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Personality, situation, and infidelity in
romantic relationships

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Dissertation

PERSONALITY, SITUATION, AND INFIDELITY IN ROMANTIC
RELATIONSHIPS

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WAS FRAU WAHRHEIT BETRIFFT,
SO ZEIGT SIE SICH SELBST IHREN INTIMSTEN VEREHRERN
NUR IN KEUSCHER UMHÜLLUNG.

WILHELM BUSCH (*1832 †1908)

Erklärung

Hiermit versichere ich, dass ich die vorliegende Dissertation „Personality, situation, and infidelity in romantic relationships“ selbstständig und ohne unerlaubte fremde Hilfe angefertigt und andere als die in der Dissertation angegebenen Hilfsmittel nicht benutzt habe. Alle Stellen, die wörtlich oder sinngemäß aus veröffentlichten oder nicht veröffentlichten Schriften entnommen sind, habe ich als solche kenntlich gemacht. Die vorliegende Dissertation hat zuvor keiner anderen Stelle zur Prüfung vorgelegen. Es ist mir bekannt, dass wegen einer falschen Versicherung bereits erfolgte Promotionsleistungen für ungültig erklärt werden und eine bereits verliehene Doktorwürde entzogen wird.

Halle (Saale), 19. September 2016

Jane Hergert

Abstract

The three essays of this dissertation deal with several aspects of sexual infidelity in romantic relationships. While I investigate the importance of sexual fidelity as a mate selection criterion in the first essay, the second essay gives an overview over the published research on antecedents of infidelity. Consequently, I propose an integrative model of infidelity which is tested and partially confirmed with longitudinal data in the final essay.

Certain characteristics of people, denoted by mate selection criteria, are assumed to play a crucial role in guiding one's decision for or against a person as a mate. In the first essay, I investigated to what extent social desirability influences ratings on the relative importance of certain mate selection criteria (research goal 1), how the importance of mate selection criteria differs due to biological sex and sexual orientation (research goal 2), and to what extent mate selection criteria are reflected in actual mate selection processes (research goal 3). There was partial evidence that the importance of socially undesirable criteria like physical attractiveness, income, and sexual skills is under-reported when the measure is direct self-report. When measured with a policy-capturing design on the other hand, a method that allows to control for effects of social desirability, seemingly unimportant characteristics (like income and sexual skill) gained importance. Furthermore, sex differences in the relative importance of physical attractiveness ($\sigma > \varphi$), income, and generosity ($\sigma < \varphi$) emerged, all in line with predictions drawn from evolutionary psychology. Interaction effects between sex and sexual orientation were only apparent for income (heterosexual women and homosexual men placed more emphasis on it than heterosexual men and homosexual women) and sexual fidelity (more important for all subgroups but homosexual men). Finally, response surface analysis showed that similarity between the ideal and current partner on humor is of particular importance for relationship satisfaction suggesting that (un)met mate selection criteria actually affect romantic relationships.

The second essay is a systematic, narrative review that aims to portray all explanatory approaches of infidelity that have been published within the past decades of empirical effort. The main focus lies on summarizing the peer-reviewed, empirical literature that has been published since 2010: The *biological approach* assumes that genetic influences and hormonal effects can explain infidelity. The *evolutionary approach* proposes that intersexual differences in parental investment may help to explain differential patterns of male and female sexual infidelity. The process of human sperm competition and changes in mate preferences across the ovulatory cycle further clarifies the evolutionary roots of female infidelity. Contrastingly, the assumption of the *deficit model* of infidelity is that problems in the primary relationship alone account for infidelity of one or both partners. Several social exchange theories are introduced within this section (e.g., equity theory, investment model, interpersonal exchange model of sexual satisfaction). Moreover, the *dispositional approach* posits that interindividual differences in stable personality traits, like agreeableness of the Big Five or all three traits of the Dark Triad, are responsible for unfaithful behavior. The *situational approach* assumes situational effects to mainly be the cause of sexual infidelity. Finally, the effects of variables like sex, age, education, and other socio-cultural constructs (like descriptive and injunctive norms) are discussed within the *socio-cultural approach*. Every approach has its merits. However, regarding one approach separately (which is mostly the case in scientific publications on the topic) always leads to the neglect of others. As a consequence, this review finally introduces the (B)ODD-model of infidelity that integrates all approaches mentioned above, apart from the evolutionary approach, into one unifying framework from a person-situation-interaction perspective.

The third essay examines the interplay of several predictors of sexual infidelity within monogamous, heterosexual romantic relationships. Using a three-wave longitudinal design, participants completed online questionnaires measuring personality traits, relationship characteristics, situational factors, and actual sexual infidelity with each time of measurement six months apart. Cross-lagged panel mediation analyses (N=341) revealed a better fit of the (B)ODD-model of infidelity in comparison with the more parsimonious model with direct effects only. However, the more complex associations hypothesized failed to reach statistical significance. Results indicate that subjective situational aspects (opportunity for infidelity) as well as deficient primary relationships both promote sexual infidelity, while personality traits and objective situational aspects that might increase perceived opportunities do not. Post-hoc analyses point in the direction that the effect of objective opportunities for sexual infidelity is mediated by subjective opportunity perceptions.

Keywords: mate selection criteria; policy-capturing; polynomial regression; response surface analysis; narrative review; literature review; sexual infidelity; emotional infidelity; extradyadic sex; (B)ODD-model of infidelity; person-situation-interaction; dispositionism; situationism; interactionism

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Synopsis

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1 General Introduction and Aim of Research

A well-intentioned advice, I received from quite a few people, when I first expressed my interest in studying psychology in 2003 was “You should not do this to shrink yourself!” But friends and family weren’t the only ones to tell me so – even one of the teachers communicated this in a very serious voice on one open day of the psychological institute of my future alma mater. To assure the reader, this was not the (main) source of my motivation. And certainly, this piece of advice has some truth about it. Nevertheless, my own infidelity in a past relationship was the pivotal event that brought me to that topic as one of academic inquiry rather than committing and/ or experiencing it myself. Although I had pretty quickly figured out, why I myself had engaged in infidelity in that past relationship, I still wanted to know, if there are any regularities or patterns to discover when it comes to explaining infidelity. Therefore, I investigated that topic in my diploma thesis with a small sample consisting mostly of students and a cross-sectional design. Still, a lot of questions remained unanswered after I got my degree. And I am not intending to spoil anything but a lot of those questions still are – which is probably the case in most research projects. Anyhow, as these questions kept on simmering inside of me for quite a while, I decided to make sexual infidelity the center of my PhD-thesis eventually. I conducted three separate studies that each focused on a specific domain of the field – one essay is dedicated to each of them. While the first study illustrates the importance of sexual fidelity as a mate selection criterion, even when social desirability is controlled, the second essay is a narrative literature review that provides an overview over the more recent empirical literature dealing with sexual infidelity. The literature is summarized, categorized and critically evaluated. In addition to that, I integrate all existing explanatory approaches into one unifying theoretical framework – the (B)ODD-model¹ of sexual infidelity. Finally, the third study is designed to put the (B)ODD-model to test with a strong design and state-of-the-art statistical analysis techniques.

2 Global Theoretical Background and Key Constructs

In 1968 one book with a very boring title shook the psychological scientific community, especially personality psychology, to its core (Laux, 2008) and initiated a discourse about the determinants of human behavior that went on for decades and still awaits its final conclusion. Walter Mischel criticized the traditional trait-oriented approach in predicting human behavior to be deficient – his major points of critique were: First, the low transsituational consistency of human behavior. Trusting the personality psychology paradigm, a certain trait should be determining behavior in different situations. According to empirical results though, it does not. At least not in the expected magnitude. Take the classic study regarding punctuality in students: The correlation between their arrival at lectures, parties, and sports events was a piddling $r = .19$ (Dudycha, 1936). Second, the predictive validity of personality tests is generally low – the association between personality traits when measured with a certain instrument and the behavior of interest rarely exceed the magical ceiling of $r = .30$. Mischel regarded both points of criticism as too severe to be ignored. Due to lack of space, the debate and proposals for solutions can only be briefly portrayed here but in short, he proposed a paradigm change from *dispositionism*, which assumes behavior to be a function of the person to *situationism* with the view of behavior rather being a function of the situation the person is in as opposed to the person itself. As this is a rather extreme point of view, too, with modern *interactionism* Magnusson and Endler (1977) built a bridge between the two opposing standpoints. In a nutshell, interactionism states that human behavior is a function of both, person, situation, and the interaction of those two.

While the focus of the first study of this dissertation lies more on evolutionary psychology, the theoretical development in study 2, which is tested in study 3 of this dissertation is based on the ideas of interactionism.

¹(B)ODD is an acronym. The letters stand for: (B)iological, Opportunity, Deficit, Disposition.

3 Short Overview of Main Results

3.1 Study1. “My romantic partner should be incredibly wealthy, really good looking and good in bed.” The relative importance of mate selection criteria and their influence on actual relationship quality.

Studies that investigate sex differences in the importance of certain mate selection criteria usually do so with direct self-reports. Unfortunately, those are prone to result distortions due to socially desirable answering patterns. Who would dare to express, that the partner of their dreams should be especially beautiful and rich – and everything else pretty much does not matter? The data-collection method of policy-capturing helps to prevent introducing this kind of bias (Aiman-Smith, Scullen, & Barr, 2002; Rhoades Shanock, Baran, Gentry, Clever Pattison, & Heggstad, 2010). While one study already investigated the effects of social desirable responding on importance ratings of certain mate selection criteria when it comes to selecting a short-term partner (Wiederman & Dubois, 1998), I conducted the first study with a similar objective for the selection of a long-term partner.

Seven criteria were selected, namely physical attractiveness, income, generosity, humor, intelligence, sexual skills, and sexual fidelity. As expected, social desirability affected the relative importance ratings in a way that the importance of “superficial” criteria like physical attractiveness and sexual skills were under-reported in a direct self-report and when measured with policy-capturing, those seemingly unimportant characteristics gained importance. This is reflected in mean rank changes of the criteria when comparing results of asking participants directly, how important those criteria are for them when in search of a long-term romantic partner as opposed to the concealed measuring with policy-capturing: The most dramatic and in both sexes identical changes occurred in the relative importance of sexual skills in both men and women. While this criterion ended up in the fifth out of seven ranks in the open rating, it came in third in the policy-capturing measure. Physical attractiveness had rank 4 in the open rating vs. rank 2 with policy-capturing in men. In addition, when asked openly, most important to men was a long-term partner with humor (rank 1) and intelligence (rank 2) – via policy-capturing those criteria did not seem as important anymore as humor switched to rank 4 and intelligence even to rank 5. Most important for the key area of this dissertation are the relative importance differences regarding sexual fidelity: While sexual fidelity was the most important characteristic of a long-term partner for women in both types of measurement, it ended up on rank 3 only in men in the direct self-report. With the policy-capturing measure, this changed dramatically and sexual fidelity came in first, too.

Further analyses were conducted to find out, whether there are differential effects of the relative importance of those criteria due to biological sex and sexual orientation. Interestingly, sexual fidelity was more important to heterosexual men and women and homosexual women, homosexual men on the other hand did not care that much about a faithful partner. This result is partially in line with predictions derived from evolutionary psychology.

Finally, I wondered, to what extent mate selection preferences are actually visible in mate selection. Do people choose their partners according to their own mate selection criteria – and if so, does it even matter, if the partner does (not) resemble the ideal romantic partner? The participants in the study were asked to describe their current and their ideal romantic partner on the seven mate selection criteria presented above. In addition, they reported their current relationship satisfaction. I assumed that congruence between current and ideal partner would result in higher relationship satisfaction and incongruence would lead to lower relationship satisfaction. With congruence operationalized as absolute difference scores, the data implied detrimental effects of incongruence between current and ideal partner regarding humor, sexual skills, and sexual fidelity on relationship satisfaction. However, as this operationalization of incongruence has been criticized in the past due to the loss of so much information as a result of too many untested constraints on the data (e.g., Edwards, 1993; Schönbrodt, 2013) I reanalyzed the data with polynomial regression and response surface analysis – these methods allow for more detailed hypotheses as well as a comprehensible visualization of results. Only for humor,

the results could be cross-validated; they implied that it is not only important for a happy relationship that the current partner has as much humor as he or she should have but also the level: The more humor a person requests in the ideal and has in their current partner the happier the relationship.

With reference to the focal area of this dissertation, study 1 has illustrated that sexual fidelity is the most important mate selection criterion for a long-term romantic partner to men and women equally, even when bias due to social desirable responding is controlled.

3.2 Study2. Antecedents of sexual infidelity in romantic relationships. A literature review of the latest empirical results, prevailing explanatory models, and proposal of a new model.

Sexual infidelity has always been the juicy center point of gossip, novels, and since the last century even of movies. It is part of the scientific landscape as well, be it anthropology, biology, sociology, or psychology. In this narrative literature review, I present the latest research literature from an interdisciplinary perspective. All existing explanatory approaches are presented, their empirical support is assessed, and critical aspects and open questions are pointed out: Research on infidelity began from a mainly descriptive, *atheoretical approach* with the works of Kinsey, Pomeroy, and Martin (1948) and Kinsey, Pomeroy, Martin, and Gebhard (1953). It was too early to ask for the reasons, why people would be sexual unfaithful. Rather, the aim was to describe sexual behavior in order to prepare the canvas for more complex scientific inquiry. The *biological approach* focuses on genetic, neurological, and hormonal factors to explain sexual infidelity. In fact, twin studies suggest a heritable component of infidelity in both, men and women (Cherkas, Oelsner, Mak, Valdes, & Spector, 2004; Zietsch, Westberg, Santtila, & Jern, 2015). Hormonal markers like oxytocin (Scheele et al., 2013) and testosterone (Gettler, McDade, Feranil, & Kuzawa, 2011; McIntyre et al., 2006) seem to act as (in)idelity promoting agents. According to the *evolutionary approach*, male and female sexual infidelity have their roots in evolutionary pressures. While men seek to maximize the quantity of their potential offspring through sexual infidelity, women seek to maximize the genetic quality of their potential offspring (Gangestad & Thornhill, 1997). Processes like human sperm competition (e.g., Baker & Bellis, 1989, 1993a, 1993b) and women's changes in mate preferences during their ovulatory cycle (e.g., Gildersleeve, Haselton, & Fales, 2014) seem to support the evolutionary interpretation. The basic assumption of the *deficit model of infidelity* is that mainly difficulties in the primary relationship, especially emotional and/ or sexual dissatisfaction, cause one or both partners to become unfaithful (e.g., Allen et al., 2008; Foster et al., 2014; Havlicek, Husarova, Rezacova, & Klapilova, 2011). Social exchange theories like the *equity theory* (Hatfield, Traupmann, & Walster, 1978), *investment model* (Rusbult, 1980), and *interpersonal exchange model of sexual satisfaction* (Lawrance & Byers, 1995) are more elaborated theoretical models that can be drawn upon within this explanatory approach. The *dispositional approach* proposes stable personality traits as the explanatory root of sexual infidelity. Several traits, e.g., the Big Five (e.g., Schmitt & Buss, 2000), the Dark Triad (e.g., Jones & Weiser, 2014), sensation seeking (e.g., Wiederman & Hurd, 1999), attachment (styles, e.g., DeWall et al., 2011), sociosexuality (e.g., Penke & Asendorpf, 2008) have been more or less consistently linked to sexual infidelity in the past. Contrastingly, within the *situational approach*, opportunities for infidelity are stated to be a necessary but not sufficient prerequisite for infidelity to occur. While subjective opportunities refer to perceived opportunities rather (e.g., Lammers, Stoker, Jordan, Pollmann, & Stapel, 2011; Plack, Kröger, Allen, Baucom, & Hahlweg, 2010), objective opportunities refer to all situations that increase the probability of meeting potential sexual partners. The latter can be work-related (e.g., number of work hours, business meetings, business-related travel; e.g., DeMaris, 2009) or relationship-related (e.g., not living together, time spent apart, shared social networks (-); e.g., Blumstein & Schwartz, 1983; Drigotas, Safstrom, & Gentilia, 1999; Le, Korn, Crockett, & Loving, 2010; Treas & Giesen, 2000). Finally, the *socio-cultural approach* explains the occurrence of sexual infidelity with socioeconomic variables (like sex, age, education; e.g., Adamopoulou, 2013), relationship-/ or sexuality-related factors (like relationship status and duration; e.g., Liu, 2000), and other socio-cultural constructs (like descriptive and injunctive norms, religiosity, political orientation; e.g., Buunk & Bakker, 1995).

Building upon these summaries, the explanatory approaches are then integrated into one unifying and comprehensive framework that is the (B)ODD-model of infidelity. The acronym (B)ODD stands for (B)iological-Opportunity-Disposition-Deficit. Where other research on infidelity keeps focusing on only one or two of the explanatory approaches, this model unites all of them from a person-situation-interactionistic perspective. In contrast to the single, direct effects models portrayed throughout that essay, the (B)ODD-model states more complex moderational and mediational associations between the groups of variables. The most central assumption is the role of the situation, namely that subjective opportunities for sexual infidelity partially mediate the link between personality traits and infidelity as well as between relationship quality and infidelity, respectively. A person with a certain personality structure should be more likely to pick up an opportunity for infidelity, be it a real or an imagined one. Likewise, people in unhappy relationships should be more receptive to potential opportunities than those that are perfectly satisfied. In addition, the model states that objective opportunities for infidelity serve as moderators of the direct links between personality traits and infidelity, and between relationship quality and infidelity: Personality and relationship quality should only affect infidelity rates when objective opportunity-indicators are high. These assumptions accommodate for the idea of opportunities as necessary but not sufficient preconditions for infidelity. Finally, the model posits descriptive and injunctive norms regarding extradyadic sex to serve as a moderator between subjective opportunities and infidelity in a way that subjective opportunities will only be taken if the respective norms are in favor of extradyadic sex.

3.3 Study3. The (B)ODD-model of sexual infidelity – A model test with longitudinal data.

The last essay within this dissertation puts the (B)ODD-model of sexual infidelity that has been proposed in the second study (see above) to the test. With a strong cross-lagged panel design data were collected at three different times of measurement with an interval of six months in between each wave. The questionnaires that were delivered anonymous and online measured personality traits (Big Five, narcissism, self-control, sensation seeking, attachment, sociosexuality), relationship characteristics (emotional and sexual relationship satisfaction, quality of alternatives, investment, commitment), situational factors (subjective and objective), socio-cultural factors (sex, age, educational background, relationship status and duration, [presence of] children, past infidelity, political orientation, religiosity, injunctive and descriptive norms) as well as actual infidelity. As opposed to most other studies on sexual infidelity, the relationship agreement about which behavior (does not) constitute/s sexual infidelity was assessed, too. The final sample consisted of $N = 341$ participants who had completed all of the three questionnaires and had equal relationship agreements: They were in monogamous relationships with every observable sexual interaction with someone else than the primary partner being regarded as infidelity, starting with french kissing.

In terms of prevalence, 7.5% reported sexual infidelity in the form of french kissing within the past half year on the third wave, 4.2% have had intercourse, 3.2% reported a steady affair.

In order to be able to test the whole model at once and because I was not interested in the effects of certain specific constructs (e.g., agreeableness) – rather, the effect of specific explanatory approaches was of interest (e.g., personality), the data complexity was reduced: All constructs that exhibited an association with infidelity in the predicted direction were z-standardized and added up to a composite of the respective category (e.g., all objective opportunity-indicators into one objective opportunity composite). Data were then analysed with state-of-the-art cross-lagged panel mediation (Selig & Preacher, 2009). I compared two models: the (B)ODD-model of sexual infidelity with the more parsimonious model of direct effects only. Although fit indices indicated a better fit of the more complex (B)ODD-model, neither the hypothesized interactions nor the assumed mediational associations could be confirmed. Instead of being partially mediated by subjective opportunities for infidelity, deficits in the primary relationship uniquely predicted infidelity only. So did subjective opportunities which were in turn affected by objective opportunities. All further hypothesized direct and more complex associations did not reach statistical significance.

In sum, the data suggest that opportunities for infidelity are important factors in the prediction of sexual

infidelity as are deficits in the primary relationship. To my surprise, personality factors and norms regarding extradyadic sex were not of any particular importance. However, instead of abandoning the (B)ODD-model of infidelity altogether as a reaction to these results, future research should aim to replicate the findings. Additionally, maybe it is more fruitful to narrow the focus on specific constructs instead of collapsing several constructs into one composite – after all, reduction of data complexity always leads to a loss of data.

4 General Scientific Contribution

4.1 Strengths of the Present Research

This research has several strengths. To begin with, there is a high methodological diversity in terms of the studies' designs: While study 1 employs a policy-capturing design that allows to control for social desirability answering bias, the data-collection for study 3 is based on a prospective, cross-lagged, longitudinal design. Study 2 has a special position as it is a rather theoretical piece of work that combines the strengths (and weaknesses) of a narrative literature review with a theoretical development. Still, I believe it is the most comprehensive and thorough review on sexual infidelity ever written.

The data for studies 1 and 3 have been collected in an anonymous online setting to ensure people were feeling comfortable and safe enough in order to report sensitive behavior (e.g., Mustanski, 2001). Analyses were conducted with sophisticated, state-of-the-art statistical methods like response surface analysis with polynomial regression (study 1) and cross-lagged panel mediation (study 3).

Not only has the present research several strengths in terms of design and analyses – there are noteworthy content-related strengths as well: Study 3 is one of the rare studies of sexual infidelity that actually takes intradyadic relationship agreements on infidelity into account. Instead of assuming which behaviors count as infidelity and which do not or forcing a certain infidelity-definition onto the participants, they were asked to define this behavior themselves. Additionally, studies 2 and 3 stand out because of the extensive consideration of the situational aspect in the genesis of infidelity: It is true that the opportunity to infidelity-construct has been noticed in the past but rather as a side note than it has been studied in depth to date. Finally, the present research marks the first step in acknowledging all existing explanatory approaches for infidelity and integrating them into the one unifying framework that is the (B)ODD-model of infidelity. Although the data showed only partial support for the model, future research should start working from there instead of dismissing it altogether.

4.2 Limitations of the Present Research

Where there is light, there must be shadow. Accordingly, the present research has its limitations, too. For the specifics please consult the respective essays.

5 Future Research Directions

As the Wilhelm Busch-quote on the beginning of this dissertation implied already, the story of psychological research on infidelity is not yet finished. There are numerous possibilities and unanswered questions that want to and hopefully will be investigated in the future. In the following section I will highlight some of these possible future directions.

This dissertation hopefully conveyed that it is important to take intradyadic definitions of infidelity into account. However, future research should address the question, if this actually makes a difference in terms of results: Does it lead to differential results when intradyadic relationship agreements are factored in as opposed to when the researcher defines the criterion? Such a project could help clarify, to what extent the available research literature should be interpreted with caution.

Most of the empirical studies focus on self-reports of only one partner in a romantic dyad. The main purpose with such a design is usually to investigate what causes this kind of behavior and maybe what follows from it. Some empirical work stemming predominantly from therapeutic psychological branches focuses also on people, where the partner has been or is unfaithful. In these cases the research interest lies rather on psychological consequences for the partner who has been cheated on, the consequences for the dyad, and how the resulting

conflicts and problems can be tackled therapeutically. However, what's currently missing is data from couples. With data from both parts of a couple a researcher would be able to investigate what dyadic processes precede unfaithful behavior of one or both partners and what reciprocal events maybe take place before, during and after unfaithful episodes. Clearly, such data would be a big asset. One new approach, that might help address this problem is the pairfam-project that sounds very promising. Pairfam stands for "Panel Analysis of Intimate Relationships and Family Dynamic" and as the title suggests, in this project multisource-data from around 12,000 randomly sampled people from three different birth cohorts, their parents, partners and children is collected once a year. The panel study started in 2008 – the data of the first six waves of data collection are available for the scientific community upon request. Panel studies are usually very restricted in terms of how thorough a construct can be measured. At least within this panel sexual infidelity is measured once a year with one item in the anchor person: "Have you or your partner been sexually unfaithful within the last year?" The answer options are: 1 = *Yes, me.*, 2 = *Yes, my partner.*, 3 = *Yes, me and my partner*, 4 = *No.*, -1 = *I don't know.*, -2 = *I don't want to answer this question.* (pairfam, 2013). Some of the results presented in the third study can and should be tested with regard to their replicability within the pairfam-dataset. As a step further, the perspectives of the romantic partners should be taken into account as well to expand the viewpoint and gain novel insights of the interplay between romantic partners and romantic relationships.

Another big blank in the psychological research literature on infidelity is the person, with whom a person is sexually unfaithful with. It seems as though only popular science has shown some interest in these persons – if so, it is mostly the female versions: mistresses. Scientifically this problem is referred to as the so-called "third party problem" (McAnulty & Brineman, 2007). We still do not know in detail what motivates the third party: Is it always mate-poaching as some scholars propose (e.g., Schmitt & Buss, 2001). Or do they just want to have fun with no further strings attached? Do they even know that their sexual encounter is in a romantic relationship with somebody else? How difficult is it for the third party, if they fall in love but the other person refuses to leave his or her romantic partner? What are their coping strategies in these cases?

Infidelity research typically relies on self-report questionnaire data. Clearly, the object of investigation prohibits some alternative data-collection methods like for example behavioral observation in ambulatory assessment settings. However, preliminary stages of sexual infidelity might be accessible for researchers in experimental settings – for example, flirting or dating someone other than the partner is sometimes considered as some kind of preliminary stage to sexual infidelity, sometimes it even fits the intradyadic definitions of unfaithful behavior already. The first authors who applied such an experimental design were Seal, Agostinelli, and Hannett (1994). They simulated a situation in which the participants (in a heterosexual, exclusive dating relationship) were asked to rate a video for an online dating website, where an attractive member of the opposite-sex introduced him- or herself. The behavioral measure in this experiment was, whether the participants wanted to take part in a drawing of the assumed operating company behind the website for a free, virtual date with the attractive stranger. They found a main effect of sociosexuality, such that unrestricted participants were more likely to engage in the drawing and a significant sociosexuality*dating length interaction, that implied an inhibitory effect of dating length on the willingness to take part in the drawing for the date only for sociosexual restricted participants. Although this is a creative and clever experiment, there still is room for improvement: It should be attempted to generalize some of the findings over different ages of participants with different designs and less restrictive samples. The sample in the study of Seal et al. (1994) was very restrictive in terms of age, sexual orientation and relationship status and consisted of young, heterosexual students in exclusive dating relationships only. If not generalizable, it should be further investigated, what differential roles such variables as sexual orientation, relationship status (unmarried vs. married), kind of relationship (monogamous vs. open vs. polyamorous) play in the willingness to engage in alleged preliminary stages of sexual infidelity.

To this date (and my knowledge) only very few, to be specific only four, meta-analyses dealing with infidelity exist. Three of these four (Harris, 2003; Carpenter, 2012; Sagarin et al., 2012) investigate mainly sex differences in response to emotional vs. sexual infidelity. The fourth one (a non-published dissertation) investigates sex differences in prevalence of infidelity, reasons for and approval of infidelity and jealousy in response to the

partner's infidelity (Dreznick, 2003). Two aspects seem noteworthy: First, all of the meta-analyses investigate infidelity-related sex differences. Second, three of the four meta-analytical reviews focus exclusively on consequences of infidelity. However, the effects of personality factors on the occurrence of sexual infidelity and their interplay with situational factors are completely neglected. One main avenue of future research should therefore be a meta-analysis that focuses on relevant explanatory constructs that have been ignored until now.

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“My romantic partner should be incredibly wealthy, really good looking and good in bed.”

The relative importance of mate selection criteria and their influence on actual relationship quality.

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Abstract

Certain characteristics of people, denoted by mate selection criteria, are assumed to play a crucial role in guiding one's decision for or against a person as a mate. With the present research, I investigated to what extent social desirability influences ratings on the relative importance of certain mate selection criteria (research goal 1), how the importance of mate selection criteria differs due to biological sex and sexual orientation (research goal 2), and to what extent mate selection criteria are reflected in actual mate selection processes (research goal 3). There was partial evidence that the importance of socially undesirable criteria like physical attractiveness, income, and sexual skills is under-reported when the measure is direct self-report. When measured with a policy-capturing design on the other hand, a method that allows to control for effects of social desirability, seemingly unimportant characteristics (like income and sexual skill) gained importance. Furthermore, sex differences in the relative importance of physical attractiveness ($\sigma > \varphi$), income, and generosity ($\sigma < \varphi$) emerged, all in line with predictions drawn from evolutionary psychology. Interaction effects between sex and sexual orientation were only apparent for income (heterosexual women and homosexual men placed more emphasis on it than heterosexual men and homosexual women) and sexual fidelity (more important for all subgroups but homosexual men). Finally, response surface analysis showed that similarity between the ideal and current partner on humor is of particular importance for relationship satisfaction suggesting that (un)met mate selection criteria actually affect romantic relationships. Recommendations for further research on mate selection criteria and similarity-related research questions are presented.

Keywords: mate selection criteria; policy-capturing; direct self-report; ideal-real partner similarity; relationship satisfaction; polynomial regression; response surface analysis

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1 Introduction and Background

Imagine Maddie. Maddie is single and currently looking for a partner. Therefore, she subscribes to an online-dating website. While she is browsing through the website she stumbles over the dating-profile of Paul. Paul is 6"7, handsome looking, and a waiter. Based on his self-reported entries on his profile he seems to have a terrible sense of humor, though. A few profiles later she clicks on the profile of Chuck, mostly because he looks so repellent in his photo. Chuck is 5"2 and a theoretical physicist with a PhD and tenure. His profile reads witty and charming. Whom will Maddie probably write a personal message? And what would she say if she was asked directly, for example by a psychologist who does research on the topic, what characteristics a long-term romantic partner should have? Does she even choose a partner based on her preferences? And if so, does it even matter if her preferences are met?

The example illustrates potential practical (for people in search for a romantic partner) and theoretical (for researchers, who are seeking to understand the process better) questions arising from the topic of mate selection. How should a person be like to be picked over others for a sexual and/or romantic relationship, or: Who is more likely to be picked by Maddie and why?

The present research aims to answer the questions proposed above, thereby following a widely recognized and popular research tradition. However, I approach the field of mate selection preferences from a different methodological angle that should yield results with better external validity than the classical approach (research goal 1). An additional aim is to replicate well-established findings of sex differences in mate selection preferences with these more externally valid results and add to the body of existing empirical evidence effects of sexual orientation (research goal 2). The final goal is to assess to what extent (un)met mate selection preferences actually affect romantic relationships with visually-aided polynomial regression (research goal 3).

To my knowledge, the first studies of mate preferences in the field of psychology were conducted by Hill (1945) and Christensen (1947). The participants in both studies were given a list of characteristics (like dependability, absence of alcohol and tobacco, good health, chastity) of a potential mate and had to rate the subjective importance of each of the characteristics. Numerous studies on the subject of mate selection preferences have been conducted since (e.g., Buss, Shackelford, Kirkpatrick, & Larsen, 2001; Hudson & Henze, 1969; McGinnis, 1958; Schwarz & Hassebrauck, 2012; Shackelford, Schmitt, & Buss, 2005). Results from a cross-cultural study over 33 cultures suggest that mate preferences are at least to some degree universal (Buss et al., 1990).

Although the topic of mate selection criteria has gotten a lot of research attention over the past decades, almost all studies have one limitation: Their results are based on direct self-reports where participants are asked directly, how important certain criteria are in a romantic partner. This might pose a problem, especially when the criteria differ in their social desirability. While it is totally acceptable to request a partner who is funny and faithful it might not be the case with requesting a rich person with exceptionally good looks. Participants answering partially socially desirable is likely to distort the results, which could manifest in rank order changes. Only one published study investigated, how the importance of mate selection criteria changes when social desirability is considered: Wiederman and Dubois (1998) examined the effects of social desirability on rankings and ratings of the following six criteria for short-term relationships with a policy-capturing design (see section 1.1, p. 30, for further details on the method) that allows controlling for effects of social desirability: Physical attractiveness, financial resources, generosity, sexual experience and interest, current relationship status, and desired level of commitment. Within the policy-capturing design, men and women placed most emphasis on physical attractiveness of the potential short-term mate while when asked directly, women regarded the desired level of commitment as the most important characteristic. Moreover, Wiederman and Dubois (1998) observed that the correspondence between the relative importance of certain cues assessed with policy-capturing vs. direct self-report is generally low. However, the study of Wiederman and Dubois (1998) dealt with short-term mating only. How social desirability affects rankings of mate selection criteria for long-term romantic partners is unclear to date. In summation, these considerations lead to the first research question, which will be expanded to specific hypotheses later on:

Research question 1:

To what extent does social desirability influence ratings of the relative importance of mate selection criteria in a long-term romantic partner?

One other aspect, typically early studies on mate selection criteria are lacking (especially Christensen, 1947; Hill, 1945; McGinnis, 1958), is a theoretical background they draw on. Instead, most of the earlier studies stay on a purely descriptive, phenomenological level. Evolutionary psychology however provides a powerful framework to derive hypotheses from, including hypotheses regarding sex differences in sexual selection strategies:

Intersexual selection, the main topic of interest in this paper, means the process of choosing one mate over other potential mates. According to the *theory of parental investment* (Trivers, 1972) and the *sexual strategies theory* (Buss & Schmitt, 1993), that both build upon Charles R. Darwin's work of evolutionary theory (1859, 1871a, 1871b), human females should mostly be choosing their mates, whereas males should be competing for them. The reasoning behind that statement is that females are investing more in their offspring. Therefore, they are sexually available only for a limited amount of time. Note that the biological sex is not a predictor for the role of whom in the process of sexual selection but rather the relative investment of each sex into the offspring (Buss & Schmitt, 1993). However, as Buss and Schmitt (1993) and Trivers (1972) point out, the variability in the male paternal investment in humans is very high, ranging from deserting a pregnant woman to taking parental leave with the newborn while the woman pursues her professional career. Hence, men have certain possibilities to choose a sexual and/or romantic partner in the human society as well. Still, women are supposed to be the "chooser" sex. Due to the fact, that homosexual persons cannot procreate biologically to this date, it seems reasonable to assume that sexual orientation does have differential effects on mate selection preferences, which might interact with effects of sex. Accordingly, the evolutionary perspective on mate selection lead to the next two research questions:

Research question 2:

Are there sex differences in the relative importance of mate selection criteria for long-term romantic relationships when controlling for social desirability?

Research question 3:

Are there differences in the relative importance of mate selection criteria between hetero- and homosexuals? If so, do they interact with potential sex differences?

Another interesting aspect in the study of mate selection preferences is the question, to what extent they actually affect behavior: Is a romantic partner really chosen according to his or her resemblance to the individual mate preferences of the choosing person? And if so, does this influence relationship outcomes? Empirical literature on this topic is widespread with a variety of characteristics in focus. Concordantly, most of the studies find at least some indications that congruence between the current and the ideal partner predicts relationship outcomes, although the effects are mostly small. Ruvolo and Veroff (1997) for example report negative effects of real-ideal partner discrepancies in several personality descriptors on marital well-being after one year of marriage. Other research focused on more social-cognitive components of partner ideals and relationship ideals like the *ideal standards model* (e.g., Campbell, Simpson, Kashy, & Fletcher, 2001; Fletcher, Simpson, Thomas, & Giles, 1999). This model posits that ideal partners can be described along three different dimensions: warmth-trustworthiness, vitality-attractiveness, and status-resources. Both Fletcher et al. (1999) and Campbell et al. (2001) found a positive relationship between actual-ideal partner consistency on these dimensions and relationship quality. Strauss, Morry, and Kito (2012) reported effects of ideal-current partner similarity in attachment styles on relationship satisfaction but only for avoidance, not for anxiety. Eastwick and Finkel (2008) reported results that indicated no sex-differences in associations between romantic interest in a real person in a speed-dating paradigm and their attractiveness and earning prospects. As opposed to these results, Li et al. (2013) observed in several experiments with online-messaging and real-live speed-dating that ideal mate preferences regarding physical attractiveness and social status do predict attraction in early stages of mate selection for long-term

romantic partners. Additionally, they found the sex-differences evolutionary psychology predicts: In men, physical attractiveness had higher predictive validity, in women it was social status. A recently published meta-analysis in turn reports generally positive effects of physical attractiveness (moderate-to-strong, $r = .40$) and earning prospects (small, $r = .10$) on romantic evaluations (Eastwick, Luchies, Finkel, & Hunt, 2014) but no sex differences in these effects. Usually, similarity is operationalized in a slightly deficient way, though (e.g., with difference scores or Mahalanobis distance). The proper way would be to investigate fit-, congruency-, or similarity-hypotheses with polynomial regression (e.g., Edwards & Parry, 1993). In condensation, these empirical results and the methodological considerations lead to the fourth research question:

Research question 4:

To what extent does [appropriately operationalized] similarity between an ideal partner and the actual partner on certain mate selection criteria have predictive validity for relationship satisfaction?

Before the research is presented in detail, the policy-capturing method is introduced as it played a major role in the first two research goals.

1.1 Policy-Capturing Methodology

The policy-capturing methodology originated in industrial and organizational (I/O) psychology but was subsequently applied to various research domains in the field of psychology (Doherty, 2007). It is a regression-based technique which allows to investigate complex decision-making processes on a fine-grained level (Aiman-Smith, Scullen, & Barr, 2002).

Decisions are usually not based on one piece of information. Rather, they have to be inferred from multiple criteria, which might even be conflicting. The decision for or against a job for example might be based on pay, distance from the place of residence, job security, and prospects for career advancement. The policy-capturing approach allows to capture how people “weight, combine, or integrate information.” (Zedeck, 1977, p. 51)

With the help of this methodology, it is possible to identify individuals’ decision-making policies when they are making evaluative judgments (Karren & Woodard Barringer, 2002). The task of each participant in a policy-capturing design is to rate a certain number of fictitious scenarios (e.g., a job description) on the decision of interest (e.g., Would you take this job?). These scenarios consist of several cues (e.g., pay) with their levels (e.g., annual salary of 20.000\$, 40.000\$, or 60.000\$) systematically varied over the scenarios. Afterwards each participant is treated like one sample and his or her ratings of the scenarios are regressed on the cues. The results are individual standardized β -weights for each of the cues (e.g., pay, job security, ...) that reflect their relative importance in the decision-making process of the individual. Because of this strategy, the method allows for idiographic (e.g., What decision-making strategy is participant X applying?; What cue is most important for the decisions of participant y?) as well as nomothetic (e.g., Is there a general trend in what cues are more or less relevant for a decision?) analyses. Due to its indirect character – the subjects give a holistic judgment on each scenario instead of rating each cue separately and directly – this approach is an eligible tool for controlling for social desirability. This does not hold true for direct ratings of the desirability of mate selection preferences. For a more detailed review of the technique and its applications please see the tutorials of Aiman-Smith et al. (2002) and Karren and Woodard Barringer (2002). Specific decisions regarding the policy-capturing design applied in this study are presented in detail in section 3.1(p. 32).

1.2 Preliminary Study

One of the key issues in policy-capturing research is to ensure realism (Karren & Woodard Barringer, 2002) or representativeness (Aiman-Smith et al., 2002). The decisions the participants are asked to make have to be as realistic as possible to enhance external validity. Although it is usually unclear on *what* type of information specific decisions are based upon, people base their decisions mainly on a relatively small number of criteria, due to cognitive restraints (Karren & Woodard Barringer, 2002).

In an attempt to approach the cues of relevance for long-term mate selection processes both empirically and theoretically I conducted an online preliminary study to identify the cues for the main study, thereby following the recommendation of Karren and Woodard Barringer (2002) who call for gathering the information about potential cues from all possible sources: Individuals (qualitatively and quantitatively) and published work. The preliminary study consisted of one qualitative part, where the participants were asked to name between at least three and up to 10 characteristics they regarded as desirable as well as three to 10 characteristics they regarded as undesirable in a long-term romantic partner. Additionally, I compiled a list of 43 potentially relevant mate selection criteria, extracted from previous research literature on the topic. The participants rated each of these 43 criteria on how desirable they viewed them in a long-term romantic partner from 1 = *absolutely undesirable* to 7 = *absolutely desirable*. Fifty-nine participants aged between 19 and 60 years ($M = 33.7$, $SD = 9.9$, $N = 44$ female), completed the preliminary online-study.

Karren and Woodard Barringer (2002) recommended to use at least four and at most eight cues in a policy-capturing study. The selection of cues for the main study was guided by several aspects: First, to reach a well-balanced mixture of socially desirable and socially undesirable criteria (formerly labeled as cues) for the investigation of social desirability effects. Second, to select criteria that have been investigated frequently in the context of mate selection in order to being able to compare the policy-capturing based results with direct self-report data from previous studies. Third, only one study investigated mate selection preferences in a policy-capturing context to date, but only for short-term mates (Wiederman & Dubois, 1998). The focus here was on the selection of long-term romantic partners instead – to assess differential effects of the mating strategy in a policy-capturing design, I selected at least some of the cues that Wiederman and Dubois (1998) investigated. Fourth, the preliminary study, especially its qualitative part, was mainly intended to ensure not overlooking certain criteria of special importance for people that psychological research failed to investigate until now. Based on the selection criteria, the following seven cues were extracted for the main study:

1. Physical attractiveness,
2. income,
3. generosity,
4. humor,
5. intelligence,
6. sexual skills (“good in bed”), and finally
7. sexual fidelity¹.

See Table 1 for the ranks of all the selected cues in both the qualitative and quantitative part of the preliminary study. Of these seven cues, physical attractiveness, income, and sexual skills represent the socially undesirable criteria that are usually considered as “superficial” characteristics that have nothing or little to do with how a person really is (= first selection criterion). As can be seen in Table 1 cues of varying importance for the participants were chosen: Seemingly very important cues (such as intelligence), cues of medium importance (such as generosity), and one factor of seemingly no importance at all (income, rank 41 of 43). Especially physical attractiveness and income represent the most frequently investigated mate selection preferences, the remaining five selected cues have only been investigated a few times (= second selection criterion). Finally, Wiederman and Dubois (1998) investigated four of the seven final cues in their PC-study on criteria in short-term mate selection (= third selection criterion). Referring back to the fourth selection criterion, fortunately, there were no surprises in terms of qualitatively named, important but previously overlooked cues.

¹It seemed necessary, to include the word sexual before fidelity for two reasons: First, as Blow and Hartnett (2005) already pointed out, research on infidelity sometimes lacks a clear distinction between the two facets emotional and sexual infidelity. In order to avoid possible confoundations of these two concepts that might occur together but do not necessarily have to, sexual was put before fidelity. Second, due to widespread differences in the definition of emotional infidelity and therefore possible misconceptions of the construct, the focus was on sexual (in)fideliity exclusively, as it is most clearly concerned with actions of sexual content with another person than the primary partner and should be interpreted unambiguously by different participants.

Table 1: *Rankings of the Chosen Mate Selection Criteria*

Criterion	rank _{qual-des} ^a	rank _{qual-undes} ^b	rank _{quant} ^c
Physical attractiveness	7 [13x]	9 [4x / hideous]	24
Income	14 [3x]	11 [2x / no income]	41
Generosity	16 [1x]	9 [4x / parsimony]	28
Humor	2 [39x]	6 [8x / lack of humor]	7
Intelligence	1 [42x]	7 [7x / stupidity]	11
Sexual skills	– [not mentioned]	– [not mentioned]	20
(Sexual) fidelity	5 [21x ^d]	2 [15x / infidelity]	6

Note.

^a *qual-des* stands for the qualitative part of the study dealing with desirable characteristics in a potential mate. The rank resulted from the number of mentions of the characteristic. The number in squared brackets indicates how often this characteristic was mentioned. The task for the participants was to name three to 10 desired characteristics in a long-term mate. Overall there were 16 ranks composed from 88 different characteristics – therefore, some ranks were assigned more than once.

^b *qual-undes* stands for the qualitative part of the study dealing with undesirable characteristics in a potential mate. See ^a but the results in this column are based on undesired characteristics. Overall there were 12 ranks and 83 different characteristics with some ranks assigned more than once.

^c Overall there were 43 ranks. *quant* stands for the quantitative part of the study.

^d The participants noted only fidelity, not sexual fidelity and probably meant both facets of the construct: Sexual (performing no sexual actions like kissing or intercourse with another person) as well as emotional (not establishing a romantic emotional bond with another person) fidelity.

2 Current Study

To investigate the research questions introduced above, I conducted an online survey consisting of three parts: In the first part, the participants assessed 82 policy-capturing-scenarios. Additionally, they had to rank the importance of the mate selection criteria by dragging and dropping them in the right order, representing the direct self-report measure as opposed to the policy-capturing method. In the second part, the participants were asked to rate their current (if they were in a romantic relationship at the time) and ideal romantic partner on the seven mate selection criteria and on the Big Five. In the last part, the participants answered sociodemographic questions and provided additional information about their current romantic relationship. For more details on the structure of the online survey and the instruments used please consult the following method-sections of research goal 1 (p. 32), research goal 2 (p. 38), and research goal 3 (p. 44).

3 Research Goal 1 – Differences Between the two Methodologies in Mate Selection Preferences

The aim of the first part of this study was to test, whether expected effects of social desirability on the relative importance of mate selection criteria can be controlled with the application of a policy-capturing design. Specifically, the following hypotheses were investigated:

Hypotheses 1 to 3: The rankings of mate selection criteria obtained with direct self-reports vs. the policy-capturing method will differ in such a way that the socially undesirable criteria will be more important for men and women (resulting in higher ranks) when obtained with the policy-capturing method. These socially undesirable criteria are:

1. Physical attractiveness,
2. income, and
3. sexual skills.

3.1 Method

Participants. Altogether the online survey was accessed $N = 2.190$ times. While $n = 521$ broke off directly on or immediately after the welcome page, another $n = 444$ canceled their participation over the course of the survey. Most of the dropouts took place while the policy-capturing scenarios were presented ($n = 429$), which illustrates that this task was very exhausting for the participants. Without the dropouts, a sample of $n = 1.225$ participants that completed the survey remained. From these 1.225 four cases were excluded due to code-duplicates while keeping the primary cases. An additional three cases were excluded because they exhibited too many missings in important variables and nine cases due to suspicious data (most certainly click-throughs’).

After completing the idiographic regression analyses for each respondent to obtain the individual β -weights for each cue with the remaining sample, another 345 cases were excluded because their idiographic R^2 , meaning the predictive validity of the seven cues for the judgment of the adequacy of fictitious people as long-term romantic partners, did not exceed .60. A $R^2 < .60$ indicates either unstable decision-policies or inattentive answering (Stewart, 1988; Wiederman & Dubois, 1998) – both possibilities call for the omission of such cases.

After all, $N_{final} = 864$ participants remained in the final sample which was used for the inference testing of the hypotheses. 74.5% of the participants were female ($n = 644$), $n = 220$ male. They were aged between 16 and 66 with a mean of 30.1 years ($SD = 9.6$). 72.7% ($n = 628$) were students. Additionally, 61.5% were employed and 11.5% ($n = 99$) freelancing or self-employed. Furthermore, 70.1% ($n = 606$) were in a romantic relationship at the time the survey was conducted. The majority of the sample was unmarried (68.3%, $n = 590$; only 17.5% ($n = 151$) reported being married). 77.7% were childless ($n = 671$), whereas the rest of the sample reported having between one child and six children.

The heterogeneity of the sample in characteristics such as age and employment status may seem somewhat untypical for a sample consisting predominantly of students. This results from the fact that the online-survey was conducted at a distance teaching university (University of Hagen), where most of the students are in their mid-thirties, have families, are employed, and usually study in their spare-time (FernUniversität in Hagen, 2012).

Measures. In the following section only the measures relevant for research question 1 will be described.

At first, the participants were presented with 82 fictitious scenarios. Of these 82 scenarios seven were presented directly after the instruction for practicing purposes. This is a recommended tactic that has a stabilizing influence on the individual regression equations (Aiman-Smith et al., 2002). Afterwards, the participants rated the remaining 75 scenarios (10x7 per page, 1x5 per page) on how well they could imagine the described fictitious persons as their long-term partners on a rating scale ranging from 1 = *absolutely not* to 6 = *very good*. Five of the remaining 75 scenarios were duplicates for reliability-checking purposes. The coefficients varied from $r_{tt} = .60$ to $.82$ implying sufficient to moderate test-retest reliabilities of the judgments.

The seven cues were varied on two or three levels. Only two levels were used when a middle level did not make any sense. To be faithful on an *average* level for example would have been difficult to interpret for the participants and not realistic at all. See Table 2 for a complete overview of the number of levels for the individual cues and in what fashion they were presented. The scenarios as a whole as well as the cue positions inside each scenario were presented in a randomized order. The cue positions were randomized to prevent primacy- and recency-effects.

As can be seen in Table 2, the wording of the cue-levels was kept short and simple while comprehensible: Where necessary, the meanings of the level-phrasings like *average* or *not that* were explained. The rationale behind this was to guarantee a maximum amount of realism. If, however, the participants did not need the extra explanations (e.g., because they already rated 20 scenarios and have the meanings memorized), they could ignore them easily because the most important parts of every cue in every scenario were underlined².

Given the number of cues (seven) and cue levels (4x two levels, 3x three levels), the participants would have had to rate $2^4 \cdot 3^3 = 432$ unique scenarios in a *full factorial design*, where every variable is completely crossed and balanced. Although the scenarios were kept as short as possible, presenting all 432 scenarios was not possible. Therefore, I drew a random sample of 77 scenarios out of the pool of possible scenarios with Microsoft ExcelTM.

²For further clarification please find the instruction as well as an example scenario below:
The instruction read as follows: On a scale from 1 *not at all* to 6 *very good*, how well can you imagine the following hypothetical person as your long-term romantic partner?
This person ...
... bends the rules of sexual fidelity. Is sexually unfaithful.
... is not that generous. Never invites you and almost never gives you a present.
... has an average income. Can afford some things but has to pay attention to the prices as well.
... is good in bed. Satisfies your sexual needs often.
... is not that intelligent.
... has a good sense of humor. Makes you laugh.
... looks good, is attractive.

Table 2: Overview of the Cue Levels and Phrasing

Cue	Levels
	This person ...
Physical attractiveness	1 <u>does not look good</u> , is not attractive. 2 looks <u>good</u> , is attractive.
Income	1 has a <u>low income</u> . Earns a bare living but extras are not possible. 2 has an <u>average income</u> . Can afford some things but has to pay attention to the prices as well. 3 has a <u>high income</u> . Can afford a lot of things without having to pay attention to the prices.
Generosity	1 is <u>not that generous</u> . Never invites you and almost never gives you a present. 2 is <u>generous on an average level</u> . Invites you sometimes and gives you a present every now and then. 3 is <u>very generous</u> . Invites you frequently and gives you a lot of presents.
Humor	1 has <u>little sense of humor</u> . 2 has a <u>good sense of humor</u> . Makes you laugh.
Intelligence	1 is <u>not that intelligent</u> . 2 is <u>of average intelligence</u> . 3 is <u>very intelligent</u> .
Sexual skills	1 is <u>not good in bed</u> . Satisfies your sexual needs rarely. 2 is <u>good in bed</u> . Satisfies your sexual needs often.
Sexual fidelity	1 bends the rules of sexual fidelity. Is sexually <u>unfaithful</u> . 2 would never cheat on you. Is sexually <u>faithful</u> .

This design represents a *fractional factorial design* and belongs to the group of *confounded factorial designs*: Only one subset of scenarios is used and every participant rates the same scenarios. Graham and Cable (2001) illustrated in their study that the confounded factorial approach yields similar results as the full factorial design while producing less negative outcomes in the participants such as fatigue, cognitive overload, and stress. This procedure is in line with recommendations of Aiman-Smith et al. (2002) that the number of presented scenarios should not exceed 80 to minimize the risk of fatigue and/or boredom that at least there should be 10 scenarios per cue presented for a valid estimation of the β -weights with sufficient power (Cohen, 1988). After excessive pretesting of the main study, it was clear that the number of 82 (70 core scenarios plus seven in the beginning for practicing purposes and five duplicates to analyze retest-reliability) scenarios was the absolute maximum because this task is indeed extremely exhausting and annoying for the respondents.

Another important aspect of a policy-capturing design regards the orthogonality of the cues which is not independent of the request for realism. In full factorial designs, all cues and cue levels are crossed and therefore not correlated. However, some of the cues might be associated in “real-life” which would then result in unrealistic scenarios. Some scholars argue only orthogonal cues should be implemented because only then the individual effects of cues can be estimated properly (e.g., Zedeck & Kafry, 1977). Others claim that orthogonality in the cues would be a too restrictive demand and mostly unrealistic (e.g., Lane & Marques, 1982). To apply the fractional factorial design was the compromise between orthogonality and realism. The intercorrelations between the cues varied between $r(\text{humor}*\text{fidelity}) = -.20$ and $r(\text{income}*\text{fidelity}) = .12$ which is, again, in line with recommendations of Karren and Woodard Barringer (2002) who stated that cue-intercorrelations of zero are not necessary but should not exceed .20.

One last important point to be aware of with policy-capturing designs relates to sampling questions. Knowledge about the decision of interest (expert vs. novice) influences the quality of the ratings and thus the validity of the β -weight estimates (Aiman-Smith et al., 2002). This is of special interest for policy-capturing research in I/O-contexts, if the research questions concern for example personnel selection or performance appraisal decisions. Fortunately, mating decisions are decisions almost everybody makes every now and then, e.g.: Is this person worth being considered as a romantic partner or not? If yes, why? If not, why not? This fact makes nearly every person of a certain age, where falling in love and mating is usually already part of life, expert in the field of mating decisions. According to results of an online survey with 13.000 participants (Durex, 2006), the mean age at first sexual intercourse is 15.5 years for girls and 16.4 years for boys. Results from studies with German representative samples suggest that the first sexual intercourse usually happens within a committed relationship (Bundeszentrale für gesundheitliche Aufklärung, (2010)) and by the age of 17 years, 85% of the girls and 76% of the boys have been at least in one committed relationship (Group, 2009). The participants were mostly of legal age – it seems therefore reasonable to assume that their sample consists predominantly of

people that already have been in love, have had sex, and have made mating-decisions. Consequently, they can be considered experts in mate selection decisions. Additionally, the study was explicitly promoted as a study about mate selection: In the sense of self-selection, it is likely that people only decided to take part in the study if they were familiar with the topic.

After the participants completed the scenario-ratings they answered sociodemographic questions about their sex, age, their current employment situation, and relationship status.

Finally, they were asked openly to rank the seven mate choice preferences according to their subjective importance in a long-term romantic partner. The instruction read as follows: “Now, please think about how important the following characteristics are for you in a long-term romantic partner. Please indicate this by dragging and dropping the most important feature into the first position, the second most important feature into the second position and so on”. This rating represented the direct self-report measure of the importance of these seven criteria.

Procedure of data collection. The study was conducted anonymous and online from December 2012 to February in 2013³ with EFS Survey, a specific software-solution for conducting online research provided by the questback GmbH⁴. Participants were recruited via the website of the virtual laboratory of the Psychological Institute at the University of Hagen. Psychology undergraduates received partial course credit for their participation. Additionally, participants were recruited through calls on several websites and groups or personal pages in online social networks⁵.

Two kinds of further incentives for participation besides course credit (which only applied for students who majored in psychology) were used: Four gift certificates worth 25 € for a widely popular online retailer were raffled and the respondents were informed about the results of the study by e-mail, if they were interested. The e-mail-addresses of the participants were saved separately from the survey data collected in the survey to not compromise their anonymity.

3.2 Results

Most of the analyses were conducted with the statistical software SPSS Version 21.0 and 22.0 (IBM Corporation, 2012, 2013). Where different software packages were used, I will indicate so at the appropriate section. After computing the β -weights of the cues for each respondent individually using OLS-regression (method: enter) absolute ranks were assigned to the cues in a descending order: The cue with the highest standardized β -weight was assigned rank 1 of 7 – this indicates the cue with the highest importance or predictive validity for the judgment in question (namely, how well a person can be imagined as a long-term romantic partner). The cue with the second-highest standardized β -weight got assigned rank 2 of 7 and so on.

The ranks from the direct self-report were measured directly in rank order from most important (rank 1) to least important (rank 7), therefore the data did not have to be transformed in any way. Because of the nonparametric character of the data, Wilcoxon signed-rank tests were applied to detect significant differences between the ranks obtained with policy-capturing versus direct self-rating.

Although I expected mean-rank-differences only for socially undesirable characteristics in the direction that those characteristics would be more important for the participants, when social desirability is controlled for, Table 3 summarizes the results for differences on all seven criteria for the interested reader.

Because of the hypotheses about sex differences (see section 4, p. 36) the hypotheses here were tested separately for men and women as well. Due to the multiple tests, I adjusted for alpha-inflation with the Bonferroni-correction. The correction resulted in a significance level of $p = \frac{.05}{3} = .017$ ⁶.

³The process of data collection is described only once throughout this manuscript, because all results reported here are based on this sample or subsamples of it, respectively.

⁴GmbH is the german equivalent of LLC.

⁵For a detailed list of channels used for acquisition please contact the author.

⁶In accordance with recommendations from American Psychological Association (2010) and Bakker and Wicherts (2011), exact p -values from the significance tests are reported in order to improve statistical accuracy and to minimize the risk of misreporting statistical results (e.g., this should help avoiding rounding errors). The only exception are p values lower than .001: those will be reported with the usual notation $p < .001$, as recommended by American Psychological Association (2010).

Table 3: *Results – Rank Differences in the Mate Selection Criteria Between Two Data Collection Methods: Direct Self-Rating vs. Policy-Capturing*

Cue	♀ ($n = 641$)					♂ ($n = 218$)				
	open ^a	pc ^a	r ^b	open _{abs} ^c	pc _{abs} ^c	open	pc	r	open _{abs} ^c	pc _{abs} ^c
Physical										
attractiveness	4.65	4.54	-.04 ^d	4	5	3.57	3.08	-.26***	4	2
Income	5.91	5.16	-.31***	7	6	6.33	5.81	-.25***	7	7
Generosity	5.25	5.40	[.07**] ^d	6	7	5.53	5.42	[-.05]	6	6
Humor	2.87	3.94	[.40***]	3	4	2.78	3.75	[.39***]	1	4
Intelligence	2.53	3.47	[.40***]	2	2	2.81	3.87	[.43***]	2	5
Sexual skills	4.86	3.85	-.41***	5	3	4.16	3.58	-.27***	5	3
Sexual fidelity	1.93	1.52	[-.29***]	1	1	2.82	2.31	[-.28***]	3	1

Note.

^a Scores in the columns reflect mean ranks (the higher, the more important, ranging from 1 to 7) in women and men, respectively. *Open* means the ranks were obtained via the direct self-report measure (drag&drop) while *pc* means the ranks were obtained via the policy-capturing method.

^b r reflects the effect size, derived from $r = \frac{Z}{\sqrt{N}}$, where N is the total number of observations (twice as much participants in the sample). The usual conventions apply for interpreting the size of the effect (Cohen, 1988): $r > .10$ indicating a small effect; $r > .30$ indicating a moderate effect; $r > .50$ indicating a large effect.

^c *abs* stands for mean absolute ranks. They were derived by assigning the lowest absolute rank to the lowest mean rank. For example, sexual fidelity has a mean rank of 1.93 in the direct self-report measure representing the lowest number compared to the other six mean ranks, which means that sexual fidelity was the most important characteristic for women in the direct self-report measure – therefore it got assigned the absolute mean rank of 1).

^d Gray font color indicates a non-significant difference. The p -value for physical attractiveness in the women subsample was .073 and for generosity in the men subsample .163.

^e Squared brackets indicate exploratory results as no hypotheses for these differences have been specified.

** $p < .01$ (for generosity in the women subsample: $p = .005$), one-tailed; *** $p < .001$, one-tailed. Adjusted significance level was $p < .017$.

As can be seen in Table 3, there was partial support for the hypotheses: As predicted, highly significant differences in the mean ranks for the socially undesirable characteristics income ($Z = -11.23$, $p < .001$, $r = -.31$ for women; $Z = -5.31$, $p < .001$, $r = -.25$ for men) and sexual skills ($Z = -14.71$, $p < .001$, $r = -.41$ for women; $Z = -5.68$, $p < .001$, $r = -.27$ for men) occurred in the expected direction. These effects were of medium size (Cohen, 1988). However, for physical attractiveness the effect of the method (open vs. policy-capturing) was significant only in the subsample of men ($Z = -5.46$, $p < .001$, $r = -.26$). Although the direction of the mean-level change is in the hypothesized direction in the subsample of women, the effect was not significant ($Z = -1.46$, ns with $p = .073$, $r = -.04$)

Auxiliary to the mean ranks, the mean absolute ranks paint a slightly different picture: While there is a change in absolute rank order contrary to the expectations for physical attractiveness in the subsample of women, the mean rank differences point in the opposite direction. Additionally, there is no change in absolute rank order regarding income in the subsample of men, although there was a significant mean rank difference consistent with the prediction.

3.3 Discussion

Results regarding research goal 1 showed that social desirability has an effect on rankings of mate selection criteria in that direction that certain socially undesirable characteristics tend to be more important for participants, when the relative importance is measured indirectly with the policy-capturing design. This effect holds true for physical attractiveness (only for men), income, and sexual skills. The latter two effects were found for women and men. The following part deals with the question, to what extent known sex differences in mate selection preferences replicate in a sample where effects of social desirability are controlled for, whether sexual orientation also has an effect on mate selection preferences and whether there are interaction effects between the two factors sex and sexual orientation.

4 Research Goal 2 – Differences in Mate Selection Preferences due to Gender and Sexual Orientation

Sexual strategies theory (Buss & Schmitt, 1993) states the existence of evolved, sex-specific psychological mechanisms that underlie mating strategies (short-term vs. long-term mating) due to different obstacles the sexes have

faced in the mating game over time. According to their theory, these sex-specific strategies become apparent in sex differences in mate preferences. The authors proposed a set of sex-specific problems men and women face in the context of short-term- and long-term mating. While most of the predictions were tested and confirmed in the past decades (see for example Buss & Schmitt, 1993, for a detailed review), they have not yet been tested in a design, where effects of social desirability are controlled. Therefore, the first seven hypotheses propose that those findings are replicable in a policy-capturing design which would close this research gap. Apart from number 6, they hypotheses 1 through 7 are derived from an evolutionary psychological point of view.

Specifically, I investigated the following hypotheses regarding sex differences in the relative importance of the seven mate selection criteria:

Hypothesis 1: Physical attractiveness qualifies as a biological marker for fertility that should be more important to men than to women because of a women's limited window of fertility. Therefore, physical attractiveness is expected to be more important to men than to women in a long-term romantic partner.

Hypothesis 2: Women may need to choose a partner with resources that is able to provide for his offspring, while she is busy raising it. Therefore, income is expected to be more important to women than to men.

Hypothesis 3: Generosity should matter more to women than to men because this characteristic may also serve as a cue for the willingness of a man to invest in potential offspring.

Hypothesis 4: Prior results are somewhat mixed on the importance of humor in a long-term romantic partner – while some scholars argue that humor is not essential for the survival of offspring (Feingold, 1992; Goodwin, 1990) others state that it is a marker for fitness in the Darwinian sense because it is associated with intelligence which in turn exhibits associations with resources (Bressler & Balshine, 2006; Greengross & Miller, 2011). Both sides present empirical results supporting their positions, albeit the empirical evidence and arguments on the second position slightly outweigh the other. Therefore, I propose humor being more important to women than to men.

Hypothesis 5: Intelligence is associated with occupational success and income (e.g., Judge, Hurst, & Simon, 2009). Due to this indirect association of intelligence with resources, it is expected to be more important for women.

Hypothesis 6: For sexual skills evolutionary psychology does not provide sufficient arguments to derive a hypothesis about sex differences in the importance of this characteristic. Numerous studies have proven the importance of a satisfactory sexual relationship between partners for overall relationship satisfaction (e.g., Byers, 2005; Yeh, Lorenz, Wickrama, Conger, & Elder Jr., 2006). However, studies that investigate to what extent sexual skills play a role in mate selection are rare. Kümmerling (2006) found that satisfactory sexual relations are slightly more important to men (rank 5 of 18) than to women (rank 8 of 18) in mate selection while Hatfield and Sprecher (1995) report the other direction: Women showed a greater preference for a partner who is skilled as a lover ($M = 3.26$ on scale from 1 to 5) than men ($M = 3.06$). However, the assumption of a sex difference in the relative importance of sexual skills of a long-term romantic partner is theoretically not justified – therefore, I assume no sex difference.

Hypothesis 7: It has been shown in hypothetical scenario studies and with psycho-physiological data (e.g., Buss, Larsen, Westen, & Semmelroth, 1992) that women disapprove more of emotional infidelity, whereas men disapprove more of sexual infidelity, when asked in a forced-choice format. The explanation for this result is that a woman can always be sure of her parenthood but must fear that their partner turns his back on her and withdraws the resources to be with another woman. Men on the other hand must fear investing their resources into offspring that is not his own. Therefore, men should place more emphasis on sexual fidelity in a long-term romantic partner than women.

Several studies already investigated effects of sexual orientation on mate selection and mate preferences. Mostly, those studies reveal only minor differences between heterosexuals and homosexuals, especially in men. Sometimes homosexual women exhibit a similar pattern as heterosexual men (Bailey, Gaulin, Agyei, & Gladue, 1994; Engel & Saracino, 1986; Kenrick, Keefe, Bryan, Barr, & Brown, 1995; Lippa, 2007; Russock, 2011).

Bailey et al. (1994) report sex differences in the importance of various mate selection criteria in line with sexual strategies theory and additionally showed that the biological sex had by far more impact on mate selection preferences than did sexual orientation. Some differences do seem to exist, though: Homosexuals seem to not care as much as heterosexuals about sexual fidelity (Engel & Saracino, 1986), especially men (Blumstein & Schwartz, 1983). Physical attractiveness seems to be even more important to homosexual men than to heterosexual men (Russock, 2011).

Interestingly, to my knowledge interaction effects between sex and sexual orientation on the importance of mate selection criteria has not been investigated so far. Based on the review of the existing research literature I propose the following hypotheses about potential interaction effects between sex and sexual orientation on the importance of five of the seven mate selection criteria. The specific hypotheses were:

Hypothesis 8: Physical attractiveness is more important to homosexual men than to heterosexual men, whereas this factor is equally less important to homosexual and heterosexual women. *Hypotheses 9 to 11:* For income, generosity, and intelligence, the same interaction effect is expected: These three criteria should be less important to homosexual women than to heterosexual women and equally less important to men, regardless of their sexual orientation.

All three hypotheses are derived from the fact that homosexual women cannot procreate biologically with their partner (yet) and therefore, do not have to ensure to choose a resourceful partner. In short, regarding income, generosity, and intelligence homosexual women do not need to be as choosy as heterosexual women.

Hypothesis 12: Sexual fidelity is expected to be more important to heterosexual men than to homosexual men and women, regardless of the women's sexual orientation.

4.1 Method

Participants. Participants in the analyses regarding research question 2 were roughly the same as above (see section 3.1, p. 32) except that all participants not exclusively heterosexual were excluded for the analyses regarding hypotheses 1 to 7. This was necessary because of the interaction hypotheses between sex and sexual orientation that were tested later in a second step. The stepwise approach was used, because of the low participation rate of homosexual participants – therefore, at least testing for main effects of sex was possible with a bigger sample. After exclusion of not exclusively heterosexual participants $N_{heterosexual} = 566$ participants remained with a mean age of 30.6 years ($SD = 9.1$) ranging from 17 to 64. 21.6% were male ($n = 122$). 80.7% ($n = 457$) were students. Still, 60.2% ($n = 341$) were employed and 12.7% ($n = 72$) freelancing or self-employed. Of these 566 participants only 27.4% ($n = 155$) were not in a romantic relationship at the time. The majority in this sample was unmarried (66.8%, $n = 378$) and childless (76.0%, $n = 430$).

The subsample for research question 3 represents a fraction of the main sample and consists of 204 individuals, equally distributed over the categories heterosexual men, heterosexual women, homosexual men and homosexual women ($n = 51$ in each group). They were between 18 and 66 years old ($M = 32.8$, $SD = 10.8$). 56.4% ($n = 115$) were students at the time the study was conducted. Additionally, 65.7% ($n = 134$) were employed, 8.8% ($n = 18$) were self-employed or freelancing. In this subsample again, the majority of 67.6% ($n = 138$) was in a romantic relationship, 67.2% ($n = 137$) of the subsample were unmarried. Finally, 80.9% ($n = 165$) did not have one or more child/ren (yet).

Measures. In the following section, again, only the measures relevant for research questions 2 and 3 will be described. If the measures overlap with measures used for research goal 1 above there will be a reference to the correspondent section, where they have already been described in greater detail.

Relative importance of the seven mate selection criteria was measured with the policy-capturing design. For an introduction on this method see section 1.1 (p. 30). For a detailed elaboration of the measure see section 3.1 (p. 32). However, this time, the final results were not calculated with mean ranks but with the standardized β -weights for the cues.

In addition to the sociodemographic items introduced already in section 3.1 (p. 32), sexual orientation was assessed. This second factor (besides sex) was measured by asking the participants to indicate their sexual

orientation on a 6-point rating scale from 1=*exclusively heterosexual* ($n = 566$), 2=*somewhat heterosexual* ($n = 139$), 3=*bisexual* ($n = 28$), 4=*somewhat homosexual* ($n = 26$) to 5=*exclusively homosexual* ($n = 102$) and 6=*asexual* ($n = 3$). Every value was explained further in the questionnaire, for example *somewhat heterosexual*: You are also sexually attracted to your own sex, but the sexual attraction to the opposite sex preponderates. *Asexual* was explained with: You are sexually attracted neither to your own nor to the opposite sex. The explanations and scale points were inspired by measures of Bogaert (2004), Kinsey, Pomeroy, and Martin (1948), and Storms (1980).

4.2 Results

Analyses for research question 2. In sum, seven hypotheses regarding research question 2 were tested with seven separate two-sample t-tests for independent samples. Again, because of multiple testing I adjusted for α -inflation with the Bonferroni-correction which resulted in a corrected significance level of $p = \frac{.05}{7} = .007$.

First, I checked if the assumption of normality was met: All Kolmogorov-Smirnov-tests, except for the standardized β -weight of income in the men subsample, were (highly) significant ($p < .001$ to $p < .05$), therefore suggesting that the data significantly deviates from normal distribution. Because of the sample size, however, this result is not that remarkable. Therefore, I decided to rely on the central limit theorem that states, given a sufficient number of cases, the mean-distribution of any random variable will approximately be normally distributed (e.g., Rice, 1995). Furthermore, I computed seven Mann-Whitney U-tests in addition to the t-tests, to check, whether they reach the same conclusions, which they indeed did: Both, parametric and non-parametric tests, yielded identical results regarding statistical significance and similar results regarding effect sizes. Therefore, only the results of the parametric t-tests are reported in Table 4.

Table 4: *Results – Hypotheses about Sex Differences in the Relative Importance of the Mate Selection Characteristics*

Cue	♀ ($n = 444$)		♂ ($n = 122$)		$t(df)^c$	p^d	95% CI ^a		Cohen's d^e
	M^b	SD^b	M^b	SD^b			LL ^a	UL ^a	
Physical attractiveness	.15	.14	.29	.21	-8.88(150)	<.001	-.18	-.10	.89
Income	.10	.11	.02	.08	7.69(245)	<.001	.06	.10	.77
Generosity	.09	.09	.06	.07	3.63(564)	<.001	.01	.05	.35
Humor	.20	.16	.19	.19	0.38(564)	.353	-.03	.04	.06 ^f
Intelligence	.23	.16	.19	.14	1.99(564)	.024	.00	.06	.26
Sexual skills	.18	.14	.20	.15	-1.14(564)	.127	-.05	.01	.14
Sexual fidelity	.73	.24	.72	.26	0.51(564)	.304	-.04	.06	.04

Note.

^a CI = Confidence interval for mean differences; LL = lower limit; UL = upper limit

^b Means and standard deviations for the standardized β -weights obtained with the policy-capturing method.

^c For physical attractiveness ($F = 48.97$, $p < .001$) and income ($F = 8.15$, $p < .01$) Levene's test indicated heterogeneity of variances. Therefore, the results from the t-tests for unequal variances are reported.

^d One-tailed. Adjusted significance level was $p < .007$.

^e Due to different sample sizes, d was computed with the the pooled variance as an estimate for σ . Rules of thumb for interpretation of the size of an effect (Cohen, 1988): $d > .20$ indicates a small effect; $d > .50$ indicates a moderate effect; $d > .80$ indicates a large effect.

^f Gray font color indicates insignificant effects.

Descriptively, all sex differences in the standardized mean β -weights were in the assumed direction (if there was one), except for sexual fidelity – the mean β -weight was, other than expected, .01 higher in the group of heterosexual women compared to heterosexual men. However, only three of six assumed sex differences in the relative importance of certain mate selection characteristics were statistically significant: The mean standardized β -weight for physical attractiveness was significantly higher in heterosexual men than heterosexual women ($M_{women} = .15$ vs. $M_{men} = .29$, $t(150) = -8.88$, $p < .001$, $d = .89$). Cohen's d indicates a large effect (Cohen, 1988). For income and generosity, the mean standardized β -weights were significantly higher in heterosexual women (income: $M_{women} = .10$ vs. $M_{men} = .02$, $t(245) = 7.69$, $p < .001$, $d = .77$; generosity: $M_{women} = .09$ vs. $M_{men} = .06$, $t(564) = 3.63$, $p < .001$, $d = .35$). Cohen's d implies a moderate sex difference regarding income and a small sex difference in the relative importance of generosity. No sex difference in the relative importance of sexual skills was expected which the results confirmed ($M_{women} = .18$ vs. $M_{men} = .20$, $t(564) = -1.14$, $p = .127$).

The sample was very heterogeneous in terms of age. Because the possibility of age effects on mate selection preferences could not be ruled out entirely, additional multiple ANCOVAS with one group factor (sex) and age as covariate were performed. Maybe societal changes have differential effects on the relative importance of mate selection criteria in different age cohorts: E.g., for several decades now, more and more women were and still are joining the workforce and have become more and more financially independent of men. However, the results on these analyses did not differ considerably from the effects obtained with the multiple t-tests and are therefore presented as supplemental information in Appendix A (p. 58) only.

Analyses for research question 3. Because age effects showed to be negligible in the analyses for research question 2, I did not include it in the analyses reported in the following section.

Starting point was, again, to check whether the assumptions of normality and variance homogeneity were met. Kolmogorov-Smirnov tests revealed violations of normality for all cues in all four subsamples, except β for physical attractiveness in the women subsample, and β for income in both sex subsamples. Again, I relied on the central limit theorem (Rice, 1995). Levene’s tests revealed variance heterogeneity for physical attractiveness, generosity, and sexual fidelity. In this analysis each cell contains equal sample sizes of $n = 51$. ANOVA and two-way ANOVA are robust against violations of normality and variance homogeneity if the sample sizes are equal (in two-way ANOVA) and larger than $n = 30$ (Maxwell & Delaney, 2004). Therefore, I proceeded with the two-way-ANOVAS despite partly violated assumptions.

Results of the five two-way-ANOVAS are shown in Table 5, with an adjusted α of $p = \frac{.05}{5} = .01$ for the overall-omnibus-tests.

As can be seen in Table 5, only the interactions for the characteristics income ($F = 16.00$ with $p < .001$, $\eta^2 = .074$) and sexual fidelity ($F = 15.61$ with $p < .001$, $\eta^2 = .061$) were significant. The η^2 of both interactions suggest an effect of moderate size (Cohen, 1988). The significant interactions are plotted in Figures 1 and 2, whereas the three insignificant interaction plots for physical attractiveness (Figure B5), generosity (Figure B6), and intelligence (Figure B7) can be found in Appendix B (p. 59).

With respect to physical attractiveness, only a main effect of sex was detectable ($F = 28.50$ with $p < .001$, $\eta^2 = .124$), which was already confirmed for heterosexuals with the analyses regarding research question 2. For generosity, neither the main effect of sex was replicable, as shown earlier, nor did an interaction effect occur. However, a medium-sized main effect of sexual orientation ($F = 17.40$ with $p < .001$, $\eta^2 = .077$) on the relative importance of generosity emerged. The two-way ANOVA for intelligence revealed no significant effects of any kind.

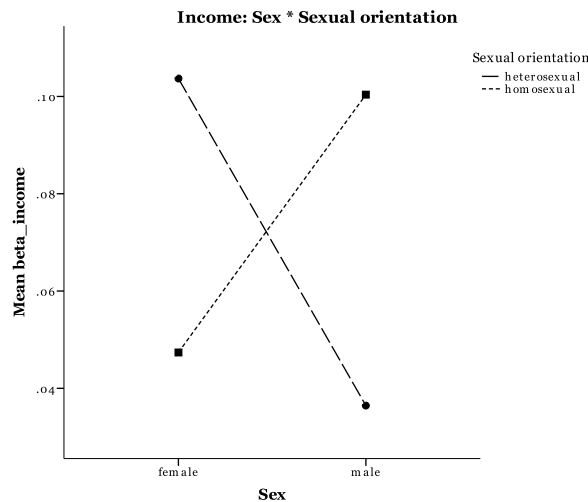


Figure 1: Interaction Between Sex and Sexual Orientation for β_{Income}

Table 5: Results – Hypotheses about Interactions of Sex With Sexual Orientation

Source	Sum of Squares	df	Mean Square	F	p	Partial η^{2a}	η^{2b}
Physical attractiveness [$R^2 = .127^{***}$]							
Sex	1.00	1	1.00	28.50 ^{***}	<.001	.125	.124
Sexual orientation	.01	1	.01	.31	.581	.002	.001
Interaction	.01	1	.01	.18	.670	.001	.001
Error	6.99	200	.04				
Total	8.00	203					
Income [$R^2 = .075^{**}$, $p = .001$]							
Sex	.00	1	.00	.22	.637	.001	.001
Sexual orientation	.00	1	.00	.06	.801	.000	.000
Interaction	.18	1	.18	16.00 ^{***}	<.001	.074	.074
Error	2.31	200	.01				
Total	2.50	203					
Generosity [$R^2 = .111^{***}$]							
Sex	.03	1	.03	3.09	.080	.015	.014
Sexual orientation	.18	1	.18	17.40 ^{***}	<.001	.080	.077
Interaction	.05	1	.05	4.53	.035	.022	.020
Error	2.03	200	.01				
Total	2.29	203					
Intelligence [$R^2 = .023$, $p = .202$]							
Sex	.10	1	.10	3.48	.063	.017	.017
Sexual orientation	.01	1	.01	.32	.570	.002	.002
Interaction	.02	1	.02	.86	.356	.004	.004
Error	5.51	200	.03				
Total	5.63	203					
Sexual fidelity [$R^2 = .213^{***}$]							
Sex	1.42	1	1.42	18.50 ^{***}	<.001	.085	.073
Sexual orientation	1.53	1	1.53	19.96 ^{***}	<.001	.091	.079
Interaction	1.19	1	1.19	15.61 ^{***}	<.001	.072	.061
Error	15.30	200	.08				
Total	19.43	203					

Note.

^a Partial η^2 represents the portion of explained variance by one factor with “other nonerror sources of variance being partialled out” (Cohen, 1973, p. 108). In this case, these nonerror sources are either sex or age, respectively. Formula:

$$Partial\eta^2 = \frac{SS_{Effect}}{SS_{Effect} + SS_{Residual}}$$

^b η^2 represents the proportion of total variability that is attributable to one factor. Formula: $\eta^2 = \frac{SS_{Effect}}{SS_{Total}}$. Rules of thumb for interpretation of this effect size are: $\eta^2_{partial} > .01$ indicates a small effect, $\eta^2_{partial} > .06$ indicates a medium effect, $\eta^2_{partial} > .14$ indicates a large effect (Cohen, 1988).

^c Gray font color indicates insignificant effects.

*** $p < .001$, ** $p < .01$; Adjusted significance level was $p < .01$.

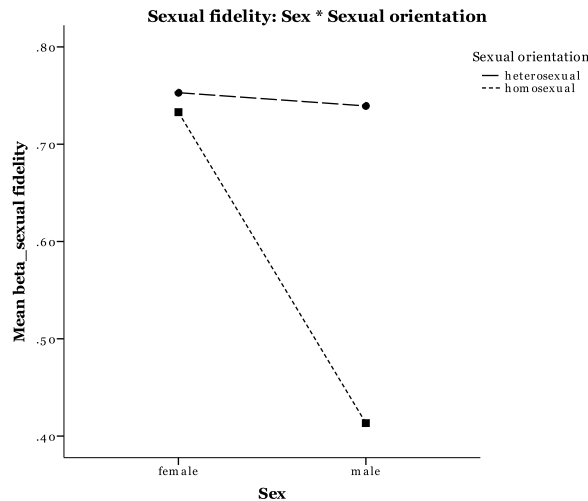


Figure 2: Interaction Between Sex and Sexual Orientation for $\beta_{Sexual\ fidelity}$

4.3 Discussion

Research question 2. With respect to research question 2 four hypotheses out of seven were confirmed. Men do place higher importance on physical attractiveness of a potential partner than women while women place more emphasis on income and generosity. Therefore, the results suggest that there are considerably fewer sex differences in the importance of mate selection criteria visible, than expected. This is in line with the results of Wiederman and Dubois (1998): They only detected two of six possible sex differences in preferences for short-term mates which I replicated for long-term mates. Like in the results reported here, in the study of Wiederman and Dubois (1998) men placed higher importance on physical attractiveness while women rated generosity as more important. However, the magnitudes of the obtained standardized β -weights in the study differ quite notably from those in the work of Wiederman and Dubois (1998), for exact values see Table 6.

Table 6: *Comparison of Standardized β -Weights Obtained in Wiederman and Dubois (1998) vs. in this Study*

Cue	M_β (W&D, 1998)	M_β (This Study)
Physical attractiveness		
Women	.52	.15
Men	.72	.29
Generosity		
Women	.25	.09
Men	.20	.06

These differences are comprehensible, though. The participants in their study were instructed to rate the desirability of the hypothetical persons as short-term mates while the participants in this study were instructed to rate the desirability as long-term romantic partners. The present results compared with the results of Wiederman and Dubois (1998) suggest that “obvious” and superficial external characteristics such as physical attractiveness and generosity lose some of their relative importance when it comes to choosing a long-term romantic partner. This is in line with prior research of Regan, Medina, and Joshi (2001), who showed that homosexual participants clearly distinguish between short-term sexual and long-term romantic partners and value external attributes like physical attractiveness higher in the former type of partner where internal characteristics like intelligence and a prosocial personality are valued more in the latter.

A side note on the relative importance of sexual fidelity: As can be seen in Table 4, sexual fidelity is by far the most important characteristic for men and women in a long-term romantic partner. The standardized β -weights are .73 for women and .72 for men, whereas the second most important characteristic in women has a β of .23 (intelligence) and in men of .29 (physical attractiveness), respectively. It seems as if the societal norm of sexual fidelity and monogamous relationships is deeply rooted in the minds of the people – this result concurs with empirical evidence presented by several scholars, that the majority of people prefer to be in a monogamous romantic relationship (see Kröger, 2010 for an overview). Although some scholars included fidelity in their research about mate selection preferences (Engel & Saracino, 1986; Rowatt, Delue, Strickhouser, & Gonzalez, 2001; Wiederman & Dubois, 1998), the extent of the importance of this characteristic for mate selection in long-term relationships has never been shown. The implications for the process of mate selection are far reaching: While external characteristics like physical attractiveness and even internal characteristics like humor or intelligence can be gauged quite quickly after getting acquainted with someone, sexual fidelity is a characteristic that will only reveal itself after entering in a romantic relationship. Therefore, it seems that the most important mate selection criterion cannot be assessed beforehand. Rather, it unfolds after committing to another person which can make the process very complicated and potentially painful.

Research question 3. Regarding research question 3, there was partial support for the hypotheses about interaction effects on the importance of certain mate selection criteria between sex and sexual orientation. The prediction of an ordinal interaction between sex and sexual orientation for income in that manner that income would be most important to heterosexual women and more or less equally non-important for heterosexual men and homosexual men and women was not confirmed. Instead, a disordinal interaction occurred: Income is most

important for heterosexual women and homosexual men and basically not important for homosexual women and heterosexual men at all.

For sexual fidelity as well, an ordinal interaction was predicted in the way that sexual fidelity would be most important to heterosexual men and equally non- or less important to homosexual men and hetero- and homosexual women. In fact, another type of ordinal interaction emerged, where sexual fidelity was equally more important to heterosexual men and homo- and heterosexual women than to homosexual men. This result is, on second glance, not that surprising because the t-test on the importance of sexual fidelity did not yield a significant difference between heterosexual men and women (see Table 4).

The predicted interactions for physical attractiveness, generosity, and intelligence could not be detected. When looking at the effect sizes and interaction plots, it seems that there virtually does not exist any interaction or main effect of sexual orientation for physical attractiveness. Instead, there was only the main effect of sex. With regard to generosity, the interaction plot and effect size might suggest a small hybrid interaction ($\eta^2_{\text{partial}} =$), which failed to reach statistical significance, though. A potential cause could be the sample size of $n = 51$ per cell. However, generosity proved to be more important to homosexual participants (with the highest importance for homosexual men) than heterosexual participants (see Figure B6, p. 59). In the case of intelligence there were no effects at all, although the interaction graph (see Figure B7, p. 59) suggests at least a small main effect of sex, with women placing more importance on intelligence in a long-term romantic partner than men. Anyhow, due to the adjusted α -level, this effect already failed to reach statistical significance in the t-test performed before (see Table 4).

The overall results for research question 3 may at first sight seem somewhat contradictory to the results presented for research question 2: Remember, there were significant sex differences for physical attractiveness (*men > women*), income, and generosity (for both of the latter *men < women*). For physical attractiveness there is no contradiction in the two-way ANOVA but for income and generosity in turn there seem to be. These seemingly contradictions disappear though, with realizing two things: First, for research question 2, only heterosexual participants were analyzed. Instead of finding the main effect of sex on the relative importance of income, only an interaction effect got uncovered. Due to its hybrid character, the main effects sum up to zero. A look at the interaction graph clears up the contradiction (Figure 1, p. 40): The effect of sex for heterosexual individuals that was already revealed in the analyses for research question 2, is obvious here. For generosity, a similar argument holds true: In the two-way ANOVA only a main effect of sexual orientation was detected with generosity being more important for homosexual participants. The effect of sex (for heterosexuals) can again only be seen in the interaction graph (Figure B6, p. 59). The last seemingly contradiction concerns sexual fidelity: Whereas heterosexual men and women did not differ significantly from each other in the relative importance of that mate selection criterion (research question 2), I found a main effect of sex in the corresponding two-way ANOVA. Again, a look at the interaction graph (Figure 2, p. 41) straightens the alleged contradiction out: The main effect of sex is exclusively caused by the group of homosexual men.

5 Research Goal 3 – Impact of Mate Selection Preferences on Relationship Quality

Finally, I was interested in how important it is for relationship outcomes that the chosen romantic partner resembles the partner, a person describes as his or her ideal partner. Specifically, I investigated the following hypothesis:

Hypothesis 1: The more similar the subjects' current romantic partner is to their ideal partner on the seven mate selection criteria, the higher the self-reported relationship satisfaction.

As mentioned already in the introduction, a multitude of studies already investigated the link between current-ideal partner similarity and relationship outcomes. Operationalizations for similarity are predominantly measures like absolute differences (used by Asendorpf, Penke, & Back, 2011; Ruvolo & Veroff, 1997), interaction terms in moderated regression (used by Eastwick & Finkel, 2008; Fletcher et al., 1999; Li et al., 2013; Watson

et al., 2004), simple effects in linear regression (used by Strauss et al., 2012), or correlation coefficients (used by Rammstedt, Spinath, Richter, & Schupp, 2013). However, all of these operationalizations impose certain constraints on the data which are most likely not always met. To illustrate, how results and gain of knowledge about relationships between predictor variables and criterion differ between one kind of the well-known operationalizations and one method that is better suited for the analysis of similarity-related hypotheses, results will be reported from two different analysis strategies: Multiple linear regression with absolute difference scores and response surface analysis (RSA) with polynomial regression.

5.1 Method

Participants. The participants building the sample for analyses regarding research question were, again, mostly the same as described above in section 3.1 (p. 32). The only difference was that all persons not in a romantic relationship were excluded. A total of $n = 606$ participants remained in the sample with a mean age of 31.2 years ($SD = 9.6$) ranging from 16 to 66. 77.6% were female ($n = 470$), 22.4% male ($n = 136$). Most of the participants lived together with their partners (65%, $n = 394$), the remaining participants either were in a long-distance relationship (9.1%, $n = 55$) or did just not live together (25.9%, $n = 157$). The majority was unmarried (59.9%, $n = 363$), the remaining participants were either married (24.8%, $n = 150$) or engaged (5.8%, $n = 35$). 73.3% ($n = 444$) of the sample did not have kids (yet) with a range from 0 to 6. Again, most of them were students (73.8%, $n = 447$). 61.6% ($n = 373$) were employed, and 12.0% ($n = 73$) were self-employed or freelancing.

Measures. In the following section only the measures relevant for research question 4 will be described.

After the participants completed rating the policy-capturing scenarios, they answered several sociodemographic items (introduced already in section 3.1, p. 32) including a question regarding their relationship status. Afterwards, the participants were asked to rate their ideal partner as well as their current romantic partner on the seven mate selection criteria (e.g., “My ideal partner has a good sense of humor.” vs. “My current partner has a good sense of humor.”) on a 5-point Likert scale ranging from 1=*not at all* to 5=*absolutely*. The phrasing of the items was similar to the phrasing of the highest cue levels used in the policy-capturing scenarios (see Table 2, p. 34). Each rating (ideal partner, current partner) was presented on a separate webpage that were presented in a randomized fashion. To disguise the true intentions, the items for the mate selection criteria were mixed with items from the 10-item Big Five Inventory (Rammstedt & John, 2007). These items were presented in a randomized order as well. This should have achieved a counterbalance and therefore minimized the risk of carryover effects, specifically sequence effects. Relationship satisfaction was measured with the corresponding 10-item subscale from the Investment Model Scale (Rusbult, Martz, & Agnew, 1998) in a German translation (Grau, Mikula, & Engel, 2001) – one item reads for example: “Our relationship does a good job of fulfilling my needs for intimacy, companionship, etc.”. The items were answered on a 5-point Likert scale ranging from 1=*do not agree at all* to 5=*agree completely*. Reliability was good with $\alpha = .89$.

5.2 Results and Discussion

In a first step of testing the hypotheses, similarity was operationalized as absolute difference scores of the corresponding measures ($|\text{current partner} - \text{ideal partner}|$) on the seven mate selection criteria. This is a very common operationalization although it has some serious flaws – more details on this will be given in the next section. These absolute difference scores are interpreted as follows: A score of zero indicates full similarity and the higher the score (here with a maximum of five), the higher the discrepancy between current partner and ideal partner romantic. Note that this operationalization does not allow to distinguish between the direction of the discrepancy: With an absolute difference score of two between current and ideal partner there is no way to tell who has the smaller rating. Descriptively, the discrepancy between the described current and ideal romantic partner was generally low (which equals high similarity), ranging from $M = .36$ ($SD = .72$) for sexual fidelity to $M = .87$ ($SD = .86$) for income.

Subsequently, I regressed the self-reported relationship satisfaction on the seven absolute difference scores

simultaneously (method: enter). Due to the number of predictors in the regression equations, I corrected for α -inflation. The Bonferroni-corrected significance level was $p = \frac{.05}{7} = .007$.

In terms of assumptions, there was no serious violation to detect: There was no cause for concern over multicollinearity as variance inflation factors ranged from 1.07 to 1.18 only; the Durbin-Watson statistic was 1.98 pointing towards independent errors; furthermore, visual inspection of the histograms of the standardized residuals implied that normality of errors was met; and finally, visual inspection of scatterplots of the standardized predicted values against standardized residuals indicated that the assumption of homoscedasticity of the residuals was met as well. The results for the multiple linear regression analysis is reported in Table 7.

Table 7: *Results – Predictive Validity of Similarity on Mate Selection Criteria between Current Partner and Ideal Partner*

	<i>B</i>	<i>SE</i>	β	<i>t</i>	<i>p</i>	95% CI ^a	
						<i>LL</i> ^a	<i>UL</i> ^a
[<i>R</i> ² = .237***]							
Constant	4.43	.05		84.87	.000	4.32	4.53
Physical attractiveness	.06 ^b	.05	.05	1.32	.188	-.03	.15
Income	-.04	.03	-.05	-1.27	.205	-.11	.02
Generosity	-.03	.04	-.03	-.80	.422	-.11	.04
Humor	-.36	.05	-.31	-7.89	.000	-.44	-.27
Intelligence	-.12	.05	-.09	-2.34	.020	-.22	-.02
Sexual skills	-.16	.04	-.18	-4.69	.000	-.23	-.10
Sexual fidelity	-.17	.04	-.15	-4.16	.000	-.24	-.00

Note.

^a *CI* = Confidence interval for mean differences; *LL* = lower limit; *UL* = upper limit

^b Gray font color indicates insignificant effects.

Table 7 shows a really high relationship satisfaction for maximum similarity (meaning that all predictors equal zero) between current and ideal partner (*Intercept* = 4.43; maximum was 5). For every unit of discrepancy between current and ideal partner on humor, the self-reported relationship satisfaction declines about .36 points ($t = -7.89$, $p < .001$). This effect appears for sexual skills ($B = -.16$, $t = -4.69$, $p < .001$) and sexual fidelity ($B = -.17$, $t = -4.16$, $p < .001$) as well. As a whole, the model accounts for 23.7% of variability. Similarity on humor was the most important predictor here.

The usage of absolute difference scores (or squared absolute difference scores or interaction effects) as a measure for similarity, congruence, discrepancy, contingency, compatibility or fit – the list of synonyms is long, therefore sometimes also confusion is large – is not free of critique: The loss of information due to untested constraints is immense (e.g., Edwards, 1993; Schönbrodt, 2013a). This becomes highly clear, when looking at squared difference scores⁷: To regress an outcome variable on a squared difference score only assumes that many terms equal zero without testing for it. The equation frequently used for the analysis of similarity-hypotheses reads as follows:

$$Z = \beta_0 + \beta_1 D + \varepsilon \quad (1)$$

with

$$D = (X - Y)^2 \quad (2)$$

When expanding the squared term the following equation results:

$$Z = \beta_0 + \beta_1 X^2 - 2\beta_2 XY + \beta_3 Y^2 + \varepsilon \quad (3)$$

If all terms that are usually implied as being zero are now added – and represent the untested constraints

⁷The same can be shown for absolute difference scores but it is less illustrative. Please consult Edwards (2002) for further details

(constraints that remain untested even when moderated regression analysis is used) – it becomes obvious, how many untested constraints really are in the model displayed in equation 1:

$$Z = \beta_0 + \beta_1 X + \beta_2 Y + \beta_3 X^2 + \beta_4 XY + \beta_5 Y^2 + \varepsilon \quad (4)$$

Equation 4 represents a second-order polynomial regression equation which is a more appropriate analysis technique to investigate fit-hypotheses (e.g., Edwards & Parry, 1993). According to Edwards (2002), the three basic principles of this procedure are: First, congruence is treated “as the correspondence between the component measures in a two-dimensional space instead of as one single score” (p. 360). Second, a similar principle holds true for the effect of congruence on the outcome variable of interest: It should be viewed as a three-dimensional response surface instead of reducing it to a two-dimensional plot. Thereby it can be accurately assessed, what specific influence different levels of (in)congruence have on the outcome variable. And third, the constraints usually imposed on the data when using absolute difference scores should be tested instead of assumed as true without testing.

In addition to the common assumptions of regression analysis there are two more assumptions in the case of polynomial regression: Commensurability of component measures, meaning that both predictors must stem from the same conceptual domain and are measured with equivalent scales (Edwards, 2002), both of which are met here.

The three-dimensional response surface can be described on several different aspects (Edwards, 2002; Rhoades Shanock, Baran, Gentry, Clever Pattison, & Heggestad, 2010; Schönbrodt, 2013a):

- The *stationary point* of the surface lies where the slope of the surface is zero in all directions.
- The *principal axes* of the surface: They lie perpendicular to each other and intersect at the stationary point. Therefore, these axes describe the overall orientation of the response surface. In congruence-research often, the hypothesis is that the outcome variable Z is maximized along the *line of congruence*, where $X = Y$. In this case the first principal axis should lie on this line of congruence (see also a_1). If the hypothesis is that the outcome variable is minimized on the line of congruence, than the second principal axis should run along it.
- $a_1 = b_1 + b_2$ ⁸ describes the slope along the line of congruence: $X = Y$ (as related to Z). A significant, positive a_1 indicates an additive linear relationship between X and Y on Z , while Z increases with increasing X and Y . A significant negative a_1 indicates an additive linear relationship between X and Y as well that goes along with a decrease in Z while X and Y increase. Therefore, this coefficient indicates to what extent the degree of similarity has an impact on the outcome variable as well as its direction.
- $a_2 = b_3 + b_4 + b_5$ describes the shape or curvature of the surface along the line of congruence ($X = Y$ as related to Z). Therefore, a significant a_2 is a sign for a non-linear line of congruence. If it is positive, the line of congruence is shaped upwards (convex/ u-shaped), if it is negative, the line of congruence is shaped downwards (concave/ inversely u-shaped).
- $a_3 = b_1 - b_2$ describes the slope along the line of incongruence: $X = -Y$ (as related to Z). A significant positive a_3 implies an increase in Z with an increase in the discrepancy between X and Y in such a fashion that X is higher than Y . A significant negative a_3 implies a decrease in Z with an increase of the discrepancy between X and Y with Y being higher than X . Therefore, this coefficient indicates to what extent the degree of discrepancy has an impact on the outcome variable and the direction of this effect. In other words, it indicates whether the ridge of the response surface is shifted away from the line of congruence and to what direction (a_3 is positive, when it is shifted towards the x-axis and negative, when it is shifted towards the y-axis).
- $a_4 = b_3 - b_4 + b_5$ describes the shape/ curvature of the surface along the line of incongruence ($X = -Y$ as related to Z). Similar to a_2 , a significant a_4 indicates a non-linear line of incongruence. A significant

⁸ b_i represent the unstandardized regression coefficients for the centered predictor variables in the full polynomial regression equation; see also equation 4

positive a_4 indicates a convex line of incongruence (shaped upwards or u-shaped), a significant negative coefficient indicates a concave line of incongruence (shaped downwards or inversely u-shaped). In other words, a_4 indicates whether there is a general effect of incongruence on Z .

Note that the coefficients a_1 to a_4 can be tested for significance, which should be the basis for interpreting the results of polynomial regression. All descriptors of the response surface taken together should have made sufficiently clear that it can take various forms, depending on what coefficients in the full polynomial equation are significant: It can be flat (only linear effects or intercept-only models), it can look like a bird with wings (admittedly a very simplified bird; absolute differences), or it can look bowl-shaped (convex), dome-shaped (concave) or saddle-shaped (combined up- and downward curvatures) when significant quadratic effects are present. For an extensive overview of the possible shapes of a response surface, see Edwards (2002). For an easy comprehensible modeltree that lists and plots all possible (un)nested models in the polynomial regression family that need to be tested in order to find out, which constraints fit the data and which model fits best, see Schönbrodt (2013b).

As an introduction to the methods of polynomial regression and response surface analysis, the previous section should suffice. For a far more detailed and comprehensive summary on problems with difference scores and the possibilities of polynomial regression and response surface analysis, see Edwards (2002).

Meanwhile, easy applicable software solutions exist to test and visualize results of polynomial regression in order to investigate fit-hypotheses: An excel-spreadsheet for visualization and testing of the surface parameters was introduced in 2010 by Rhoades Shanock et al. (see also the minor correction from Rhoades Shanock, Baran, Gentry, Pattison, & Heggstad, 2013) and an *R*-package with even more impressive computation and visualization options was recently published by Schönbrodt (2013c).

However, the seemingly endless possibilities of polynomial regression and response surface analysis are accompanied by the call for specifications of the verbal models and subsequently, clearer and more specific formulation of empirically verifiable hypotheses (Edwards & Berry, 2010; Schönbrodt, 2013a) in confirmatory hypotheses testing. Here however, polynomial regression and response surface analysis were applied in an exploratory manner, as I did not yet feel confident to verbalize specific models – rather, I was basically interested in examining the interplay of the predictor variables and how this affects relationship satisfaction. I did this by first splitting the dataset of $n = 606$ individuals into two equally sized subsamples (each subsample consisted of $n = 303$ participants, randomly assigned) and computed the fit of the various possible models in both subsamples with version 3.0.2 of the open-source statistical software *R* (R Core Team, 2013) and version 0.8 of the *R*-package *RSA* (Schönbrodt, 2013c). *RSA* compares several nested and unnested models (full polynomial models up to cubic terms, linear models without quadratic terms, rising ridge models and flat ridge models) as multiple regression path models with ML-estimation and provides visualization of these models as well as tests for the surface parameters a_1 to a_4 . Only if the model solution from the first subsample was replicable in the second subsample, I analyzed and interpreted the corresponding response surface. Cross-validation is very important in response surface analysis to ensure that the effects are not artifacts and/or due to sampling variability (Edwards, 2002). Accordingly, only results that were cross-validated over the two subsamples will be reported in the following section. Due to lack of space, the results for the whole subsample of $n = 606$ are reported directly as opposed to presenting the *RSA*-results for both subsamples separately.

All seven models underlying the difference scores (see Table 7) were tested but only one pattern was cross-validatable in the two subsamples: Humor of the current vs. ideal partner.

5.2.1 Humor Current vs. Ideal Partner

For the predictor variables of humor of the current and ideal partner a *shifted rising ridge model* was the most economic model that fitted the data best ($CFI = 1.000$, $TLI = 1.000$, $RMSEA = 0.000$, $SRMR = 0.006$). See Figure 3 for the corresponding response surface with overplotted original data points and height lines. Additionally, I plotted the corresponding two-dimensional contourplot in Figure 4.

The black line depicts the first principal axis that is shifted to the right from the gray line of congruence. The dotted gray line depicts the line of incongruence. There are several things noteworthy in the response

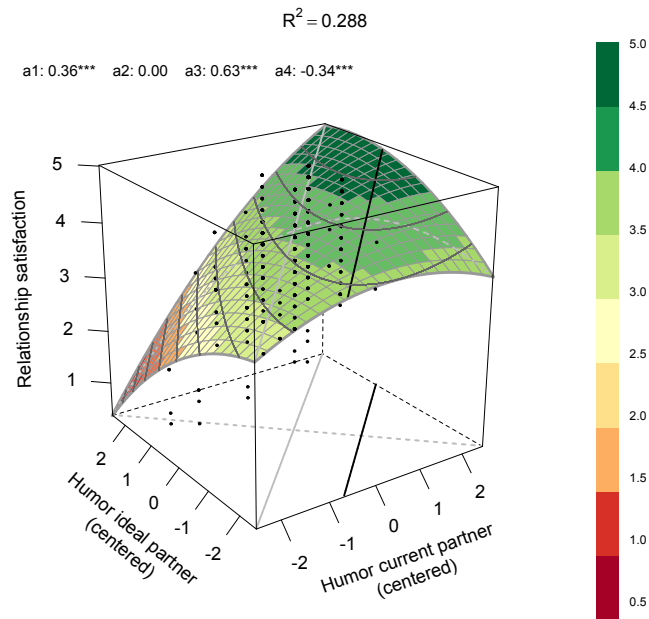


Figure 3: Response Surface for Humor in Current and Ideal Romantic Partner as reported by Participants and their Influence on Relationship Satisfaction

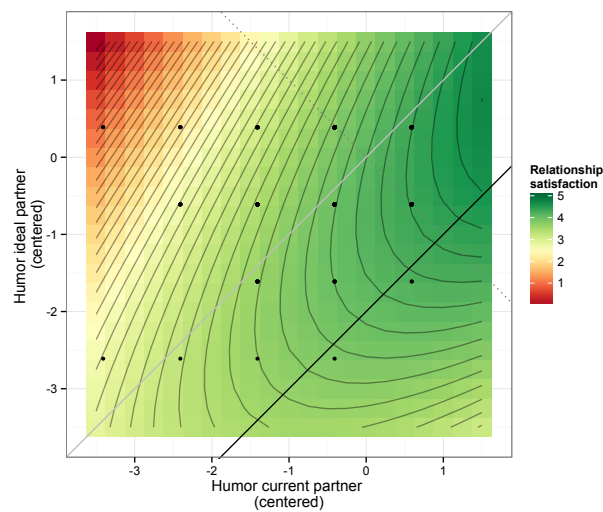


Figure 4: Contour Plot for Humor in Current and Ideal Romantic Partner as reported by Participants and their Influence on Relationship Satisfaction

surface combined with the tests of the surface parameters depicted on the top left of Figure 3: First, there was a significant general effect of incongruence, indicated by the significant surface parameter a_4 ($a_4 = -0.34$, $Z = -3.42$, $p=.001$), which is visible in the dotted gray line of incongruence in the corresponding response surface. This result implies that a discrepancy on the characteristic humor between the current and ideal romantic partner has negative effects on relationship satisfaction. Additionally, there was a rising ridge pattern that is best characterized by a mix of an additive (both predictors contribute to the outcome variable) and a flat-ridge pattern (only similarity is important for a high outcome, regardless of the level). The effect of additivity is indicated by the significant surface parameter a_1 ($a_1 = 0.36$, $Z = 6.75$, $p<.001$). The shift of the first principal axis from the line of congruence towards the x-axis is indicated by the significant parameter a_3 ($a_3 = 0.63$, $Z = 7.32$, $p<.001$). For all the parameter test results please see Table C9 in Appendix C, p. 60. In sum, this response surface suggests that not only similarity between the current and ideal partner on humor is important for relationship satisfaction but also the level. The more humor one wants and has in a romantic partner, the higher the relationship satisfaction.

The results of polynomial regression and response surface analysis illustrate the deficits of absolute or squared difference scores for investigating hypotheses about similarity nicely. Not only does this method provide more meaningful results. These results are much better interpretable with the visual aid of the response surfaces and the corresponding surface parameter tests as well. Additionally, the attentive reader might have noticed in the graph that the portion of explained variance (noted above the response surface separately) is apparently larger than in the model with the absolute difference scores. This in turn should indicate that the method is a very good alternative for investigating fit-hypotheses.

6 General Discussion

In a first step of the introduced research project (research goal 1), it was shown that social desirability does influence ratings of the relative importance of certain mate selection criteria. Statistically and generally speaking the effects ranged from small to moderate: The maximum of absolute rank changes obtained was two – sexual skills in both sexes (from rank 5 in the direct self-report measure to rank 3 in the policy-capturing measure) and for physical attractiveness in men (from rank 4 to rank 2). There was no empirical support for the hypothesis about a mean-rank-change from one measure to the other regarding physical attractiveness in women. Post-hoc power analyses with G*Power 3.1 (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that the test was hopelessly underpowered ($1-\beta=.63$). To detect such a small effect with sufficient power of .80 (Cohen, 1988) and an α of .05, a number of 1258 participants would have been needed. However, because of the negligible size of the estimated effect ($r = -.04$, see Table 3, p. 36) I would rather conclude that there just is no meaningful effect. In sum, effects of social desirability seem to affect open rankings of mate selection criteria and the policy-capturing approach is an effective tool to control for this tendency. Therefore, I would recommend to always apply policy-capturing methodology when a small (up to eight) number of mate selection criteria with differences in their social desirability are focal variables in a study.

Subsequent analyses (research goal 2) revealed less sex differences in the relative importance of the seven mate selection criteria than expected: To heterosexual men physical attractiveness of a long-term mate was more important than to women whereas income and generosity were more important to heterosexual women. All detected differences were in the expected direction and therefore in line with predictions derived from evolutionary psychology. They correspond with results reported by Wiederman and Dubois (1998), who found similar effects for the relative importance of physical attractiveness and generosity of short-term mates. The magnitude of the standardized β -weights was smaller in the current study than in the work of Wiederman and Dubois (1998), implying that socially undesirable characteristics seem to be more important criteria in mate selection than people may want to admit (see results regarding research goal 1), but that these external criteria lose some of their importance when it comes to selecting a long-term mate instead of a short-term mate (results regarding research goal 2).

There were no sex differences in the relative importance of humor, intelligence, sexual skills, and sexual

fidelity that were measured with policy-capturing). However, only for sexual skills I did not expect one. The sex difference regarding the importance of intelligence ($d = .26$) failed to reach statistical significance due to α -correction – therefore, if a sex difference in the direction that women place more emphasis on intelligence than men in a long-term romantic partner does exist, it is a rather small one. The estimated effect sizes for humor (.06) and sexual fidelity (.04) indicated no meaningful sex difference at all. The non-existent sex difference for humor thereby joins the queue of contradictory empirical results.

The non-existent sex difference for sexual fidelity contradicts predictions of evolutionary psychology. Recent meta-analytical findings might shed some light on this result: Carpenter (2012) revealed with his meta-analysis based on 172 effect sizes from 54 studies, that the reactions to hypothetical infidelity depend largely on the measure: Both, men and women (women more consistently, though), were more distressed by emotional infidelity in a forced-choice answering-format. When asked to indicate the amount of stress evoked by hypothetical infidelity-scenarios on continuous measures, men and women (men more consistently, though) were more distressed by sexual infidelity. The author discusses alternative theoretical explanations for similar reactions of men and women to hypothetical infidelity situations that both fit the meta-analytical results better than the predictions derived from evolutionary psychology: The *social cognitive perspective* (Harris, 2003) states that different reactions to different types of infidelity would not have been adaptive, because cues for both of the types of infidelity tend to overlap. The *double-shot perspective* (Desteno & Salovey, 1996) points in a similar direction in proposing that participants are not able to distinguish between both types of infidelity. Instead, they would only perceive two hypothetical scenarios (originally developed by Buss et al., 1992 and used numerous times since) where infidelity takes place, instead of one scenario with only emotional and one with solely sexual infidelity happening. For DeSteno, Bartlett, Braverman, and Salovey (2002) all findings with sex differences are nothing more than artifacts of measurement. However, it should be kept in mind that the studies, the meta-analysis of Carpenter (2012) is based upon, all refer to reactions of participants to hypothetical infidelity-situations. Edlund, Heider, Scherer, Farc, and Sagarin (2006) for example did find the sex differences predicted by evolutionary psychology in responses to *actual* infidelity. In addition, two other random-effects meta analyses of 40 papers (published and unpublished; 209 effect sizes from 47 independent samples) found a theory-supportive sex-differences in reaction to hypothetical or actual infidelities when measured with continuous measures (Sagarin et al., 2012). Furthermore, preferences in faithful partners were of focal interest here, not responses to an unfaithful partner.

Interaction effects between sex and sexual orientation became apparent only for the relative importance of income and sexual fidelity. While heterosexual women and homosexual men placed more importance on income than homosexual women and heterosexual men, sexual fidelity was very important for all subgroups except for homosexual men. Due to the sample sizes ($n = 51$ in each group) that allowed to detect only medium effects, the results of the two-way ANOVAS should be interpreted with caution.

The RSA-results suggest that perceived similarity between the current and ideal romantic partner is predictive for relationship outcomes only when it comes to the mate selection criterion of humor. The fact that only one current–ideal partner similarity model could be cross-validated with a clear effect of congruence may be indicative for the fact that mate selection preferences are not that important in mate selection after all. Maybe there is more truth to the lay belief, that you cannot control with whom you fall in love and that mate selection preferences offer guidance to a lesser extent in the process, than assumed.

To my knowledge, part three of this research (regarding reserch goal 3) represent the first attempts to investigate similarity-hypotheses in romantic relationship research with polynomial regression and response surface analysis. Therefore and in line with the discussion on the replicability crisis in psychological research (Asendorpf et al., 2013; Open Science Collaboration, 2015; Pashler & Harris, 2012; Yong, 2012), I want to call out for replication of these results in a confirmatory setting and for the extension on other mate selection criteria, that were not investigated here (for example age, educational background, personality traits). The results also illustrate that we need to rethink and replicate allegedly well-known results of similarity-effects on relationship outcomes because of the serious flaws of the various operationalization methods used to date. Future studies on similarity-effects should abandon difference score testing (and its colleagues) altogether and apply polynomial

regression and response surface analysis instead.

7 Limitations and Future Directions

The Policy-Capturing Approach. There are several limitations of the policy-capturing method: First, although the aim was to produce realistic scenarios with the criteria selected, their levels and the level phrasing, this naturalistic aspect most certainly will disappear after reading and rating the 30th scenario. Second, the selection of criteria must necessarily be incomplete. Because the policy-capturing method permits only a restricted number of cues and levels, important ones might have been left out. Third, by studying mate selection preferences in the manner portrayed here and lots of other researchers did in the past, the assumption is that mate selection is a more or less conscious process: That people in search of a long-term romantic partner have easy access to their very own mate selection preferences – that they know, what they are looking for in a partner – and that they behave and choose accordingly. However, reports of love at first sight for example contradict this assumption or at least would work only for visible criteria such as physical attractiveness. The present results regarding the effects of similarity between a person’s partner and their ideal partner could point in a similar direction: Maybe mate selection preferences guide the process of mate selection to a lesser extent than assumed to date. Fourth, one major assumption of the policy-capturing method is additivity and linearity. Especially the assumption of additivity could pose a problem, though. Commonly stated declarations in the context of mate selection sometimes include characteristics seen as “dealbreakers”: If a person has a certain characteristic or exceeds/ falls below a certain barrier of that characteristic he or she cannot be considered as a romantic partner anymore. While it seems reasonable to assume that six of the seven criteria are at most in a few individual cases seen as dealbreakers, it could be a more severe problem for sexual fidelity. It was by far the most important mate characteristic for both, men and women in this sample. Maybe sexual infidelity is in fact a dealbreaker-characteristic for people who usually prefer monogamous relationships. If so, the assumption of additivity would be violated and the regression equation for the case here would have to look rather like this, with X_7 representing the dummy-coded sexual fidelity-cue with 0=*unfaithful*:

$$Y = \beta_0 + (\beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6) * \beta_7 X_7 + \varepsilon \quad (5)$$

Impact of mate selection preferences on relationship quality. Another limitation of the research regards research question 4, where I investigated whether the similarity between an ideal partner and the current partner predicts relationship satisfaction. Although there was some evidence that similarity has predictive validity for relationship satisfaction (humor), it could be possible that the participants partly described their current romantic partner when they were asked to describe their ideal partner on the mate selection criteria. An argument against such an effect is that the order in which the participants had to rate their ideal and current partner on the mate selection criteria was randomized. Additionally, I tested, whether there were systematic differences in the descriptions of the ideal partners between participants with romantic partners and singles. If the critique mentioned above holds true, ideal partners of participants in a romantic relationship should be described in a more realistic way. Instead, participants with romantic partners described their ideal partners in a more demanding way than singles. Nevertheless, significant differences were only found for physical attractiveness ($M_{ParticipantsWithPartner} = 4.06$ vs. $M_{Singles} = 3.90$, $t(862) = -2.99$, $p = .003$, $d = .22$) and generosity ($M_{ParticipantsWithPartner} = 3.69$ vs. $M_{Singles} = 3.37$, $t(862) = -5.01$, $p < .001$, $d = .38$). Therefore, although the critique cannot be smoothed out completely, the effects are probably not an artifact.

Future research should address further, to what extent preferences on certain mate selection criteria actually guide the process of mate selection. This assumption was tested only indirectly with research question 4 with evidence that similarity between the current and ideal partner on humor, boosts relationship satisfaction. To investigate this assumption further, longitudinal designs are essential. One possibility would be a mixed-method-multisource-longitudinal design, where participants would have to indicate their mate selection preferences in t_0 and then take part in a speed-dating, where they and their interactions were videotaped. Couples that

form after the speed dating would be accompanied with a smartphone-based diary study over the course of their relationships. With this approach there would be numerous possibilities to investigate effects of ideal mate preferences on mate selection processes. Due to the fact that speed-dating paradigms are already widely popular in research regarding the formation of romantic relationships and have already been adopted for the investigation of the role of mate preferences in this context (e.g., Asendorpf et al., 2011; Eastwick & Finkel, 2008; Li et al., 2013), a reanalysis of the existing data with polynomial regression and response surface analysis could help clarify the associations between ideal partner preferences and mating decisions even more and maybe correct previous alleged null findings (as in the studies of Asendorpf et al., 2011; Eastwick & Finkel, 2008).

Conclusion This study is the first to provide empirical evidence of social desirability-effects in mate selection preferences research and partly replicates sex differences in mate selection preferences with data, where effects of social desirability are controlled. Additionally, interaction effects between sex and sexual orientation on mate selection preferences were observed. Finally, the results indicate that the role of preferences in the process of mate selection may guide actual mate selection to a slightly different extent than assumed to date. Future research should strive to replicate and expand the results reported here, especially the similarity-related results.

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Appendix A Sex Differences in Mate Selection Preferences with Age as Covariate

Checking of assumptions. Visual inspection of the scatterplots (age and standardized β 's plotted for each sex separately) indicated homogeneity of regression slopes so there was no need to specify an interaction effect between sex and age (which would have been a surprise anyway). Therefore only sex was specified as group variable and age as covariate. Furthermore, the t-test of age differences between heterosexual men ($M = 31.0, SD = 8.6$) and heterosexual women ($M = 30.5, SD = 9.2$) was not significant ($t(563) = .48, p = .631$, two-tailed). Levene's test for homogeneity of error variances on the other hand were significant for physical attractiveness ($F(563) = 48.22, p < .001$) and income ($F(563) = 7.26, p < .01$). Because of the robust character of AN(C)OVA (e.g., Budescu, 1982) I went on with the analysis nonetheless. As a result, the most important assumptions of ANCOVA were met.

Results. Results of the seven ANCOVAS are shown in Table A8, with an adjusted α of $p = \frac{.05}{7} = .007$. The significant sex differences obtained with the multiple t-tests above were stable when age was controlled. Interestingly, there were effects of age on the importance of all mate selection criteria but humor. However, all of these effects were small ($.01 < \text{partial } \eta^2 < .05$) and therefore will not be further explored.

Table A8: Results – Hypotheses about Sex Differences in the Relative Importance of the Mate Selection Characteristics With Age as Covariate

Source	Sum of Squares	df	Mean Square	F	p	Partial η^{2a}	η^{2b}
Physical attractiveness [$R^2 = .142^{***}$]							
Sex	1.91	1	1.91	81.95***	<.001	.127	.125
Age	0.29	1	0.29	12.32***	<.001	.021	.019
Error	13.11	562	0.02				
Total	15.28	564					
Income [$R^2 = .112^{***}$]							
Sex	0.61	1	0.61	61.15***	<.001	.098	.097
Age	0.11	1	0.11	11.10**	.001	.019	.017
Error	5.58	562	0.01				
Total	6.29	564					
Generosity [$R^2 = .035^{***}$]							
Sex	0.10	1	0.10	13.52***	<.001	.023	.023
Age	0.05	1	0.05	7.00	.008	.012 ^b	.012
Error	3.98	562	0.01				
Total	4.12	564					
Humor [$R^2 = .000, p = .906$]							
Sex	0.00	1	0.00	.14	.709	.000	.000
Age	0.00	1	0.00	.05	.816	.000	.000
Error	16.21	562	0.03				
Total	16.22	564					
Intelligence [$R^2 = .023^{**}, p = .002$]							
Sex	0.11	1	0.11	4.26	.039	.008	.007
Age	0.23	1	0.23	9.09**	.003	.016	.016
Error	14.08	562	0.03				
Total	14.40	564					
Sexual skills [$R^2 = .011, p = .042$]							
Sex	0.03	1	0.03	1.19	.277	.002	.002
Age	0.11	1	0.11	5.08	.025	.009	.009
Error	11.77	562	0.02				
Total	11.90	564					
Sexual fidelity [$R^2 = .049^{***}$]							
Sex	0.01	1	0.01	.17	.684	.000	.000
Age	1.63	1	1.63	28.50***	<.001	.048	.048
Error	32.13	562	0.06				
Total	33.77	564					

Note.

^a Partial η^2 represents the portion of explained variance by one factor with “other nonerror sources of variance being partialled out” (Cohen, 1973, p. 108). In this case, these nonerror sources are either sex or age, respectively. Formula:

$$\text{Partial } \eta^2 = \frac{SS_{Effect}}{SS_{Effect} + SS_{Residual}}$$

^b η^2 represents the proportion of total variability that is attributable to one factor. Formula: $\eta^2 = \frac{SS_{Effect}}{SS_{Total}}$. Rules of thumb for interpretation of this effect size are: $\eta^2_{partial} > .01$ indicates a small effect, $\eta^2_{partial} > .06$ indicates a medium effect, $\eta^2_{partial} > .14$ indicates a large effect (Cohen, 1988).

^c Gray font color indicates insignificant effects.

*** $p < .001$, ** $p < .01$; Adjusted significance level was $p < .01$.

Appendix B Interaction Graphs with no Significant Interaction Effects

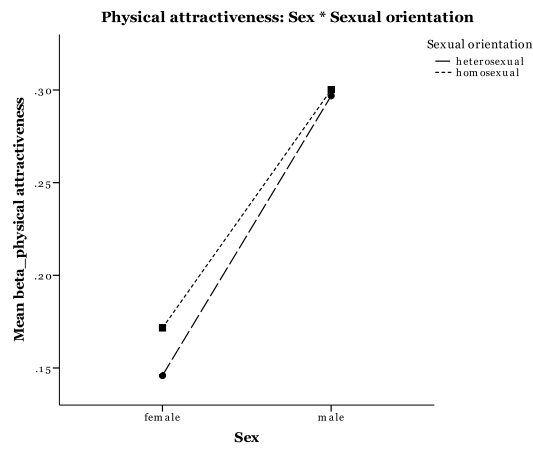


Figure B5: Interaction Between Sex and Sexual Orientation for $\beta_{Physicalattractiveness}$: Significant main effect of sex ($\eta^2 = .124^{***}$)

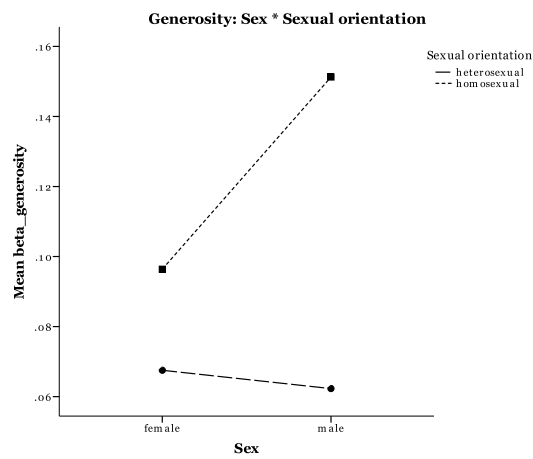


Figure B6: Interaction Between Sex and Sexual Orientation for $\beta_{Generosity}$: Significant main effect of sexual orientation ($\eta^2 = .077^{***}$)

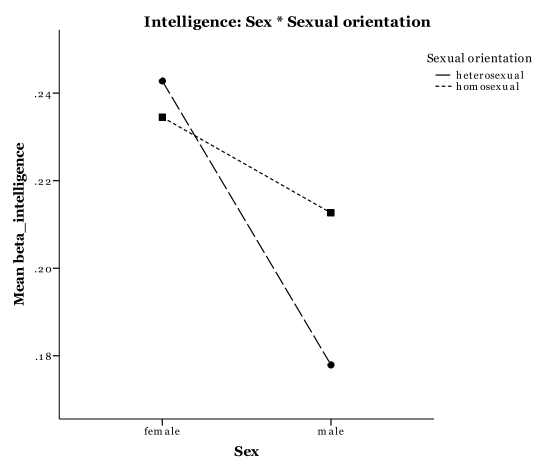


Figure B7: Interaction Between Sex and Sexual Orientation for $\beta_{Intelligence}$: No significant effects.

Appendix C Results of all Response Surface Parameter Tests for the Reported Polynomial Model

Table C9: *Results of the Response Surface Parameter Tests for the Model*

Effect	Coefficient	SE	Z	p	95% CI ^a	
					LL ^a	UL ^a
Model: Humor [$R^2 = .288$]						
a_1 slope along $x = y$	0.36	0.05	6.75	<.001	0.25	0.46
a_2 curvature along $x = y$	0.00 ^b	0.00	0.00	1.000	-0.00	0.00
a_3 slope along $x = -y$	0.63	0.09	7.32	<.001	0.46	0.79
a_4 curvature along $x = -y$	-0.34	0.10	-3.42	.001	-0.54	-0.15

Note.

$n = 606$

^a CI = Confidence interval for mean differences; *LL* = lower limit; *UL* = upper limit

^b Gray font color indicates insignificant coefficients.

^c NaN = Not a number; NA = Not available

Antecedents of Sexual Infidelity in Romantic Relationships. A Literature Review of the Latest Empirical Results, Prevailing Explanatory Models, and Proposal of a New Model.

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September 19, 2016

Abstract

This systematic, narrative review aims to portray all explanatory approaches of infidelity that have been published within the past decades of empirical effort. The main focus lies on summarizing the peer-reviewed, empirical literature that has been published since 2010: The *biological approach* assumes that genetic influences and hormonal effects can explain infidelity. The *evolutionary approach* proposes that intersexual differences in parental investment may help to explain differential patterns of male and female sexual infidelity. The process of human sperm competition and changes in mate preferences across the ovulatory cycle further clarifies the evolutionary roots of female infidelity. Contrastingly, the assumption of the *deficit model* of infidelity is that problems in the primary relationship alone account for infidelity of one or both partners. Several social exchange theories are introduced within this section (e.g., equity theory, investment model, interpersonal exchange model of sexual satisfaction). Moreover, the *dispositional approach* posits that interindividual differences in stable personality traits, like agreeableness of the Big Five or all three traits of the Dark Triad, are responsible for unfaithful behavior. The *situational approach* assumes situational effects to mainly be the cause of sexual infidelity. Finally, the effects of variables like sex, age, education, and other socio-cultural constructs (like descriptive and injunctive norms) are discussed within the *socio-cultural approach*. Every approach has its merits. However, regarding one approach separately (which is mostly the case in scientific publications on the topic) always leads to the neglect of others. As a consequence, this review finally introduces the (B)ODD-model of infidelity that integrates all above mentioned approaches into one unifying framework from a person-situation-interaction perspective.

Keywords: narrative review; literature review; sexual infidelity; emotional infidelity; extradyadic sex; extramarital sex; dating infidelity; antecedents; explanatory approaches; biological perspective; evolutionary perspective; deficit model of infidelity; dispositional perspective; situational perspective; socio-cultural perspective; (B)ODD-model of infidelity; person-situation-interaction; dispositionism; situationism; interactionism

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1 Introduction

*“I did not have sexual relations
with that woman, Miss Lewinsky.”*

— Bill Clinton

Research on infidelity has a long tradition in the field of psychology. Presumably the first publications with the highest impact were the so-called *Kinsey-Reports* about the sexual behavior of men and women (Kinsey, Pomeroy, & Martin, 1948; Kinsey, Pomeroy, Martin, & Gebhard, 1953). In the 1940s, Kinsey and his colleagues interviewed thousands of American men and women from several social backgrounds about their sexual behavior. It was groundbreaking work as it marked the beginning of open, unashamed, and scientific discourse about sexuality and it helped uncovering allegedly well-known facts as myths, e.g., that masturbation is harmful. They also covered the topic of adultery and discovered that with 40 years of age, 26% of women and about 50% reported extramarital coitus at least once. The authors found associations between adultery and age (+), duration of the marriage (-), religiosity (-), and education (-). A multitude of empirical studies have been conducted ever since and nine narrative literature reviews were published. Table 1 gives an overview of those and informs the interested reader about whether those reviews provided information about definitional and methodological issues surrounding sexual infidelity as well as prevalence rates. In addition, the Table states which explanatory approach and types of consequences are covered by the respective review. Finally, it names the number of studies included in the review and the time span of studies covered. In addition, there are several book chapters available that give a short overview (Buunk & Dijkstra, 2004, 2006a, 2006b; Gangestad, 2006). However, these book chapters typically are mostly unsystematic reviews with very restrictive foci.

Although all narrative literature reviews published to date are of good quality (for specific strengths and weaknesses of each review, please consult Table 1), most of them have one major shortcoming: While all reviews attempt to sort correlates of infidelity in a comprehensible way, they only briefly mention existing explanatory models or leave them out completely. The lack of theoretical background, however, is a major problem in infidelity research. As Thompson (1983) has put it, although some researchers have drawn on theoretical frameworks “these models have only served as sketchy backdrops against which EMS [extramarital sex] research has tentatively rested” (p. 19). R. G. Parker (1997) even put it more bluntly: The research activity on infidelity “has been unsystematic and does not lend coherence to a theoretical understanding of [infidelity]; rather, it may more closely approximate unfocused empiricism” (p. 2). Another shortcoming in the depth and width of the reviews are restrictions due to differences in priorities: While Allen et al. (2005) only analyze marital infidelity for example, McAnulty and Brineman (2007) only regard research literature specific to dating infidelity.

The major aims of this paper are therefore: First, to close the “theoretical gap”. Therefore, all existing explanatory approaches of infidelity will be portrayed along with the extent of their empirical support, even when they lie outside of the field of psychology. Concurrently, I will review the latest empirical research literature on infidelity to close the gap to previous literature reviews. As a second major aim, the explanatory models shall then be integrated into one comprehensive psychological model of infidelity. In addition, the following related topics will be covered throughout this paper: Third, underline deficits of infidelity research; fourth, discuss definitional issues regarding the infidelity-construct; fifth, highlight open avenues for future research, and sixth, give recommendations for future research on the topic. Although previous reviews have attempted the latter, the recommendations do not seem to stick: They are rarely adopted. This paper makes a further attempt to tackle problems of infidelity research and particularly proposes (new) solutions to old dilemmas.

2 Literature Search and Inclusion Criteria

The literature search was conducted with PsycINFO and PsycARTICLES databases. Applied search words were: “extradyadic”, “extrapair”, or “extramarital” combined with “sex”, “intercourse”, “relations*”, and “involvement”. Supplementary, I used search terms like “affair”, “cheating”, “emotional infidelity”, “sexual infidelity”, “physical infidelity”, “infidelity”, “unfaithfulness”, “adultery”, “philandering”, “non-monogamy”, and “concur-

rent relationships”. Only peer-reviewed, empirical, quantitative studies whose key variable was actual infidelity were reviewed. Dissertations and other monographs were not considered. Studies where infidelity was investigated with hypothetical scenarios or where intentions for future unfaithful behavior were the outcome were not considered.

Table 1: *Overview of the Existing Literature Reviews Regarding Infidelity*

Review	Antecedents									Consequences		Studies Included	Time Span
	Definitional Issues	Methodological Issues ^a	Prevalence	Biological	Evolutionary	Primary Relationship	Dispositional	Situational	Socio-Cultural ^b	Individual	Dyadic		
Thompson (1983)	x	–	x	–	–	x	x	x	x	–	–	12	1962–1980
Glass and Wright (1988)	x	–	(x)	–	–	x	x	–	x	–	(x) ^c	91	1953–1985
Allen et al. (2005)	(x)	xx	(x)	–	(x)	x	x	x	x	x	x	150	1948–2004
Blow and Hartnett (2005a)	xx	x	–	–	–	–	–	–	–	–	–	50	1980–2004
Blow and Hartnett (2005b)	–	–	x	–	–	x	x	x	x	x	x	50	1980–2004
Hertlein, Wetchler, and Piercy (2005)	x	–	x	–	–	–	–	–	–	x	(x) ^c	31	1971–2005
McAnulty and Brineman (2007) ^d	x	x	x	–	–	–	x	–	–	(x)	(x)	63	1948–2007
Kröger (2010)	x	x	xx	–	(x)	x	x	x	x	x	x	35	1993–2009
A. D. Fisher et al. (2012) ^e	–	–	(x)	x	(x)	(x)	(x)	–	(x)	(x)	–	105	1948–2011

Note.

– not covered; (x) shortly touched; x covered; xx comprehensively covered.

^a e.g., design, operationalization, sampling, statistical analysis, lack of theory

^b e.g., sex, gender, socio-economic status, age, education, culture, race

^c only gender

^d only dating relationships

^e only men

Moreover, I did not consider related topics like

- jealousy,
- mate retention tactics, e.g., mate guarding, resource display, and verbal possession signals (Buss, 1988),
- mate poaching, which means a “behavior designed to lure someone who is already in a romantic relationship, either temporarily for a brief sexual liaison or more permanently for a long-term mating” (Buss, 2006, p. 252)
- kleptogamy,
- cuckoldry,
- and potential, subjective reasons for infidelity,

as they only address actual infidelity indirectly. Furthermore, case studies, studies with homosexual participants, and studies from Africa, Asia and South America were excluded. Due to exclusion criteria, effects of culture, race, and sexual orientation were not considered in detail. The exhaustive literature search was supplemented by a thorough examination of the reference lists of the selected manuscripts on potentially relevant papers that have been overlooked before. Papers were included if they fitted the above noted inclusion criteria.

Apart from reviewing the research literature published within the last five years (since 2010) within written text, it was important to me to present the review in an organized, tabularly fashion as well. This should fulfill the needs of readers who want to quickly get a systematic overview of the latest state of research on infidelity but don't have the time to actually read the whole text. The latest narrative review with a psychological focus was published in 2010 – the more recent review of A. D. Fisher et al. (2012) focused mainly on biological correlates of infidelity and was restricted to empirical results regarding infidelity in men. However, due to time lags for manuscript preparation, the peer-review process and in press-time, the latest publication covered by Kröger (2010) and Tsapelas, Fisher, and Aron (2010) was from 2009. Therefore, this review focuses on the newer research literature published since then. Exceptions from this rule were only made, if

1. either the paper of interest was not included in a previous review,
2. a previously already covered publication was of special importance to make a specific point of argumentation clear,
3. it was a longitudinal study (which are very rare in the field of infidelity research),
4. or if it was one of the existing narrative literature reviews (all existing nine were included for broad overview purposes).

3 Global Critique of Research on Infidelity

There are several problems particularly relevant to infidelity-related research (e.g., Allen et al., 2005; Blow & Hartnett, 2005a, 2005b; Drigotas & Barta, 2001; Kröger, 2010; Thompson, 1983; Tsapelas et al., 2010) both content- and methods-related: First, there is a wild, inconsistent, and heterogeneous jungle of infidelity-definitions and operationalizations throughout the literature. Please consult section 4 (p. 68) for further details on definitional issues. To make matters worse, the majority of empirical studies operates with a binary-coded infidelity-criterion (faithful vs. unfaithful): A person with a steady extradyadic affair is treated just as a person with one slip-up (a drunken one-night stand maybe) although maybe the explanatory mechanisms for a steady affair lie more within deficits in the primary relationship whereas opportunity-variables might be better suited to explain the drunken slip-up. Thus, it is very likely that gradual or differential effects are overlooked with such broad and global infidelity-measures. Second, although prior research has identified several groups of relevant criteria, most of the specific empirical research focuses only on one or two (one being mostly socio-demographic factors) groups of variables that have been proven to be associated with infidelity. Third, most of the empirical research on the topic lacks a convincing theoretical background (e.g., Thompson, 1983; Allen et al., 2005). Fourth, more complex associations like moderation and mediation that could help illuminate the process of what leads to infidelity and what follows from it better are rarely incorporated. Fifth, the majority of studies in the field build on non-representative samples that stem from cross-sectional designs. In addition, early studies mostly concentrated on married individuals although infidelity also takes place in other types of

committed relationships. Admittedly, in the last two decades this tendency declined towards an inclusion of more types of relationships (e.g., dating relationships, cohabitation). Still, longitudinal research is considerably underrepresented. Sixth, the sparse number of longitudinal studies predominantly apply statistical methods that can be considered outdated (which is partially due to their publication date). Seventh, nearly no experimental studies exist, which lies in the nature of the topic, though. However, experimental studies (like Ciarocco, Echevarria, & Lewandowski Jr., 2012; Pronk, Karremans, & Wigboldus, 2011; Seal, Agostinelli, & Hannett, 1994) could further help researchers to understand the processes that take place before actual infidelity occurs. One final major flaw of various studies on infidelity is the lack of the measurement of relationship agreement regarding infidelity, as already pointed out by several other scholars (Blow & Hartnett, 2005a; Thompson, 1983): Today we can easily separate three different types of romantic relationships (applicable to marriage as well): *Monogamous relationships* are sexually and emotionally (in terms of romantic love) exclusive. Sexual contacts are only allowed between the partners of the romantic dyad. *Open relationships* allow sexual contacts to other people outside the romantic dyad, although the specific arrangements may vary widely (e.g., do the partners tell each other about their sexual escapades or do they prefer a “don’t ask don’t tell”-policy). The third and last possibility is a *polyamorous relationship*, where both sexual and emotional intense contacts outside the dyad are allowed. Especially people who live polyamorously most certainly do have a very different concept of infidelity as compared to people in monogamous relationships (for more details on polyamory, see e.g., Easton & Hardy, 2009; Klesse, 2006). In addition, even when relationship agreement has been measured and emotional and sexual infidelity are considered separately (like in Drigotas, Safstrom, & Gentilia, 1999), intradyadic norms of infidelity that most likely vary over relationships, have to my knowledge only been measured once by Blumstein and Schwartz (1983) in a carefully designed way¹. As they dealt with “non-monogamy” (see below, why that might not be a good idea) they did not analyze the data of people within sexually monogamous relationships separately from participants in sexually open relationships. They did report rates of couples with and without non-monogamy-agreements, though: 15% of married couples, 28% of cohabitators, 65% of gay men and 29% of lesbians agreed that under some circumstances non-monogamy is all right. Individually computed numbers lie a bit higher and therefore emphasize that an agreement is not always mutual. These numbers² illustrate that a small but significant amount of couples have an agreement that allows extradyadic sex. If actual infidelity is the interest of a researcher, he or she is well-advised to carefully construct a measure that allows for the separation of the two groups, people who engage in infidelity and people who just happen to have consensual sex outside their relationship, before analyzing their data. Unfortunately, most of the researchers in this area measure extradyadic sexual behavior although they are actually interested in infidelity. This distinction is so important because it seems very likely that the (psychological and dyadic) processes involved leading to either consensual extradyadic sex or sexual infidelity differ considerably from one another.

4 Definitional Issues

The list of potential synonyms for infidelity is very long, as the words used for the literature review illustrate nicely. What makes this fact even more complicated is that these are not exactly synonyms – some terms are very broad and neutral but mostly too vague (e.g., extradyadic involvement) while others describe very distinct

¹The specific wording of the item was (Blumstein & Schwartz, 1983, p. 621):

Which one of the following statements best describes your and your partner’s current understanding concerning sex outside of your relationship?

- 1 We have discussed it and decided that under *some* circumstances it is all right.
- 2 We have discussed it and decided that under *no* circumstances it is all right.
- 3 We have discussed it and do not agree. (PLEASE EXPLAIN HOW EACH OF YOU FEELS.)
- ...
- 4 We have not discussed it but I feel we would agree that under *some* circumstances it is all right.
- 5 We have not discussed it but I feel we would agree that under *no* circumstances it is all right.
- 6 We have not discussed it but I feel that we would not agree (PLEASE EXPLAIN HOW EACH OF YOU FEELS.)
- ...

²The numbers are arguably error-prone because of the cross-sectional design (people that have been unfaithful might agree to the item to reduce cognitive dissonance or to belatedly legitimize their own behavior) and because the wording is not as clear as it could be (some participants might interpret the item in a way that one-time slip-ups are justified sometimes while others might interpret them as intended by the authors, namely whether they are in an open relationship or not).

behaviors (e.g., extramarital intercourse). As Thompson (1983) pointed out, this “definitional ambiguity” (p. 3) makes comparing results from different studies very difficult. He proposed to specify at least three components to enhance definitional clarity of extradyadic relationships: First, is the behavior consensual or secretive? Second, outside what kind of relationship does the behavior occur? Third, what kind of behavior is shown and to what degree are emotions involved? Unfortunately, the proposal of Thompson (1983) did not fall onto fertile ground and has never been adopted.

Shackelford and Buss (1997) proposed to distinguish sexual from emotional infidelity: “Sexual infidelity refers to sexual activity with someone other than one’s long-term partner” and “emotional infidelity occurs when one’s partner channels emotional resources such as romantic love, time and attention to someone else” (pp. 1034–1035). A similar approach was taken by Glass and Wright (1985) who investigated infidelity on two different continua, namely emotional and sexual extradyadic involvement. They also let their participants (who were exclusively married) indicate, whether the extramarital involvement was mainly sexual or mainly emotional on a bipolar rating scale. Their data suggests a high association between the two constructs that is in addition somewhat higher in women ($r = .77$) than in men ($r = .48$). What these definitions disregard is whether the extradyadic behavior is permitted inside the romantic dyad or if it constitutes deviant behavior. Another point is the broadness of the concept of emotional infidelity in the sense of Shackelford and Buss (1997): If a paired person spends a lot of time with a close friend who is in trouble and needs someone to talk to, does this behavior constitute emotional infidelity? Or is it only emotional infidelity, if the partner does not understand why his or her partner is investing such an amount of time and feels neglected?

Another definitional proposal comes from Drigotas and Barta (2001) who defined the construct as follows: Infidelity “represents a partner’s violation of norms regulating the level of emotional or physical intimacy with people outside the relationship” (p. 177). This definition includes the norm-breaking character of unfaithful behavior. However, it remains unclear, where the norms come from, whether they are the same in every relationship and whether they are explicitly or implicitly agreed upon. This gap is closed by the definition of Blow and Hartnett (2005a) who propose the following extensive definition that includes all important aspects, Thompson (1983) requested in a definition of infidelity:

Infidelity is a sexual and/or emotional act engaged in by one person within a committed relationship, where such an act occurs outside of the primary relationship and constitutes a breach of trust and/or violation of agreed-upon norms (overt and covert) by one or both individuals in that relationship in relation to romantic/emotional or sexual exclusivity. (pp. 191–192)

Note that this definition, although it constitutes the most appropriate one, cannot be the base for the literature review because most of the empirical research focuses on much narrower definitions, like extramarital intercourse or extradyadic sex. Even if the deviant, norm-breaking character of infidelity is recognized by the researchers in their infidelity-definition, it is rarely translated into the operationalization of the variable. In addition, to my knowledge, no empirical study exists that focused exclusively on emotional infidelity nor does a study exist that relied on the definitional proposal of Blow and Hartnett (2005a).

McAnulty and Brineman (2007) discussed obstacles in the definition and measurement of dating infidelity in depth, too. They distinguished two approaches in the definition and measurement of infidelity: First, the researcher could allow the respondents to define the term with questions, like “How often have you cheated on or been unfaithful to your partner?”. Second, the researcher could provide the definitions for the respondents. Both options are prone to critique. While the first approach might lead to an apples-and-oranges problem – differing definitions of infidelity produce identical responses, the second does not respect the intradyadic agreement. What complicates the matter even further is the fact that “two different people in the same relationship might have different ideas about what represents infidelity or constitutes an affair.” (Hertlein et al., 2005, p. 6).

Due to all pitfalls mentioned above that are associated with the definition of sexual infidelity, the definitional basis for the literature review can only be a cross-section of all possible definitions of infidelity used throughout the years of research on infidelity: The research focused mostly on (narrow concepts) of sexual infidelity,

sometimes supplemented with additional considerations of emotional infidelity. A tabularly overview of the most common infidelity-definitions in published studies with nationally representative as well as convenience samples can be found in Luo, Cartun, and Snider (2010).

5 Prevalence Rates

Most of the studies in the field of infidelity research are based on small convenience samples, whose results are not generalizable. Another difficulty in estimating prevalence rates poses the fact that reported infidelity rates highly depend on the measure: Open interviews yield considerably lower incidence and prevalence rates than anonymously administered survey studies (T. D. Fisher & Brunell, 2014; Thompson, 1983; Whisman & Snyder, 2007). To illustrate, Whisman and Snyder (2007) obtained an infidelity-incidence-rate of 1.1% within the past year among their married all-female respondents when asked directly in the context of a face-to-face interview. When the questions were presented anonymously the self-reported infidelity rate rose to 6.1%. Some biases known to influence true scores may be responsible for this difference: Socially desirable responding might be the cause of underreporting actual infidelity, as it represents objectionable behavior. Another bias is the tendency of men to overreport sexual experience while women tend to underreport sexual events (for example number of sexual partners; Oliver & Hyde, 1993). Both biases may especially distort prevalence estimates of infidelity when data-collection is non-anonymous and/or data is collected through interviews (Whisman & Snyder, 2007). A final point that has to be considered in estimating the occurrence of infidelity is the time-frame. Sometimes infidelity is assessed as lifetime prevalence, when the time frame is the whole life of the participants. Other researchers assess period prevalence rates, for example Kinsey and colleagues (1948, 1953) used 5-year intervals.

However, by now several studies with large, representative samples have been conducted (for an overview, please consult Kröger, 2010, and Luo et al., 2010). In 18 studies with representative North-American samples conducted between 1993 and 2008 between 11 and 16% of women and between 21 and 25% of men admitted extradyadic sex at least once over their life course. In the last year between 1 and 5% of women and 4 to 12% of men report extradyadic sex. In Europe the figures are slightly higher but also have a wider range: 10 to 24% of women and 16 to 38% of men report extradyadic sex during their present romantic relationship. In the last year 4 to 13% of women and 13 to 23% of men admit extradyadic sex. The European numbers are based on eight representative samples drawn between 1992 and 2008. For a more comprehensive overview of infidelity prevalence rates in North-America and Europe, see Kröger (2010) (in German language) or Luo et al. (2010). Whether the magnitude of prevalence rates is so different between North America and Europe because of intercultural differences, differences in sex morals, if it is solely an artifact or even something completely different remains unclear.

Bearing the difficulties associated with measuring the occurrence of infidelity in mind, it seems reasonable to assume that the estimated prevalences represent the lower bound of the true prevalence at most. Furthermore, in the studies reviewed by Kröger (2010) the criterion was extradyadic sex, Luo et al. (2010) broadened the definition a bit more but focused on sexual intercourse as well. The prevalence rates of milder forms of sexual contact that are commonly regarded as infidelity as well (e.g., french kissing) will certainly be higher.

6 Prevailing Explanatory Models and their Empirical Support

Before I start elaborating the existing explanatory models for infidelity, some cautionary notes: First, due to interaction effects (mainly sex- or other demographics-related), linear effects have to be interpreted with caution. Second, the theoretical approaches are not as distinct as the outline might suggest at first glance. Some of the approaches do overlap and were partly investigated together, for example biological and evolutionary psychological approaches. However, to enhance clarity they are presented separately and intersections or studies that combined several approaches will be noted in the text, where appropriate. Third, in the young field of psychological research on infidelity, the first studies focused on extramarital sex (e.g., Kinsey et al., 1948, 1953). However, due to societal changes – cohabitation before marriage became more common since the end of the 1960s, couples even decided consciously against marriage as a relationship model – research on infidelity in

non-married couples began (e.g., Blumstein & Schwartz, 1983). As no major differences between the effects of/ on infidelity in non-married couples vs. married couples emerged (e.g., Allen & Baucom, 2006), both groups are usually combined (Kröger, 2010). Therefore, results are presented with no explicit consideration of relationship type or status. If a study focused on this distinction and differences emerged, it will be noted in the text, though. Finally, some studies worked with several explanatory approaches (for example with the deficit model and the dispositional approach). Those studies are presented within every section dealing with the respective theoretical approaches – when they appear for the first time, all empirical results are presented tabularly, afterwards only the results relevant to the specific sections are presented in a tabularly fashion again. Back links are provided as well.

6.1 Atheoretical Approaches

For the sake of completeness, the first empirical works that dealt with sexual infidelity are included here as a short side note. The main aim of the early large-scaled projects (e.g., Blumstein & Schwartz, 1983; Janus & Janus, 1993; Kinsey et al., 1948, 1953; Laumann, Gagnon, Michael, & Michaels, 1994) was to describe human sexuality objectively rather than explain why a specific behavior occurs, let alone, why there may be inter- and intraindividual differences in sexual behavior. Take biologist Alfred C. Kinsey and his colleagues, for example: “[Their initial] approach to human sexuality was the standard biological approach to an unknown territory (which human sexuality was at that time): as descriptive and objective as possible.” (Penke & Asendorpf, 2008, p. 1113). In those publications only descriptive statistics are reported, crosstabulations at the most.

The introduction of this approach serves simultaneously as its critique: Crosstabulations may give an idea about possible effects, like gender differences in infidelity. However, compelling theoretical ideas accompanied with empirical evidence are indispensable in science. Nevertheless, these works have their merits as they descriptively paved the road to actually understanding the reasons behind sexual infidelity.

6.2 Biological Explanations

In the following section prevailing biological explanations will be introduced. For a tabularly overview of the latest, most important studies, see Table 6.2.5 (p. 76).

6.2.1 A Side Note on Monogamy

Before introducing specific, biological explanatory approaches for infidelity, some introductory words on monogamy: Several types of monogamy should be distinguished (Reichard, 2003): *Social monogamy* refers to two individuals of the opposite sex living together. This type of monogamy is best represented in humans by a monogamous marriage. *Sexual monogamy* represents more or less the opposite of sexual infidelity: Two individuals having sex exclusively with each other. Finally, *genetic monogamy* means that two individuals procreate only with each other. Clearly, these different types can intersect but they do not necessarily have to. A newer form of monogamy in western, industrialized societies is represented by *serial monogamy*, where partners live in sexually monogamous relationships with one person as long as they work out. After the break-up they switch to another partner, with whom they live sexually monogamous again.

Whereas approximately 90% of bird species live socially monogamous, it is assumed that only 3% of mammalian species have socially monogamous mating and pair-bonding strategies (Kleiman, 1977). Human societies are not exclusively monogamously organized. Instead, different human societies exhibit various patterns of mating strategies: According to the *ethnographic atlas* (see P. J. Gray, 1998; Murdock, 1967) that is based on 1,267 independent samples of human societies (mostly agricultural societies, though), 543 societies allow (at least occasional) polygyny, wherein one man can marry more than one woman. These societies are usually at the same time monoandrous, which means a woman can only marry one man. Only three known societies are polyandrously organized, wherein one woman can marry several men. 98 societies in the sample are exclusively socially monogamous including the western industrialized societies. However, as anthropologist Helen E. Fisher (1994) points out, the fact that a society allows polygamy of a certain kind (mostly polygyny) does not necessarily mean that it is common. Rather, dyadic pair-bonds seem to prevail, regardless of the potential

polygamous options. Or as Murdock (1949) put it: “An impartial observer employing the criterion of numerical preponderance, consequently, would be compelled to characterize nearly every known human society as monogamous, despite the preference for and frequency of polygyny in the overwhelming majority.” (pp. 27-28). Various attempts have been made to explain the existence of social monogamy in mammals: Two papers with contradictory findings on the evolution of social monogamy have been published recently. Opie, Atkinson, Dunbar, and Shultz (2013) investigated data on 230 primate species and found that neither, benefits of biparental care nor mate-guarding strategies could explain the development of social monogamy. Rather, the authors conclude that only the risk of male infanticide (because breeding females are not or less fertile) increased the probability of social monogamy in primates. Lukas and Clutton-Brock (2013) on the other hand concluded on the basis of their analysis of mating-strategies from over 2,500 non-human mammalian species that social monogamy evolved due to low female density where it was an advantage for the male to stay with the female. These results could be interpreted as in line with results from Y-chromosomal genetic analyses, namely that the density of females increased earlier than the density in men and as such, polygyny was the rule than the exception during most of human prehistory or at least as long as there were more females than males (Dupanloup et al., 2003). In contrast, from an anthropological angle, Henrich, Boyd, and Richerson (2012) hypothesize that normative (and social) monogamy evolved to reduce the aggressive potential of our societies as it reduces intrasexual competition, which is still associated with violence in humans as well as in other mammals. This in turn should maximize inclusive fitness (Fortunato & Archetti, 2010). As can be seen here, the debate goes on. From an evolutionary, anthropologist point of view, it remains unclear whether the prevention of male infanticide, the benefits of biparental care or mate-guarding strategies were the motor behind the evolution of social monogamy.

However, with regard to the fact that social monogamy does not represent the opposite pole on the fidelity-infidelity continuum, in the following section I will concentrate on specific biological explanations for sexual infidelity. Emotional infidelity will not play a role in this section, as it is neglected in this branch of research. Most of the research in this area focuses on genetic markers of and hormonal influences on sexual infidelity as well as their intersections.

6.2.2 Genetic Influences

Cherkas, Oelsner, Mak, Valdes, and Spector (2004) were the first researchers to investigate the heritability of sexual infidelity. They showed that sexual infidelity has a genetic component. Their analysis, based on data of homo- and heterozygotic female twins of various age cohorts, yielded a 41% heritability estimate for sexual infidelity. Newer analyses support this estimate, as they have shown a 40% estimate for women and a 62% estimate for men (Zietsch, Westberg, Santtila, & Jern, 2015). Linkage-analyses did not yield associations with the AVPR1A (arginine vasopressin 1A) receptor gene, although transfers of similar genes in the socially promiscuous prairie vole (Cherkas et al., 2004) have been shown to increase socially monogamous behavior (Lim, Hammock, & Young, 2004)³. Walum et al. (2008) on the other hand were successful in linking one specific polymorphism on the AVPR1A receptor gene to human pair-bonding behavior in men: This polymorphism was associated with male attachment and had predictive validity for self-reported marital problems and marital quality. However, Walum et al. (2008) did not investigate sexual infidelity and they obtained significant results only for men, not for women. Finally, the data of Zietsch et al. (2015) suggests a link between the AVPR1A receptor gene and extrapair mating, but only in women. Interestingly, they conducted the analyses to test the between-sex genetic correlation hypothesis which posits that only in men genetic factors predispose male extrapair mating. This in turn only indirectly predisposes female extrapair behavior, as it is maintained only as a byproduct of the male selection. This hypothesis is meant to be an alternative and nonadaptive explanation for female infidelity as the authors cite several bird-studies that find no or only limited evidence that extrapair-offspring is fitter than within-pair offspring. According to the authors, these results contradict the classical

³The AVPR1A-receptor is one out of three major receptor types for arginine vasopressin and it can be found throughout the whole brain as well as in peripheral organs like kidney, liver, and vasculature (Caldwell, Lee, Macbeth, & Young, 2008). Vasopressin itself, a neurohypophysial hormone, is also known as antidiuretic hormone (ADH) and can be found in most mammals. As it usually contains arginine, it is called arginine vasopressin (AVP), too (Dorland, 2011). Its purpose is to constrict blood vessels and to retain water in the body (Marieb & Hoehn, 2015)

evolutionary explanation for female infidelity, namely to provide excellent genetic material for her offspring (see also section 6.3, p. 77). Unfortunately, the empirical results – the extrapair-prevalence of opposite sex-siblings was not associated – do not support their claim.

According to several prior studies, the neurotransmitter dopamine plays a major role in the modulation of sexual and pair-bonding behavior. One study found that male participants with a specific polymorphism on the dopamine D4 receptor gene reported *more* extradyadic sexual contacts than unfaithful participants without this polymorphism (Garcia et al., 2010).

Genetic similarity between two procreating individuals is associated with higher risks for mutations, diseases, and early death of the offspring. Humans – apart from women who take contraceptives – seem to be able to identify the amount of genetic similarity through scent and this in turn seems to play a role in mate selection: In the so-called “sweaty t-shirt experiment” Wedekind and Furi (1997) let four male and two female participants wear a t-shirt over two nights and then let other participants sniff these t-shirts and rate the pleasantness of these scents. Additionally, all participants were genetically typed on the major histocompatibility complex (MHC)-region, a genetic region that is very variable and associated with the immune system. They observed that women and men prefer the scent of individuals that are genetically dissimilar to them on the MHC-region. Additionally, scents that reminded participants of their own romantic (ex-)partners were genetically more dissimilar to them than would be expected by chance. The role of genetic (dis)similarity in the occurrence of infidelity was investigated further by Garver-Apgar, Gangestad, Thornhill, Miller, and Olp (2006): They determined the extent of genetic similarity on the MHC-region between two romantic partners and found that the number of extradyadic sexual partners reported by normally ovulating women was associated with increasing genetic similarity between the individuals within the romantic dyad.

6.2.3 Hormonal Influences

The dopaminergic-reward-path, whose role in explaining sexual infidelity was introduced in the paragraph before, is not independent from the hormones arginin vasopressin and oxytocin, both of which enhance dopaminergic function (see Melis & Argiolas, 1995). It has been shown various times that oxytocin levels are associated with prosocial behavior, like attachment and affiliation (see Carter, 2014) – this hormone is often labeled the “love hormone”, because it is released especially after orgasm, during breast feeding and during the first stages of a romantic relationship (e.g., van Anders & Gray, 2007; Bartels & Zeki, 2004; H.-J. Lee, Macbeth, Pagani, & Scott Young, 2009; Sanchez, Parkin, Chen, & Gray, 2009). One recent study suggests that oxytocin could act as a fidelity-promoting agent (Scheele et al., 2013): The authors showed their male participants photographs of their female romantic partners and of other (similarly attractive) familiar and unfamiliar women while they inhaled either oxytocin or a placebo via nasal spray. The men with oxytocin treatment rated their partners as more attractive compared to the participants that inhaled the placebo. The effect was not caused by familiarity effects, because the positive (partner) bias only occurred in the attractiveness rating of the romantic partners rather than in the attractiveness ratings of the similarly attractive familiar women as well.

Further research regarding hormonal influences on sexual infidelity suggests that testosterone level in men and oestradiol level in women plays a role as well: Testosterone level in men (and other vertebrates) works as a hormonal marker of their mating effort and short-term mating success. Empirical evidence suggests that the testosterone level of men decreases when they commit to a stable, romantic relationship (see P. B. Gray & Campbell, 2009 for a comprehensive review). The reason seems to be that a lower level of testosterone and therefore, lower risk of aggressive behavior, is necessary for successfully upbringing potential offspring. In fact, Gettler, McDade, Feranil, and Kuzawa (2011) were the first to present longitudinal empirical evidence that illustrated that fatherhood decreases testosterone levels in men.

But how exactly do testosterone levels in men relate to sexual infidelity? McIntyre et al. (2006) reported that extrapair sexual interest works as a psychological moderator of the relationship between relationship status and testosterone level: Men who were in a committed relationship but carried on exhibiting extrapair sexual interest and have been sexually unfaithful in their current relationship tended to maintain high levels of testosterone.

In women, oestradiol level is positively associated with self- and other-rated physical attractiveness, which serves as a prime for fertility (Durante & Li, 2009). Additionally, higher oestradiol levels are associated with higher self-reported willingness to engage in sexual behavior outside the primary relationship like flirting, kissing or starting an affair (Durante & Li, 2009). Unfortunately, this study failed to investigate actual infidelity and focused exclusively on the likelihood of sexual infidelity within the next year.

6.2.4 Availability of More Than one Mating Partner: The Coolidge Effect

The term *Coolidge effect* refers to the observation that mammalian males tend to lose their sexual appetite when there is only one female sexual partner available. After presenting the male with a new partner, his sexual desire (although sexually satisfied) and willingness to copulate reappears (J. R. Wilson, Kuehn, & Beach, 1963). It was first demonstrated with rats (Beach & Jordan, 1956) and subsequently demonstrated with other mammals as well. The effect also appears in females but to a lesser extent (see Dewsbury, 1981 for a review). It seems that dynamic changes of dopamine in the nucleus accumbens might be responsible for the reinitiation of intercourse – Fiorino, Coury, & Phillips, 1997 demonstrated this in male rats.

The name of the effect allegedly goes back to former President of the USA Calvin Coolidge who was visiting a farm with his wife Grace Coolidge, where he and his wife were separately shown a hen house with only one cock in it. Grace Coolidge asked puzzled, whether one cock was enough for all the hens to what the owner replied the cock would be able to perform several times a day. Allegedly she blurted out: “Tell that to the President!” After the President was informed and he visited the hen house himself, he asked whether one cock would have intercourse always with the same hen, which the owner denied. After this interaction the President purportedly responded dryly: “Tell *that* to Mrs. Coolidge!” (Bermant, 1976). Whether this anecdote really happened or it is just an old joke, it illustrates that this effect may be generalizable from other mammals to humans. It is, for example, a known fact that frequency of intercourse in romantic relationships declines with increasing length of relationship (Christopher & Sprecher, 2000). This in turn may not be independent from psychological constructs such as sensation seeking or impulsiveness (see section 6.5, p. 99) because novelty of the new partner plays a major role in explaining this effect. However, as Dewsbury (1981) points out, some caution is appropriate when trying to generalize an effect from one species to another. As the experimental conditions used to demonstrate the effect in rats can hardly be applied in humans, the existence of this effect has not been shown for our species to date.

6.2.5 Summary and Critique

To summarize, biologically oriented research on sexual infidelity suggests that hormones (oxytocin, vasopressin, testosterone, oestradiol) and neurotransmitters (dopamine) have predictive value in the explanation of such a behavior. Sex-specific effects were observed for testosterone level in men and oestradiol level in women. Results from genetic research imply a heritable component of sexual infidelity. Also, women’s shifts in mate preferences throughout their ovulatory cycle (see section 6.3, p. 77) may facilitate the occurrence of sexual infidelity.

As anthropological research states, social monogamy is rare in mammals and contradictory to assumptions in western, industrialized cultures also rare in human societies. Therefore, it may not be that constructive to try to explain sexual infidelity from a strictly biological perspective. From a nature-nurture perspective and assumed, the heritability estimate of 41% is correct, the main portion of variability in the occurrence of sexual infidelity remains genetically unexplained and can be attributed to psychological and/or environmental influences. The following sections deal with this portion of 59%.

Table 2: *Biological Factors*

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Cherkas et al. (2004) [empirical, representative sample (UK, 9)]	extradyadic sex (yes/no): "Whilst married or living with a partner in a sexual relationship, have you ever had sex with someone other than your husband or partner?"	Genetic influence on infidelity?	1,600 unselected mono- and dizygotic female British twin pairs (MZ, DZ) – comparable to general population; age: 19–83 ($M = 51$ years); 98% heterosexual	questionnaire regarding sexual attitudes and behavior; venous blood samples from parts of the sample	estimation of case-wise concordance for MZ and DZ; quantitative genetic model fitting; multipoint genome-wide linkage analyses	21% of MZ vs. 23% of DZ were ever unfaithful; moderate genetic influence on infidelity (41% heritable) and unique environmental effects; no genetic effects on attitude toward infidelity (always wrong vs. not always wrong); no linkage of infidelity to arginine vasopressin 1A receptor gene (AVPR1A)	(+) generalizable sample; (–) only women; (–) relationship agreement (monogamous, open, polyamorous) not measured
McIntyre et al. (2006) [empirical]	extrapair sexual interest: Study 1: Sociosexual Orientation Inventory (Simpson & Gangestad, 1991); Study 2: SOI, willingness to engage in extrapair sex, history of extrapair sex (ever) – z scored and averaged	Does the association between men's relationship status and their testosterone levels (T) depend on extrapair sexual interest?	Study 1: 102 heterosexual male undergraduates; age 17 to 26 ($M = 20$); Study 2: 69 heterosexual male undergraduates; age 17 to 33 ($M = 20$)	questionnaire; saliva	GLM (multiple one-way ANOVAs)	29% of men reported history of extrapair sex; extrapair sexual interest (including past infidelity) acts as psychological moderator of the association between romantic relationship status (single vs. paired) and T production. Interaction was stable when relationship length and commitment to relationship were controlled.	(–) small, selective sample; (–) exclusivity agreement not measured; (–) questionable operationalization of extrapair sexual interest (especially Study 1); mixture of infidelity intention, actual infidelity and a correlate of sexual infidelity in Study 2; (–) relationship agreement (monogamous, open, polyamorous) not measured
Garver-Apgar et al. (2006) [empirical]	extrapair sex: number of partners with whom they had sex while being involved with current partner and previous partners; extrapair sexual interest: five items, e.g., "I fantasized about sex with a stranger or acquaintance."	Does genetic similarity increase extrapair sexual relations?	48 heterosexual couples with normally ovulating women (students) in exclusive relationships; age 18 to 35 ($M = 20.5$ in women; $M = 21.3$ in men)	three questionnaires (start of the study; during fertile phase; during infertile phase of women); daily ovulation-test; MHC allele-typing from mucosal membranes	correlations; 2x2 repeated measures ANOVA	Women reported more extradyadic sexual partners in their current relationship with increasing genetic similarity (MHC sharing), even when sociosexuality, age, and relationship duration were controlled. MHC sharing did not predict number of extradyadic partners in previous relationships. MHC sharing predicted attraction to extrapair men (not to primary partner) for fertile women, but not for nonfertile women.	(–) small, selective sample; (–) relationship agreement (monogamous, open, polyamorous) not measured
Durante and Li (2009) [empirical]	likelihood of mating outside the primary relationship: self-rated likelihood (%) of flirting, kissing or dating a man outside the primary relationship within the next year and having a one-night stand or serious affair outside the relationship	Is oestradiol level in women associated with opportunistic mating outside the primary relationship?	52 female, normally ovulating undergraduates; age 17 to 30 ($M = 19.4$); 25 of them were in a relationship	urine test of cycle-day; salivary testing of oestradiol level during late follicular (pre-ovulatory) and luteal phase	non-parametric rank-order correlations	Oestradiol level was positively associated with likelihood of mating outside the primary relationship for flirting, kissing, and having a serious affair; marginally significant for dating; no significant association for one-night stand.	(–) small, selective sample; (–) no actual infidelity; (–) relationship agreement (monogamous, open, polyamorous) not measured
A. D. Fisher et al. (2009) [empirical] → see also Table 4 (p. 98)	extramarital affair: "Do you have other sexual relationships with people other than your usual partner?" (no, occasional, stable relationship)	How do extramarital relations and sexual dysfunctions in men relate?	2,592 unselected heterosexual men with sexual dysfunctions; $M = 55$ years old	Structured Interview on Erectile Dysfunction (SIEDY); physical examination; biochemical, hormonal and penile vascular evaluations	t-tests; Mann-Whitney U-Tests; stepwise multiple linear or logistic regressions	17% reported extramarital affairs; Unfaithful men with sexual dysfunctions showed higher androgenization (higher T level and testis volume), reported more stress at work, longer relationship span, more relational problems. Additionally, they had a higher risk of having an ill partner and a partner with hypoactive sexual desire. Organically, men with extramarital affairs had lower prevalence of hypogonadism and better sexual function.	(+) big sample; (–) specific group; only men with sexual dysfunctions; (–) relationship agreement (monogamous, open, polyamorous) not measured
Garcia et al. (2010) [empirical]	sexual infidelity: Any physical sexual activity with another person than the current partner – ever "cheated on" committed partner and number of extradyadic partners.	Can individual genetic variation explain the occurrence of sexual infidelity?	181 undergraduates (118 females); $M = 20.1$ years old	survey regarding sexual behavior; DNA sample via buccal swabs	GLM; genotyping of dopamine D4 receptor gene region (DRD4, chromosome 11)	Participants with a specific polymorphism on DRD4 (R7+) were twice as likely to report sexual infidelity (ns). Of unfaithful participants, individuals with the 7R+-polymorphism reported significantly more extrapair sexual partners (1.79 vs. 1.14).	(–) small, selective sample; (–) relationship agreement (monogamous, open, polyamorous) not measured ("cheated on" implies norm breach, though)

Table 2: *Biological Factors*

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Zietsch et al. (2015) [empirical]	extrapair sex: How many different sexual partners did you have in the last 12 months? – participants were in a 1-year relationship at least → everyone indicating more than one must have had extrapair sex then	test of the between-sex genetic correlation hypothesis → genetic factors that predispose male extrapair mating indirectly affect females to (as a byproduct)	same sample in both studies: 7,378 Finnish twins and their siblings in long-term relationships (at least one year) aged from 18 to 49 ($M = 29.8$)	Study 1: questionnaire measuring extrapair mating and demographics / Study 2: DNA-sampling (via mailed self-collection kits)	Study 1: intraclass tetrachoric correlations; genetic model fitting / Study 2: linkage-analyses for specific regions of the oxytocin receptor gene (OXTR, 12 SNPs) and the arginine vasopressin 1A receptor gene (AVPR1A, 7 SNPs)	Study 1: 9.8% of men and 6.4% of women reported two or more sexual partners within past year; no effects of age; intraclass tetrachoric correlations to extrapair mating were higher for female MZ twin pairs than female DZ twin/sibling pairs, same results for males → indicating genetic component of extrapair sex; low DZ-extrapair mating correlations suggest nonadditive genetic influences [contrary to additive effects, where genes influence the phenotype independently, non-additive effects are more complex and are labeled as such, when genes interact (epistasis)] which is confirmed by genetic analyses: no additive genetic but moderate genetic nonadditive effects emerge for men (.62) and for women (.40); near-zero cross-sex-correlations contradict the main hypothesis / Study 2: gene-based tests (SNPs were combined) showed significant effect of AVPR1A on extrapair sex only in women, no effect of OXTR	(+) large, heterogeneous sample; (+) large number of genetic regions analyzed; (-) relationship agreement not measured

Note.

The Table contains only information relevant to infidelity – hence, other research questions, measures, and results of the reviewed studies are not reported.

6.3 Evolutionary Factors

Some empirical studies on infidelity have worked with an evolutionary explanatory approach. An overview of studies conducted in this area and their main results can be found in Table 3 (p. 84).

6.3.1 Evolutionary Psychology and Sexual Strategies Theory

Evolutionary psychology focuses on questions regarding how our ancestors adapted psychologically to evolutionary pressures that threatened survival throughout their development (Buss & Schmitt, 1993; Buss, 1995). It is applicable, among several others like parenting and group living (Buss, 2005), to the topic of mating, especially mate selection, mate preferences, mating strategies, and globally sexual behavior, often with a particular emphasis on sex differences in these areas. This framework goes back to Charles R. Darwin (1859, 1871a, 1871b) and his groundbreaking development of evolutionary theory. He proposed several mechanisms that triggered the evolution of species: *Natural* and *sexual selection*, whereas the latter is defined as follows: “This depends, not on a struggle for existence, but on a struggle between the males for possession of the females; the result is not death to the unsuccessful competitor but few or no offspring.” (Darwin, 1859, p. 88).

While *natural selection* happens involuntary and depends mostly on environmental conditions, sexual selection is a more or less conscious process (depending on the species of interest). In his 2-volumed book *The descent of man* (1871a, 1871b) Darwin elaborates further on sexual selection and distinguishes between two separate components: *Intrasexual selection* refers to the competition between rivals, two members of the same sex, for a mate of the opposite sex. In humans, intrasexual selection could be reflected for example in a physical fight between two male rivals or even in a woman’s uterus, also known as human sperm competition (Baker & Bellis, 1993a, 1993b, see also the section below). *Intersexual selection* refers to the process of choosing one mate over other potential mates (Hergert, 2016b deals with this process).

According to the *theory of parental investment* (Trivers, 1972) and the *sexual strategies theory* (Buss & Schmitt, 1993), that both build upon Darwins’ work, females should mostly be the sex who choose their mates in humans, whereas males should be competing for them. The reason behind that assumption is that females have lesser opportunity to procreate than males and are sexually available only for a limited amount of time (over the course of one month and during their lifetime). In addition, women’s minimal parental investment is still enormous (nine months of pregnancy) compared to the minimal investment of males (provide motile sperm) – therefore, females have to make absolutely sure that the offspring is healthy and able to survive which they can achieve by being “choosy” about their sexual partners. Note that not the biological sex is a predictor for the role of whom in the process of sexual selection but the relative investment of each sex into the offspring (Buss & Schmitt, 1993). Admittedly, the variability in the male paternal investment in humans is very high, ranging from deserting a pregnant woman to taking parental leave with the newborn while the woman pursues her professional career. Therefore, men have certain possibilities to choose a sexual and/or romantic partner in the human society as well. Still, women are supposed to be the “choosier” sex, at least during their fertile years of life (Buss & Schmitt, 1993; Trivers, 1972).

As can be seen above, sexual strategies theory is mainly concerned with explaining sex differences in human mating behavior from an evolutionary psychological angle (Buss & Schmitt, 1993; Buss, 2005). It allows predictions regarding mating strategies (e.g., men should be more oriented towards short-term mating than women), mate preferences (e.g., women should be choosier than men in both short- and long-term mating decisions; women should be more interested in resources whereas men should lay more emphasis on physical attractiveness; see Hergert, 2016b) and behavior in relationships (men should react with more distress on sexual infidelity whereas women should be more distressed on emotional infidelity of a partner).

Regardless of trends in mating strategies, both men and women commit to long-term bonds because long-term bonds have proven to be helpful in maximizing the chance of successfully raising offspring. Staying in the evolutionary psychological framework, sexual and emotional infidelity were adaptive throughout the evolution of humans as well: From a female point of view, sexual infidelity ensures the best genetic material for her offspring –

the good-genes hypothesis – therefore affecting only the quality of the offspring (Gangestad & Thornhill, 1997).⁴ Additionally, female emotional infidelity might serve as a check, whether another male might fulfill her needs, for example in terms of resources, commitment, and parenting qualities better than her current partner. From a male point of view, sexual infidelity results in maximizing his reproductive process, therefore affecting only the quantity of potential offspring (Gangestad & Thornhill, 1997). Equally, men’s emotional infidelity might also serve as a check, whether another female fulfills his needs, for example in terms of physical attractiveness or willingness for short-term-mating better than his current partner.

Several studies tested the good-genes hypothesis: The starting point marks the study of Gangestad and Thornhill (1997) who analyzed 203 male-female pairs. All participants filled out a questionnaire, were photographed and their facial attractiveness was rated from independent judges. Finally, their body was measured on several bilateral characteristics, such as foot width and ear length, to determine the degree of fluctuating asymmetry with smaller values indicating higher genetic fitness. Indeed, the extent of fluctuating asymmetry negatively predicted the number of extrapair sex partners men reported as well as the number of times men themselves were extrapair sexual partners of other women that were currently in a romantic relationship. In women, fluctuating asymmetry had no predictive validity for both criteria. The results imply that men with good genetic fitness are more successful in finding short-term sexual mates and they are more likely to be chosen as a short-term sexual mate by women who are romantically committed to another male. Similarly, Hughes, Dispenza, and Gallup Jr. (2004) report significant correlations between the number of extrapair sex partners and opposite-sex ratings of voice attractiveness as well as indicators of sexual dimorphism in their small sample of undergraduates: While waist-to-hip ratio was significantly associated with the number of extradyadic sexual partners in women, it was the shoulder-to-hip ratio in men. Among a large number of indices for physical attractiveness (symmetry, averageness, sexual dimorphism), only other-rated masculinity of male faces and averageness of male bodies were positively associated with the number of extrapair sexual partners (Rhodes, Simmons, & Peters, 2005). No significant effects emerged for female participants on the various attractiveness-markers. All these results can be interpreted in two ways: They mostly concur with the good-genes hypothesis. In addition, the results indicate higher mating success of physically attractive persons, a characteristic that signals high genetic quality, especially in men.

6.3.2 Human Sperm Competition

What points in the direction of an evolutionary root of female sexual infidelity is the process of *human sperm competition*, proposed by R. L. Smith (1984). In short, human sperm competition denotes the intrauterine battle of spermatozoa from different men for fertilization of the ovum. The theory is based on the theory of sperm competition that G. A. Parker (1970) originally introduced for insects.

Research on the topic deals mainly with female sexual infidelity and male adaptations to threats of sperm competition. The theory was proposed within the field of (human) behavioral ecology, a field that originated in biology and largely ignores the role of psychology (Plotkin, 2004). Human behavioral ecologists investigate how ecological conditions may have shaped human behavior (Nettle, Gibson, Lawson, & Sear, 2013). However, evolutionary psychologists have attempted to link sperm competition to the psychology of human sexuality (e.g., Goetz et al., 2005; Goetz, Shackelford, Platek, Starratt, & McKibbin, 2007; Shackelford et al., 2002; Shackelford, Goetz, McKibbin, & Starratt, 2007). Empirical evidence backs the existence of the process of sperm competition in humans: First, spermatozoa are able to survive the inhospitable environment of a female’s uterus at least five days (Barrett & Marshall, 1969). If a woman was to have unprotected intercourse with more than one man around the time she is fertile and gets pregnant, it is unclear who the father is, at least without DNA-testing. Estimates on discrepancies in parenthood (so-called cuckoldry) suggest that between 0.8% and

⁴H. E. Fisher (1994) adds three more potential explanations why female sexual infidelity might have been adaptive throughout human evolution from an anthropological point of view: First, when traveling and away from the primary partner, sexual infidelity could have helped a woman being taken care of (supplementary subsistence, p. 91). Second, another male partner could have functioned as a back-up partner, in case the primary partner died unexpectedly. Third, apart from ensuring the best genetic quality for the offspring, having several children from several partners would have enlarged the genetic pool and therefore enhanced the chances of survival for at least some of them.

30% (Mdn=3.7%, $n = 17$ studies) of children have a biologically different father than the person who assumes to be the father (Bellis, Hughes, Hughes, & Ashton, 2005) Second, some scholars argue that the amount of deformed spermatozoa in mammalian ejaculate should not be viewed as damaged and malfunctioning. Rather, they serve a specific purpose as so-called “kamikaze sperm” to block the way for sperm of other males (e.g., by forming plugs from intermeshed and dried out deformed spermatozoa) and therefore support the “egg-getters” in their quest to fertilize the egg (Baker & Bellis, 1988, 1989a, 1995). However, to date there is only limited scientific evidence for the kamikaze sperm hypothesis in humans (Baker & Bellis, 1995 found some evidence, Moore, Martin, & Birkhead, 1999 failed to replicate these results) and the notion that deformed sperm in fact does represent failed, damaged spermatozoa prevails.

Although the kamikaze sperm hypothesis may not be accurate, there is evidence for the global process of sperm competition in humans: A study of Baker and Bellis (1989b) has shown that the number of sperm ejaculated during copulation of a romantic couple is strongly negatively related with the time, the couple has spent together since their last copulation. The logic behind the corroborated hypothesis is that men inseminate less sperm when they do not have to fear double-mating (mating with two or more men within a period of five days) of their partner. Larger quantities of sperm are ejaculated to enhance the possibility of impregnating the female partner through sheer outnumbering the sperm ejaculated by a potential rival. Furthermore, another study found striking evidence that sperm competition in humans might be promoted by females. In their large sample of paired women, Bellis and Baker (1990) found a peak of the occurrence rates of extrapair copulation (EPC) in the pre-ovulatory, fertile phase while intrapair copulation (IPC) had its peak during the infertile third phase of a women’s cycle. Analyses regarding the specific cycle day, EPCs and IPCs were reported to have occurred, revealed a highly positive association between EPCs, but not IPCs, to the probability of conception. This association was mainly produced by EPCs that were classified as double-matings. Finally, EPCs were less likely to have involved the usage of contraceptives. Altogether, these results indicate that if a women is sexually unfaithful, she is more likely to do so during her fertile days.

With several datasets, Baker and Bellis (1993a, 1993b) replicated the negative association between the time a couple spent together and number of sperm inseminated during intercourse and further found a negative association between time spent together and EPC. The latter finding supports the hypothesis that the male insemination tactic is appropriate because the risk for sperm competition is indeed higher, when they do not spend much time with their female partners. Furthermore, the authors showed that orgasmic patterns of women vary considerably between and within females: From non-copulatory orgasms (nocturnal, masturbatory, with female partner, with male partner) to pre- and postcopulatory orgasms and orgasms during copulation. The authors collected samples of flowback, a mixture of ejaculate and cervical mucus, to estimate the association between timing of orgasm and level of sperm retention. Their data favors the upsuck-hypothesis (Fox, Wolff, & Baker, 1970), indicating that the female orgasm, which is accompanied by rhythmic contractions of the pelvic floor muscles, generates a blow-suck mechanism that transports ejaculate to the uterus to facilitate conception and therefore enhances the level of sperm retention. Additional analyses revealed that, according to self-reported orgasmic patterns, EPCs were associated with higher levels of sperm retention than IPCs. The authors conclude that the variability in orgasmic patterns represents a powerful female tool for ejaculation manipulation that seems to favor sperm of extradyadic sexual partners. Results of Thornhill, Gangestad, and Comer (1995) suggest that a woman’s climax has yet another function, besides simply regulating the level of sperm retention: They investigated 86 sexually active heterosexual couples and estimated the degree of genetic fitness via measuring fluctuating asymmetry. Women with male partners that had a higher genetic fitness (lower fluctuating asymmetry) reported a higher frequency of copulatory orgasms than women with a partner that exhibited higher degrees of fluctuating asymmetry, even with several other factors controlled (e.g., age, SES of male partner). Other research also suggests that women tend to become sexually unfaithful with extradyadic partners that are genetically more fit than their primary partner (or genetically more dissimilar, see Garver-Apgar et al., 2006). Altogether, the results of Thornhill et al. (1995) and Baker and Bellis (1993b) back this assumption strongly.

Shackelford et al. (2002) interpret their results (which were partially replicated by Shackelford et al., 2007) that men who have been separated longer from their female partners tend to rate them as physically more attractive and express a greater desire to mate with them as a psychological adaptation to an increased risk of sperm competition. Furthermore, Goetz et al. (2005) demonstrated that men with higher risks of sperm competition exhibit more *mate retention* tactics (Buss, 1988) such as verbal or physical possession signals and tactics of *semen-displacement* (Gallup Jr. et al., 2003) such as deeper and harder thrusts during the following intercourse. A more recent study investigated whether performing oral sex can be viewed as a mechanism of infidelity detection: Indeed, men with higher risks of recurrent sperm competition did express a greater interest in and spend more time performing oral sex on their female partner (Pham & Shackelford, 2013). Interestingly, the authors failed to find a similar effect in heterosexual women (with the predictor risk of partner infidelity, Pham, Shackelford, & Sela, 2013). However, in both studies recurrent risk of sperm competition or risk of partner infidelity was operationalized identically as a composite of self- (how they see their partners) and other-driven (how they think others see their partners) attractiveness ratings (physically and sexually) of their romantic partners. This criterion maybe captures some of the constructs gist and it may be sufficient for the testing of evolutionary hypotheses. However, it is clearly deficient from a psychological point of view as it only captures phenotypical characteristics and completely disregards aspects like the partners personality (see section 6.5, p. 99) and situational factors (see section 6.6, p. 116).

6.3.3 Women's Changes in Mate Preferences During Their Ovulatory Cycle

Since the end of the 1990s, the dependance of women's mate preferences from their ovulatory cycle has gotten a lot of research attention. Although hormonal changes during the menstrual cycle most certainly play a role in these shifts, the topic is described separately from section 6.2.3 above because the large body of empirical literature on the topic is located mainly in the psychological, not the biological field. To date only preliminary results on specific effects of hormones on cycle shifts exist – the underlying process is not yet understood (see Gildersleeve, Haselton, & Fales, 2014 for a short overview). The starting point of this branch of research was marked by yet another sweaty t-shirt experiment conducted by Gangestad and Thornhill (1998). They proposed the *ovulatory shift hypothesis* that predicts cycle shifts in the direction that fertile women will sexually prefer characteristics in men that indicate good genes more than woman who are within an infertile period of their cycle. Indeed, the authors reported that women near their period of peak fertility preferred the scent of males who were physically more symmetrical (which is seen as a phenotypic marker of genetic fitness). No such an effect occurred for the preferences of normally ovulating women with low fertility at the time the study was conducted and women who took oral contraceptives.

In addition to the basic prediction of the ovulatory shift hypothesis, Gildersleeve et al. (2014) assume: These cycle shifts will be weaker or even non-existent when characteristics indicating good qualities as a long-term partner and desirability as long term partner are focal variables instead of sexual attraction. Further, the hypothesis predicts that women will not exhibit a cycle shift in their sexual attraction to men that indicate good long-term-partner qualities. The assumptions behind these predictions are that indicators of good genes are beneficial for increasing reproductive success which is especially relevant during the fertile periods of the menstrual cycle because it marks the only possibility per month of getting pregnant and carrying on good genes in the own offspring. Also, forming a long-term bond with a man who seems to be good at parenting is always a reproductive advantage and should therefore not be associated with specific phases of the menstrual cycle.

Why have women not developed constant preferences for genetic fitness then? Conjectures are that the ovulatory preference shift evolved in the ancestors of humans, not humans themselves, who did not live socially monogamous – if this is the case, the effect in humans could be interpreted simply as a rudiment. The *double mating hypothesis* (Pillsworth & Haselton, 2006) adds sexual infidelity to the equation by suggesting that throughout evolution the most advantageous strategy was mating and long-term bonding with a partner that has good genes as well as the necessary social characteristics to qualify as a good parent. However, due to uneven distributions of these characteristics in the population of men, the sexual strategy of double-mating that is supported by cycle shifts in mate preferences evolved: Women would establish long-term bonds with socially

adequate men but mate outside their primary relationship with supposedly healthy and good genes-carrying men. The double-mating hypothesis is in line with the theory of human sperm competition, whereas the first investigates sexual infidelity from a mainly biological and the latter from a mainly psychological, strategic perspective.

Since the initial study of Gangestad and Thornhill (1998) a multitude of studies investigating these shifts on various other potential indicators of genetic fitness, has been conducted. Indicators were for example facial symmetry, scent, structural facial, body and vocal masculinity (Gildersleeve et al., 2014; Wood, Kressel, Joshi, & Louie, 2014). In addition, several studies have investigated cycle shifts on characteristics that let a man appear as a good long-term partner such as warmth, kindness, trustworthiness, and parenting ability (Gildersleeve et al., 2014; Wood et al., 2014). One particular failed replication of cycle shifts in preferences for facial masculinity (Harris, 2011) sparked a debate (DeBruine et al., 2010; Gildersleeve et al., 2013; Harris, 2012; Harris, Chabot, & Mickes, 2013) between two positions: Whereas Harris (2012) and Harris et al. (2013) question the existence of cycle shifts and critically argue that effects are mainly artifacts due to researchers degrees of freedom in the process of designing a study and analyzing the data, DeBruine et al. (2010) and Gildersleeve et al. (2013) strongly advance the view that these cycle shifts indeed exist and point out several misconceptions of the other positions. Meanwhile, two meta-analytical (Gildersleeve et al., 2014; Wood et al., 2014) reviews might shed some light on the debate. Unfortunately, they arrive at different conclusions, although they are mainly based on the same studies and effects: Gildersleeve et al. (2014) reveal small-sized cycle shifts in sexually attractiveness ratings by women of male traits associated with genetic fitness and no cycle shifts when women were rating characteristics as a long-term partner – both results in line with predictions of the ovulatory shift hypotheses. In contrast, Wood et al. (2014) found no indications of cycle shifts, neither regarding sexual attractiveness ratings nor desirability as long-term partner ratings (the latter result conform to Gildersleeve et al., 2014). Although Gildersleeve et al. (2014) analyzed the data with a slightly superior statistical method and strategy, definite proof for the (non-)existence of cycle shifts in mate preferences seems to still be lacking.

Based on the premise that cycle shifts in mate preferences actually exist, Klapilová et al. (2014) hypothesized a lower rate of extradyadic sex among women under the influence of oral contraceptives, because they hormonally suppress ovulation and thereby fertility. However, they and others (Havlicek, Husarova, Rezacova, & Klapilova, 2011) failed to find such an effect in their large sample of Czech women in reproductive ages: Only within the group of women who admitted extradyadic sex within the past year, those using oral contraceptives (OC) reported a significantly lower number of one-night stands than the women not taking the pill.

Table 3: Evolutionary Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Gangestad and Thornhill (1997) [empirical] → see also Table 5 (p. 115)	extrapair sex: Did extrapair copulation (EPC) occur during current relationship and ever? (yes/no) and number of EPC-partners; number of times participants themselves were extrapair-partners	Does fluctuating asymmetry predict EPC?	203 male-female pairs (at least one undergraduate); men: 17 to 40 years old ($M = 21.1$); women: 17 to 39 years old ($M = 20.0$); relationship duration between one and 108 months ($M = 20.6$)	questionnaire; measurements of males to determine fluctuating asymmetry; other-rating of facial attractiveness	multiple regression analysis	Men: $M = 1.62$ EPC partners ($SD = 2.67$, $range = 0 - 16$); women: $M = 0.50$ EPC partners ($SD = 0.99$, $range = 0 - 7$). Men: have been EPC partner with 0.76 partners ($SD = 1.99$, $range = 0 - 13$) women have been EPC partner with $M = 0.33$ partners ($SD = 1.66$, $range = 0 - 3$). Fluctuating asymmetry (negatively) predicted number of EPC partners and number of times an EPC partner in men, not in women (no effects of age, SES, and facial attractiveness for either sex). Facial attractiveness predicted number of times an EPC partner in men, not in women. In women, only anxious and avoidant attachment styles positively predicted number of EPC partners.	(-) relationship agreement (monogamous, open, polyamorous) not measured
Hughes et al. (2004) [empirical]	number of extrapair copulation (EPC); number of times having been extrapair-partner	Does voice attractiveness and body configuration predict sexual behavior including EPC?	146 undergraduates (76 females) aged between 18 and 50 ($M = 20.9$ years)	participants recorded voice sample and served as raters of voice attractiveness; body measurements were taken to create Shoulder-to-Hip ratio, Hip-to-Waist ratio, Body-Mass-Index; subsample (34 females, 43 males) filled out questionnaire regarding sexual history including number of EPC, number of times being EPC-partner	Pearson correlation	Men: significant associations between number of EPC partners and opposite- ($r = .40$) and same-sex ($r = .36$) ratings of voice attractiveness, SHR ($r = .49$), age at first sex ($r = -.37$), number of sex partners ($r = .78$, but confounded with criterion); no significant association to WHR, BMI, age of first masturbation (similar for correlates of number of times having been EPC-partner except n s with same-sex ratings)/ Women: significant associations between number of EPC partners and opposite-sex ($r = .37$) ratings of voice attractiveness, WHR ($r = -.35$), number of sex partners ($r = .49$, but confounded with criterion); no significant association to SHR, BMI and age of first sex and masturbation (similar for correlates of number of times having been EPC-partner except significant association also with same-sex ratings of voice attractiveness)	(-) voice models and raters not independently sampled; (+) several indices of body configuration not cited; (-) relationship agreement not measured
Rhodes et al. (2005) [empirical] → see also Table 5 (p. 115)	extrapair copulation (EPC): number of times the participant had engaged in sexual intercourse with a third person while already in a relationship	Is attractiveness related to mating success including EPC?	models: 362 heterosexuals (166 males without facial hair), males aged between 18 and 47 ($M = 23.4$ years), females aged between 17 and 51 ($M = 22.9$ years) / raters: 227 students (109 males), males aged between 16 and 41 ($M = 20.3$), females aged between 16 and 55 ($M = 19.5$)	models: filled out questionnaires measuring sociodemographics, history of sexual behavior (first intercourse, number of sexual partners), number and duration of relationships, EPC, SOI-Attitude (something similar at least) + body measurements for fluctuating asymmetry (FA); photographs taken of faces and bodies (without head) / raters rated face and body images on four aspects of appearance: attractiveness, distinctiveness (reverse-scored for averageness), symmetry and sexual dimorphism (masculinity or femininity - depending on the sex of the model)	non-parametric Mann-Whitney-U tests for sex differences in reported behaviors; Kendall's rank-order correlation (τ) controlling for age	Men: $M = 1.5$ EPC (range: 0-50); Women: $M = 0.50$ EPC (range: 0-15) - difference in EPC between sexes n s; significant association with SOI-attitude ($r_{\sigma} = .27$, $r_{\eta} = .13$); significant association between EPC and rated masculinity of male bodies ($\tau = .10$), rated averageness of male bodies ($\tau = .15$); no significant associations of EPC and face/body attractiveness ratings in men and women, sexual dimorphism (masculinity in men, femininity in women) of faces in men and women, femininity of female bodies, height of men and women, rated symmetry of faces and bodies in men and women, measured body asymmetry of men and women	(+) large sample of models and raters; (+) several indices of attractiveness; (-) relationship agreement not measured
Human sperm competition							
Baker and Bellis (1989b) [empirical]	no infidelity measured; risk of double-mating of the female: time a couple has spent together in between copulations	Does the number of sperm ejaculated during intercourse depend on the time a couple spends together?	15 male-female pairs with average sexual activity	questionnaire; two ejaculate samples: one copulatory, one masturbatory	rank-order correlations; linear regression	Strong negative association between number of ejaculated sperm during copulation and time spent together since last intercourse ($r = -.95$; $R^2 = .79$). No significant association between time and masturbatory sample sperm count.	(-) small sample; (-) insufficient sample description
Bellis and Baker (1990) [empirical]	extrapair copulation	Do women promote sperm competition?	non-random sample of 2,708 females with main sexual partner (recruited through magazine ad)	questionnaire: Was the last copulation extrapair (EPC) or inpair (IPC)?; information about cycle length and day of last copulation	non-parametric G-test and non-parametric ANOVA	5.98% reported EPC as their last copulation; differences in distribution of IPC and EPC over the menstrual phases (I menses; II proliferative; III secretory); IPCs have peak in III; EPCs in pre-ovulatory phase; EPCs but not IPCs show highly positive association ($r = .91$) with probability of conception which is produced exclusively by double-mating EPCs; no effects of contraception; EPCs were less likely to involve usage of contraceptives	(+) large sample; (-) insufficient sample description; (-) relationship agreement (monogamous, open, polyamorous) not measured

Table 3: Evolutionary Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Baker and Bellis (1993a) [empirical]	infidelity not measured in the pair sample (see Baker & Bellis, 1989b); in the survey: extrapair copulation	Do men show ejaculation patterns conform with sperm competition theory?	35 pairs; UK-wide survey of female sexual behavior ($N = 3,679$; possibly the same sample as in Bellis & Baker, 1990); 13 to 72 years old (mode=21)	35 pairs: ejaculation samples; IPC, masturbatory; questionnaire from pairs and UK-wide sample	analyses based on medians; non-parametric tests; (multiple) linear regression	Negative association between time spent with partner and EPC \rightarrow time apart from partner = higher risk for sperm competition; Successful replication of Baker and Bellis (1989b); males ejaculated fewer sperm during IPC the more time they spent with their partner (independent effect of interval between IPC)	(+) replication of previous findings; (+) first result is based on large sample; (-) relationship agreement (monogamous, open, polyamorous) not measured
Baker and Bellis (1993b) [empirical]	extrapair copulation (EPC)	Do females show ejaculate manipulation according to sperm competition theory?	same samples as in Baker and Bellis (1993a)	35 pairs: ejaculation samples; IPC, masturbatory (condom) & flowback samples after IPC from women; 35 pairs and UK-wide sample: questionnaire about orgasm pattern (before, during, after ejaculation of copulatory partner vs. masturbatory vs. with a female partner); last intercourse: EPC or IPC	analyses based on medians; non-parametric tests; (multiple) linear regression	5.53% (75 of 1,357) of hormonally "normal" females (no contraceptives) reported EPC as last copulation; estimated level of sperm retention (derived from reported orgasmic pattern) during EPC was significantly higher than during IPC	(+) large sample; (-) relationship agreement (monogamous, open, polyamorous) not measured
Shackelford et al. (2002) [empirical]	no infidelity measured	Have men developed psychological adaptations to the threat of human sperm competition?	194 paired men from universities and surroundings in USA and GER; $M = 25.2$ years old; $M = 55.9$ months of relationship duration	short questionnaire	multiple linear regression	Men who have spent more time apart from female partner since last copulation rated them as 1) more attractive for themselves and other men; 2) more sexually interested in themselves; 3) showed greater interest in intercourse; failed predictions: no effects of time spent apart on estimate of how attracted female partner is to other men and of hypothetical distress after denial of request for intercourse	(-) small sample; (-) mostly undergraduates; (-) cross-sectional
Goetz et al. (2005) [empirical]	no infidelity measured	Have men developed psychological adaptations to the threat of human sperm competition?	305 paired men from universities and surroundings; $M = 25.8$ years old; $M = 52.6$ months of relationship duration	questionnaire	correlations	Risk of sperm competition was positively associated with use of mate retention tactics ($r=.14$) and semen-displacement behavior ($r=.33$).	(-) operationalization of risk for sperm competition was composite of physical attractiveness, surgency, and openness of the female partner as rated by the male partner
Goetz et al. (2007) ^a [narrative literature review]		Question: What are biological, physiological, sexual, and psychological adaptations to human sperm competition?			multiple linear regression	Answer: physiological adaptations: ejaculation manipulation by men; manipulation of sperm retention by women; penis as semen displacement device / psychological adaptations: male jealousy; mate retention tactics; semen displacement tactics; male preference for unmated short-term sexual partner; male's sexual coercion	
Pham and Shackelford (2013) [empirical]	no infidelity measured	Can oral sex performed by men be seen as a strategy for infidelity detection?	231 paired men, $M = 25.2$ years old; $M = 43.4$ months of relationship duration; had sex with partner at least once in the past week	questionnaire	multiple linear regression	correlations, men with higher recurrent risk of sperm competition (computed as a mean of how sexually and physically attractive the men view their partner and how they think other men view their partner) expressed more interest in performing oral sex and did so for a longer duration while controlling for relationship length, relationship satisfaction and duration of intercourse	(-) operationalization of risk for sperm competition was composite of physical and sexual attractiveness of the female partner rated from a self- and other-male perspective by the male partner
Changes in mate preferences during ovulatory cycle							
Gildersleeve et al. (2014) [meta-analysis]		Question: Do women exhibit shifts in mate preferences across the ovulatory cycle? Sample: 134 effects from 38 published and 12 unpublished studies Statistical method: multilevel-meta-analysis (level 2=study; level 1=effects); funnel plots				Answer: Yes, they do. Cycle shifts when evaluating short-term attractiveness (small effect: $g = .21$, $SD = .06$); No shifts when evaluating desirability as long-term partner.	(+) advanced statistical methods; (+) better analysis strategy than Wood et al. (2014)
Wood et al. (2014) [meta-analysis]		Question: Do women exhibit shifts in mate preferences across the ovulatory cycle? Sample: 102 effects from 52 published and 7 unpublished studies Statistical method: subgroup analyses and meta-regressions; funnel plots				Answer: No, they do not. No effects of cycle day on evaluation of short-term attractiveness and desirability as long-term partner.	

Table 3: Evolutionary Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Havlicek et al. (2011) [empirical, partially longitudinal (?), dyadic data] → see also Tables 4 (p. 98) and 5 (p. 115)	extradyadic sexual intercourse / falling in love with someone else than the current partner	What are correlates of extradyadic sex in heterosexual Czech couples?	86 childless, cohabiting (from three to 106 moths), long-term (at least two years, from 29 to 144 months) couples from the Czech Republic between 18 and 39; mean age of females was $M = 26.6$ years and of males $M = 28$ years	questionnaire: sociodemographics, sexual and emotional relationship satisfaction, sociosexuality, extradyadic sex, falling in love with someone else than the current partner, extradyadic behavioral intentions (EBIS, Buunk, 2011)	McNemar-test; ANOVA; MANOVA	EDS: 16.5% of men and 20.2% of women reported EDS in current relationship and 33.9% of men and 43.1% of women reported EDS during their previous relationships; <i>no association</i> between EDS and age, length of cohabitation and relationship, use of hormonal contraceptives, past EDS in previous relationships, mother's infidelity, parental divorce; <i>significant effects</i> on EDS: of having knowledge of or suspecting partners' EDS, sociosexuality (+, $\eta^2 = .074$), EBIS (-, $\eta^2 = .19$), relationship quality in women (-), sexual satisfaction (-), extradyadic sex of previous romantic partner/s (+), father's infidelity in men (+) / falling in love with someone else: 15.3% of men and 26.2% of women reported extradyadic emotional involvement during current relationship; <i>no association</i> between falling in love with someone else and age, length of cohabitation, use of hormonal contraceptives, sociosexuality, relationship quality; <i>significant effect</i> on falling in love: relationship length (+, $\eta^2 = .046$), EBIS in women (+, $\eta^2 = .059$), sexual satisfaction (-)	(-) small BUT (+) heterogeneous sample; (+) distinction between sexual and emotional extradyadic behavior; (-) relationship agreement not measured; (-) inappropriate analysis strategy (univariate instead of multivariate + dyadic nature of data not considered, no tests for sex differences); (-) not enough details on data characteristics; which variables were measured when remains unclear; variables presented and analyzed here were probably not measured longitudinally, though; (-) outdated SOI-measure used – total score can be confounded with EDS (depending on when the EDS occurred)
Klapilová et al. (2014) [empirical, representative sample (CZ, ?)] → see also Table 4 (p. 98)	extrapair-sexual behavior: reported number of sexual partners during the last year – 1	Does use of oral contraceptives predict extra-pair sexual behavior?	subsample of 3,858 women = representative sample of Czech women in terms of age, economic status, place of residence, education: inclusion criteria were being of reproductive age (between 18 and 51), having no history of hormonal or reproductive problems, being in a romantic relationship of at least 12 months, using contraceptives in form of oral contraceptiva (OC) or using none (NU) – $N_{final} = 1,155$ (493 OC)	questionnaire: Czech National Survey of Sexual Behavior	zero-inflated Poisson regression	13.4% reported one or more extradyadic sexual partner(s) during past year; significant and consistent predictors of extradyadic sexual partners (yes/no and number) were sexual satisfaction (-), having children (+); use of oral contraceptiva did not predict extradyadic sexual activity; small and inconsistent effects of relationship length (-) and age (+); among women who reported extradyadic sex, OC-users reported more one-night-stands than NU	(+) large, nearly representative sample; (-) unnecessary dichotomization of variables (e.g., sexual satisfaction); (-) cross-sectional; (-) relationship agreement not measured

Note.

The Table contains only information relevant to infidelity – hence, other research questions, measures, and results of the reviewed studies are not reported.

^a Several other narrative literature reviews on this topic were published between 2001 and 2007, all first-authored by either Aaron T. Goetz or Todd K. Shackelford. I have intentionally not cited them because they do not add on to the understanding of the process.

6.3.4 Summary and Critique

An exhaustive body of biological and psychological publications with regard to sperm competition in humans as well as nonhumans has been published since 1970. Although the question whether sperm competition and therefore female infidelity has been an important factor throughout evolution that provided enough pressure for the development of certain aspects of human sexual behavior and physiology is still not finally answered, there is some compelling evidence that it may have had some impact (Goetz et al., 2007). However, this branch of research can only explain effects of female infidelity and give reasons why female infidelity is adaptive. No statements can be made regarding male sexual infidelity or emotional infidelity of both sexes. The same argument holds true for changes in mate preferences during the ovulatory cycle. Whether these shifts do or do not exist, they only explain (the timing of) female sexual infidelity.

While the theoretical framework of evolutionary psychology provides arguments for both, emotional and sexual infidelity in men and women, it only focuses on sex differences regarding the motivations and reasons for and reactions to the behavior. Psychological, cultural or other factors that might contribute to the behavior, regardless of the biological sex are almost completely neglected. With this neglect of interindividual differences and from this theoretical viewpoint it is hardly possible to find an answer to the question why some men and women engage in sexual and/or emotional unfaithful behavior while others do not. However, the most problematic and major objection is that evolutionary psychology can hardly be verified and falsified (e.g., Buller, 2009; Gould, 1997; Plotkin, 2004). For more comprehensive critical analyses of evolutionary psychology and its flaws, please consult Panksepp and Panksepp (2000), Stotz and Griffiths (2002), and Rindermann (2003). Evolutionary psychological theories are very intriguing because at first glance they seem so simple and this is what a good theory should be: simple. However, to really prove these kinds of theories actually requires a lot: Evolutionary psychological theorists would need to have exact knowledge of environmental conditions of our ancestors, which archeology and paleontology hardly can accomplish, they then need to be able to distinguish allegedly evolved psychological adaptations from other potential influences (like changes in behavior as a result of random genetic mutation, exaptations or spandrels, see also Gould, 1991 and Buss, Haselton, Shackelford, Bleske, & Wakefield, 1998) and finally, they would have to show that the psychological mechanism resulted only because of environmental conditions of our ancestors (Plotkin, 2004).

As evolutionary psychologists argue (Buss, 1995; Confer et al., 2010) this is a challenging but certainly not impossible aspect, because if you picture evolutionary theory as a system of hierarchical levels, it is a question of the level at which hypotheses are derived and tested: From the most general level, namely Darwinian evolutionary theory towards the middle-level of evolutionary theories (e.g., theory of parental investment and sexual strategies theory) towards even more specific evolutionary hypotheses, and finally, towards the most specific predictions derived from specific hypotheses (Buss, 1995). Nevertheless, this line of argumentation seems to imply that the empirical evidence evolutionary psychologists collect, only represents small leads or single pieces of a much larger puzzle that might be equally good interpretable from another theoretical angle.

6.4 The Deficit Model of Infidelity

An overview of the most important studies that employed the so-called “deficit model of infidelity” (Thompson, 1983, p. 10) are noted tabularly in Table 4 (p. 98). The basic assumption of this approach is that only when there are deficits in the primary relationship, people become sexually unfaithful. Please note that neither are most of the studies arguments and research agendas specifically designed for this approach nor are they explicitly labeled accordingly. However, I classified the following studies into this approach because of their key variables.

6.4.1 Dissatisfaction

Usually, two types of satisfaction in a romantic relationship and their respective effects on infidelity are distinguished: Global relationship satisfaction (sometimes labeled emotional satisfaction) and sexual relationship satisfaction.

The results in this area are pretty clear and consistent: Most of the studies that investigated effects of

satisfaction on infidelity report negative effects of emotional as well as sexual relationship satisfaction on sexual infidelity (e.g., recent studies of Adamopoulou, 2013; Allen et al., 2008; Atkins, Yi, Baucom, & Christensen, 2005; Atkins & Kessel, 2008; A. D. Fisher et al., 2009; Foster et al., 2014; Havlicek et al., 2011; Klapilová et al., 2014; Mark, Janssen, & Milhausen, 2011; Plack, Kröger, Allen, Baucom, & Hahlweg, 2010; Schmidt, Matthiesen, Dekker, & Starke, 2006; Træen & Martinussen, 2008; Whisman, Coop Gordon, & Chatav, 2007). Some studies report that sexual dissatisfaction is a more important predictor of infidelity in men while emotional dissatisfaction is more important in women (e.g., Allen et al., 2008; Mark et al., 2011; Omarzu, Miller, Schultz, & Timmerman, 2012). However, as Blow and Hartnett (2005a) already pointed out, the cross-sectional nature of most of the studies in the field result in a “chicken-or-the-egg paradox” (p. 189) – is dissatisfaction in a relationship cause or consequence of sexual infidelity? Both directions are theoretically justifiable: On the one hand, a person that is dissatisfied with his or her relationship might stray to fulfill certain needs that remain unsatisfied in the primary relationship or is in search of a new partner while maintaining the unhappy relationship in order to avoid being alone. On the other hand, dissatisfaction with the primary relationship might result from sexual infidelity because the unfaithful person gains more knowledge about what he or she might be missing out on with his/ her current partner through the infidelity itself (for example in terms of sexual experiences, other shared activities or perceptions of compatibility). Societal norms and lay beliefs about infidelity may play a role in explaining this possible direction as well: Thoughts of an unfaithful person might be “I have been sexually unfaithful to my partner, therefore something *has* to be wrong with my primary relationship”. This in turn may affect relationship satisfaction.

The best way to test causal relationships would be to gather data with a cross-lagged panel design and analyze it with autoregressive structural equation modeling (SEM). Although a handful of longitudinal studies on risk factors and/or consequences of infidelity do exist (Adamopoulou, 2013; Allen et al., 2008; Amato & Rogers, 1997; Amato & Previti, 2003; DeMaris, 2009; DeWall et al., 2011; Drigotas et al., 1999; Fincham, Lambert, & Beach, 2010; Foster et al., 2014; Hall & Fincham, 2009; Le, Korn, Crockett, & Loving, 2010; McNulty & Widman, 2014; Previti & Amato, 2004; Russell, Baker, & McNulty, 2013) only one has ever attempted to investigate the problem with this kind of analysis strategy (Hall & Fincham, 2009). In addition, among the existing longitudinal studies, one is of mainly qualitative nature. Three more studies investigate their hypotheses (which are pretty similar) with the same dataset, which therefore adds nothing much to the comprehension of the phenomenon. However, the two studies investigating the association between relationship quality and infidelity longitudinally found indications that it is bidirectional, meaning that both factors seem to be both cause and consequence of each other (Drigotas et al., 1999; Previti & Amato, 2004). In contrast, Hall and Fincham (2009) found neither a predicting nor consequential effect of relationship satisfaction on infidelity. The contra-intuitive finding of Hall and Fincham (2009) may be due to the fact that most (57%) of the unfaithful participants classified their infidelity as solely emotional without any sexual component. A recent cross-sectional study reports a significant, negative direct effect of composite infidelity on relationship satisfaction that was tested with SEM (Graça Pereira, Taysi, Orcan, & Fincham, 2013).

Exceptions to the consistent satisfaction-related results are studies of Dew, Brubaker, and Hays (2006), DeMaris (2009), Fincham et al. (2010), Hall and Fincham (2009), and Russell et al. (2013) who all report no satisfaction-infidelity link. Dew et al. (2006) investigated online sexual infidelity with a male sample acquired and interviewed in chat-rooms exclusively for married men. They found, after controlling for other effects, no significant effect of marital dissatisfaction on the number of extradyadic sexual partners found on the internet. Two arguments may explain these results: First, the criterion in these analyses was the number of extradyadic sexual partners, not the occurrence of infidelity itself. Second, the sample consisted of mainly bisexual and homosexual males (79%) who were all heterosexually married and have been exhibiting online sexual behavior (they were recruited on chat-rooms explicitly designed for such purposes) – therefore, it seems highly possible that the non-significance can be ascribed to range and variance restrictions in both the predictor and criterion which could lead to an underestimation of effects. For more details on the fairly new topic of internet infidelity please see the reviews of Cravens and Whiting (2014) and Hertlein and Piercy (2006).

DeMaris (2009) found no significant effect of marital happiness or sexual satisfaction on the incidence of extramarital sex in his longitudinal dataset of married individuals. However, two highly similar (and empirically associated, see Previti & Amato, 2004) predictors showed predictive validity (*ever separated before due to marital problems* and *divorce proneness*), implying that they may have accounted for variance marital and sexual dissatisfaction otherwise would have accounted for.

As noted above already, the results of Hall and Fincham (2009) might be attributable to the fact that most of the participants in their sample classified their infidelity as emotional, not physical. Maybe relationship satisfaction does not have an impact on the occurrence of emotional infidelity and vice versa.

The main focus of the empirical work of Fincham et al. (2010) was on the protective role of prayer for the romantic partner against relationship infidelity. In fact, the authors found the negative link between prayer for partner and infidelity in their analyses but failed to find the well-known association with relationship satisfaction. Maybe this is because both variables share some variance (both variables correlated with $r = .13$ in the cross-lagged model).

Finally, Russell et al. (2013) neither found an effect of marital satisfaction nor of sexual frequency on the occurrence of infidelity in newlyweds. One possible explanation of these empirical results could lie in a serious range restriction of both predictors due to the fact that only (most certainly very happy) newlyweds were investigated. The same argument holds true for the results of McNulty and Widman (2014) which are based on the same data: At least the authors report a negative association between sexual satisfaction (a variable Russell et al., 2013 do not even name) and marital infidelity. One critical note at the end: I myself find it highly dubious that both researchers base their analyses on partially the same sample, use the same dependent variable but analyze the role of different independent variables. Although there is certainly nothing wrong with publishing several articles that are based on the same data-set, first this should be made transparent and second the dependent variable should differ.

Only one longitudinal study with dyadic data reports a positive association between premarital sexual satisfaction and later sexual infidelity in women; in men, the association was negative as expected (Allen et al., 2008). This result, however, has not been replicated to date and is based on a very small number of participants.

6.4.2 Social Exchange Theories

All three theories that will be subsequently introduced, the *equity theory* (Hatfield, Traupmann, & Walster, 1978), the *investment model* (Rusbult, 1980) and the *interpersonal model of sexual satisfaction* (Lawrance & Byers, 1995) are based on *interdependence theory* (Kelley & Thibaut, 1978). The interdependence theory is a quite economical theory on social relationships, whose main statement is that individuals are generally striving to maximize their outcome while minimizing the costs.

Equity Theory. Equity theory proposes that people experience distress when they feel they are in inequitable social relationships and that they subsequently strive to restore equity. An easy example for an unequal relationship is two partners that are both working 40-hour weeks but one of the two is always bringing the children to and getting them from daycare as well as doing all the cooking and the cleaning.

According to the theory, distress will occur in the over-benefited as well as in the under-benefited parties of the unequal relationship, but the disturbance will be stronger for the under-benefited (Hatfield et al., 1978; Hatfield & Traupmann, 1980). To restore equity a person has two possibilities: restore actual equity or restore psychological equity. If both lines of action fail, the final option would be to end the relationship and therefore leaving the whole inequity-issue behind (Hatfield et al., 1978; Hatfield & Traupmann, 1980).

To my knowledge, to date only two studies investigated the link between perceived (in)equity and sexual infidelity directly. Hatfield et al. (1978) found effects mostly conform with equity theory: Over-benefited and equal participants waited longer until they engaged in their first extradyadic sexual involvement and under-benefited participants reported the highest number of extradyadic sexual partners as compared to equal and over-benefited participants. In the second study inequity had a significant effect on the occurrence of extramarital relationships besides significant negative effects of normative disapproval of extradyadic sex and relationship

satisfaction in women. In men, only normative disapproval had a significant negative effect (Prins, Buunk, & VanYperen, 1993). The authors also found that inequity and relationship satisfaction seem to contribute independently to sexual infidelity in women.

DeMaris (2009) reports no effect of power imbalance (who has the last say in a relationship vs. is compromise a decision-tactic) on the occurrence of extramarital sex. This could be interpreted as a measure of inequity as well, although DeMaris (2009) did not address equity-theoretical considerations directly.

This explanatory approach exhibits intersections to the socio-cultural approach (see section 6.7, p. 120), especially when inequity in the relationship is apparent on the economical level.

Investment Model. The investment model states that the satisfaction with a relationship is a direct, linear function of rewards (e.g., good sex), costs (e.g., no or few disputes), and comparison level (individual expectations from a romantic relationship) as expressed in the following equation (Rusbult, 1983):

$$SAT_x = (REW_x - COS_x) - CL_x \quad (1)$$

In addition, satisfaction with the relationship as well as the quality of alternatives and the extent of investment in the relationship should influence the commitment to the relationship:

$$COM_x = SAT_x - ALT_x + INV_x \quad (2)$$

Commitment to the relationship in turn is associated with staying in the relationship vs. leaving it. Globally, the investment theory and its predictions are empirically well supported (e.g., Buunk & Bakker, 1997; Le & Agnew, 2003; Rusbult, 1980, 1983; Rusbult, Martz, & Agnew, 1998). It led to a shift in relationship research from satisfaction-only oriented paradigms towards further acknowledgment of other constructs such as commitment (Rusbult, Agnew, & Arriaga, 2012). In addition, the model can explain why people stay in unhealthy relationships they are not satisfied in (e.g., Rusbult & Martz, 1995).

The model has been utilized in the explanation of sexual infidelity as well: In a cross-sectional study with 251 paired individuals, Buunk and Bakker (1997) found that past extradyadic casual sex (within the last five years before the study was conducted), commitment, and satisfaction as well as gender (stronger effect in men), and relationship status (not committed, committed, cohabiting, married) independently predicted the self-reported willingness to engage in extradyadic sex. The authors found no effects of the perceived quality of alternatives and investment. Unfortunately, the authors did not differentiate whether sexual infidelity occurred during the present relationship of the participants or in prior relationships. In addition, they only investigated extradyadic sexual willingness as opposed to actual infidelity as a criterion. However, potential actual infidelity might be confounded with past infidelity, a variable the authors used as a predictor.

In two exceptionally well-designed longitudinal studies, Drigotas et al. (1999) investigated the role of the investment model in explaining emotional and sexual infidelity in young undergraduates. They showed that all four constructs of the investment model independently predicted the extent of emotional and physical infidelity two months later. In addition, they found evidence that the effect of the three distal variables satisfaction, quality of alternatives, and investment is mediated through commitment. In their second longitudinal study, a diary-study over spring-break, the authors found that commitment to the current romantic relationship predicted the extent of emotional and physical intimacy with opposite-sex friends or strangers during spring break. For infidelity they found a similar pattern as in Study 1 (except *ns* effect of investment). In a more recent study, an approach similar to Drigotas et al. (1999) was applied: Le et al. (2010) found that the extent of missing ones romantic partner during a four-week separation fully mediates the relationship between commitment and physical infidelity ($R^2 = .16$). These results indicate that the effect of commitment on infidelity might itself be indirect.

Another exemplary research program that focused mainly on the role of attachment in the prediction of infidelity showed with two longitudinal studies that the effect of the attachment dimension avoidance on com-

posite infidelity (according to Drigotas et al., 1999; Study 1) and sexual infidelity (Study 2) is mediated by commitment (DeWall et al., 2011). The two last results should not be seen as conflicting because the effects of Le et al. (2010) are dependent on whether the couple is separated for a longer time whereas the results of DeWall et al. (2011) might be more generalizable. One very recent study also demonstrated the correlational link between the focal variables of the investment model and composite infidelity (Foster et al., 2014). However, the more complex hypothesized mediational associations have not been tested by the authors as they mainly focused on another variable: Having been mate poached by the current romantic partner also exhibits small positive associations with later infidelity.

Please note that one of the core constructs of this theory, namely (perceived) quality of alternatives, can also be interpreted from a situational perspective (see section 6.6, p. 116).

Interpersonal Exchange Model of Sexual Satisfaction. The interpersonal model of sexual satisfaction (IEMSS, Lawrance & Byers, 1995) explains sexual satisfaction with four components: Rewards (e.g., frequent orgasm) and costs (e.g., pain during sex – could be a reward too, depends on the relationship), the comparison level of expected rewards and costs, and the perceived equality between the rewards and costs of both partners in the sexual relationship (Lawrance, Byers, & Cohen, 2011). With the equality-component the model adds a distributive justice component (Sprecher, 1998). It is expressed in the following equation:

$$SEXSAT = (REW - COS) + (CL_{rew} - CL_{cos}) + (EQ_{rew} - EQ_{cos}) \quad (3)$$

The IEMSS is empirically well supported for short- and long-term relationships (e.g., Byers, Demmons, & Lawrance, 1998; Byers & MacNeil, 2006; Lawrance & Byers, 1995). However, it has not yet been applied directly to the topic of sexual infidelity. Only sexual satisfaction has played a role in infidelity-research thus far. Nevertheless, it seems reasonable to assume that if the whole model would be employed, sexual satisfaction in the primary relationship would mediate the unique effects of rewards, costs, comparison level, and equality on the occurrence of sexual infidelity. In fact, it would be quite interesting to examine differences in sexual satisfaction and its predictors with the primary partner and a steady extradyadic partner within the context of the IEMSS.

Self-Expansion and Interpersonal Needs. One final study shall be shortly mentioned, although the study does not match the inclusion criteria as it used infidelity intentions as a criterion. However, the key variables are suitable for the deficit approach and those have not yet been investigated in another study with actual infidelity as the criterion. Lewandowski Jr. and Ackerman (2006) investigated, whether the fulfillment of certain needs and the possibility of self-expansion in a romantic relationship (or the lack thereof) can predict susceptibility to infidelity in a small sample of paired students. Indeed, deficient relationships that neither fulfill basic interpersonal needs (e.g., sexual needs or the need for companionship) nor provide enough possibilities for self-expansion are associated with a higher self-rated likelihood of infidelity.

6.4.3 Summary and Critique

The negative association between emotional and sexual relationship satisfaction and especially sexual infidelity is quite obvious. In addition, it seems that the effects of relationship satisfaction interact with gender. However, when relationship satisfaction was the key predictor the portion of explained variance remained mostly small, although the authors usually fitted models with numerous control variables that were partly significant predictors of infidelity as well (e.g., Adamopoulou, 2013; Amato & Rogers, 1997; DeMaris, 2009; Mark et al., 2011; Plack et al., 2010; Previti & Amato, 2004).

The prediction of infidelity improves further with the allowance of additional psychological relationship-related constructs that stem from social exchange theories (such as commitment, investment, quality of alternatives, and equity). Moreover, some study-results indicate that the effects of the more distal variables relationship satisfaction, investment, and quality of alternative are mediated through the effect of the more proximal variable commitment to the relationship.

To summarize, the deficit model of infidelity can be considered as empirically well established. As a very positive aspect of this approach it should be further emphasized that interindividual and interdyadic differences in the subjective quality of romantic relationships are considered. Still, to reduce the explanation of infidelity to variables of the relationship only is in my opinion shortsighted.

To regard relationship-related aspects only implies strongly that every person in a subjectively bad relationship (with for example very low commitment) has an equally high risk of engaging in sexual infidelity. But what if opportunities to become sexually unfaithful do not present themselves? What if certain personality traits work as a catalytic agent against or for betraying the partner? Therefore, it seems promising to have a look at effects of both situational aspects and personality traits.

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Relationship and Sexual (Dis)Satisfaction							
Previti and Amato (2004) [empirical, longitudinal, representative sample (US)]	extramarital sex: "Have you had a problem in your marriage because one of you has had a sexual relationship with someone else?" (yes/no – if yes: who?)	Is infidelity cause or consequence of marital relationship quality?	Data from Panel Study of Marital Instability over the Life Course: U.S. representative sample in terms of age, race, presence of children, household size, home ownership drawn through random-digit dialing (analysis based on $N = 1,475$), age: 55 years and younger (at T1) – omission of participants that reported infidelity prior to T1 (see also Amato & Rogers, 1997; Amato & Previti, 2003 and DeMaris, 2009)	telephone interviews 1980, 1983, 1988, 1992, 1997: sociodemographics, divorce proneness (27-item scale, e.g., Have you ever thought that your marriage might be in trouble?), marital happiness (11-item scale), infidelity, divorce (between 1983 and 1997)	SEM; Cox proportional hazards modeling to predict divorce	1983: 5% infidelity rate ($n = 68$), 1988: an additional 39 participants reported infidelity (of self or spouse); poor marital quality seems to be both cause (through divorce proneness) and consequence of infidelity (effects of infidelity on marital happiness (–) and divorce proneness as well as directly on divorce); no effects of control variables on prediction of infidelity (age, sex, education, race, relationship duration) / $R^2 = .08$ for prediction of infidelity with divorce proneness, marital happiness (ns), and controls (ns)	(+) longitudinal data; (+) large, nearly representative sample (apart from deviations due to drop-out); (+) omission of cases where infidelity happened prior to data collection; (+) sophisticated analysis strategy; (–) highly correlated latent variables and residuals – problems with interpretation?; (–) no cross-lagged analysis; (–) relationship agreement not measured; (–) infidelity-item implies several aspects: infidelity causes problems, respondents have knowledge about partners infidelity → if participants understood item correctly, only where infidelity has caused problems does it predict divorce – no conclusion about unknown infidelity of one's partner or self-reported unproblematic infidelity possible
Atkins et al. (2005) [empirical, dyadic data] → see also Table 5 (p. 115)	(at least one) affair during marriage? (yes/no)	Can couples dealing with infidelity be distinguished from couples with marital problems but without an infidelity history?	134 married heterosexual couples in marital therapy	before starting their therapy, couples completed several measures on their relationship and individual characteristics (personality, psychopathology) [interview and questionnaire]	logistic regression with 266 individuals "that incorporates the clustered nature of the data" with bootstrap-based cross-validation	in 19 couples (14.2%) at least one partner reported infidelity (equally among sexes); 14 predictors have been used, only 10 are reported: significant effects of sexual dissatisfaction (+, but only in men), time together (–, $OR = 0.20$), steps taken toward separation and divorce (+, $OR = 5.86$), trust issues (+, $OR = 2.61$), dishonesty (–, $OR = 0.09$ [coding error?]); no significant effects of narcissism, substance use, age, and gender	(+) dyadic data; (–) potential usefulness of dyadic data not exhausted (e.g., APIM); (–) inconsistencies in reporting of results (maybe due to nature of paper: brief report); (–) highly selective sample
Dew et al. (2006) [empirical]	online sexual activity (OSA): Sexual behavior on and off (with persons met online) the internet	What online sexual behaviors do married men exhibit and what are correlates?	508 heterosexually-married men; 31% heterosexual, 48% bisexual, 21% homosexual; aged 19 to 83 years ($M = 44.1$)	Anonymous interview via chatrooms for married men: marital satisfaction; internet (sexual) activities such as access of sexually explicit websites, exchange sexually explicit photographs, use web-cam; real-life sex with persons met online; disclosure to spouse	bivariate correlations; ANOVA; stepwise multiple linear regression	78% had face-to-face sexual encounter with partner found on the internet; single comparisons: men with OSA were more likely to be between 35 and 54, bisexual and homosexual, have a higher annual income and unsatisfied with primary relationship / in regression analysis only age ($\beta = .08$) and annual income ($\beta = .13$) significantly predicted number of extradyadic sexual partners	(+) expanded infidelity-research on the internet; (+) detailed measurement of online sexual behaviors; (–) relationship agreement not measured; (–) highly unrepresentative sample, only men
Schmidt et al. (2006) [empirical, cohort study]	extradyadic sex: "Did you ever have sex with someone other than your current romantic partner?" (yes/no) + details (How many?, How often? Duration of affair?, Motivations?, Consequences?)	Are there cohort and gender differences in the prevalence of infidelity?	776 men and women from three different generations and two different regions (eastern [Leipzig] and western [Hamburg] Germany): born 1942 ($n = 258$, aged 60 at the time the interview was conducted, "the pre-liberal generation"), born 1957 ($n = 255$, aged 45, "generation of the sexual revolution"), born 1972 ($n = 263$, aged 30, "generation of gender equalization")	interviews (partially with open questions) conducted in 2002 measuring sociodemographics and several aspects of romantic relationships, in sum 400 questions	descriptive	approximately 1-2% of sexual contacts in the past four weeks took place in the context of extradyadic relationships (labeled as infidelity by the authors); sex difference in occurrence (ever, in past three years, in past 12 months) only in 1942-generation (60-year olds); 20 vs. 10% of men admit infidelity within the past three years vs. 12 months (no effect of generation); in women: effect of generation – higher rate, when from 1957 and 1972-generation / motivations for infidelity (retrospectively): erotic (82%) and emotional (43%) attraction and sexual (25%) and emotional (22%) relationship dissatisfaction / individual consequences: mostly positive emotions (70%), also ambivalent (10%) and negative feelings (10%) were reported, nothing (insignificant experience), planned separation because participants fell in love with their affair (2%) [please note that results are based on persons in heterosexual relationships and their answer on the open question to explain how they felt after they last had sex with a third person]	(+) large, heterogeneous sample; (+) cohort study; (–) only descriptive; (–) cross-sectional; (–) relationship agreement not measured

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Allen et al. (2008) [empirical, longitudinal, dyadic data]	sexual infidelity: "I have never been sexually unfaithful to my partner." (true/false)	What are premarital precursors of marital sexual infidelity?	72 heterosexual couples, measured once each year for eight years = baseline; premarriage, mean age women $M = 23.9$ years; mean age men: $M = 25.1$ years	questionnaire (baseline): temptation, religiosity, mental health, relationship adjustment, sexual satisfaction / observed communication (videotaped discussion of the top two problems in the relationship) assessed on four dimensions: positive and negative communication and emotional (in)validation / follow-ups: infidelity, reasons for divorce (if true)	ANOVA; post-hoc comparisons	33% reported sexual infidelity during the study (11 females, 13 males) / precursors of male infidelity: significant actor effects were relationship and sexual satisfaction ($d = .79$ vs. $d = .77$, both -); positive communication ($d = .84$, -) [insignificant actor effects: religiosity (although $d = .45$, -), when compared with couples without infidelity), mental health (although $d = .50$, -), negative communication (although $d = .47$), emotional validation, emotional invalidation (although $d = .49$)]; significant partner effect was emotional invalidation ($d = .88$, +) [insignificant partner effects: religiosity (although $d = .51$, -), relationship satisfaction (although $d = .67$, -), sexual satisfaction, negative communication, positive communication (although $d = .62$), emotional validation] / precursors of female infidelity: significant actor effects were sexual satisfaction ($d = .76$), positive ($d = .70$, -) and negative ($d = .93$) communication, emotional invalidation ($d = 1.23$) [insignificant actor effects: religiosity, mental health, relationship satisfaction, emotional validation]; significant partner effects were negative communication ($d = .86$), emotional invalidation ($d = 1.00$) [insignificant partner effects: religiosity (although $d = .30$, -), mental health, relationship satisfaction, sexual satisfaction (although $d = .45$), positive communication (although $d = .63$), emotional validation]	(+) longitudinal data; (+) dyadic data; (-) small sample and therefore seriously underpowered (could only detect large effects); (-) old data; couples entered study between 1980 and 1982; (-) chosen analysis strategy
Traen and Martinussen (2008) [empirical, dyadic data, representative sample (NOR)]	extradyadic sex during present relationship: "Have you had other sex partners since having established your present cohabiting/married relationship?" (yes/no)	How are extradyadic sexual experiences distributed within couples? Do different factors predict male and female extradyadic sex? Do they tell each other? What are consequences?	3,954 people were first contacted via telephone in 2006, 1,214 of whom agreed to participate = 607 couples (response rate of 31%); 398 heterosexual couples and one homosexual couple actually returned questionnaires (the latter was excluded from analyses); couples were married or cohabiting, between 22 and 67 years old (mean age men $M = 46.2$ years; mean age women: $M = 44.0$ years)	self-administered postal questionnaires on sociodemographics, communication with their partner, their sexual relationship, their living together, negative thinking habits, negative work-to-home interference, satisfaction with the division of domestic labor	logistic regression	in 6.3% of couples females, in 12.7% males and in 4% both partners had had extradyadic sex within the current relationship; 18 predictors used; probability of females (actor effects) reporting extradyadic sex was significantly higher/ lower when: they found it easy talking about sex ($OR = 38.04$), they kept secrets from their partner ($OR = 8.40$), they think of others during sex with partner ($OR = 2.33$); partner effects: when partner reported negative habitual thinking ($OR = 0.28$), when partner agreed that lovers must tell each other everything ($OR = 3.63$) [not significant: age; habitual thinking, partner (own, spouse); habitual thinking, self (own); work-to-home-inference (own, spouse); satisfaction with division of domestic labor (own, spouse); quarreling=sign of healthy relationship (own, spouse); lovers must tell each other everything (own); lovers should not have secrets (own, spouse); talking about what is good for me (own, spouse); talking about sexual fantasies (own, spouse); easy talking to partner about sex (spouse); frequency of quarreling (own, spouse); coital frequency (own, spouse); frequency of being sexually rejected (own, spouse); frequency of thinking about others during sex (spouse); keeping secrets from the partner (spouse); surfed for porn (own, spouse); reduced sexual interest in past 12 months (own, spouse)] / probability of males (actor effects) reporting extradyadic sex was significantly higher/ lower when: older ($OR = 1.24$), they perceived work-to-home interference (+, $OR = 7.34$), they frequently thought of others during sex (+, $OR = 2.43$), they surfed for porn (+, $OR = 19.48$); one partner effect: their female partner found it easy talking about sex with them (+, $OR = 21.48$) [for insignificant effects: see above or original paper]	(-) large sample; (+) nearly representative in terms of income and education; (+) dyadic data; (-) results on consequences of infidelity mainly descriptive; (+) consideration of dependencies in the data (however, APIM would have been better suited for analysis); (-) cross-sectional; (-) mostly 1-item measures of predictors; (-) no information about Pseudo- R^2 ; (-) relationship agreement not measured; (-) some predictors may already constitute infidelity in some relationships [e.g., thinking of others during sex, surfing for porn]

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
DeMaris (2009) [empirical, longitudinal, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Have you had a problem in your marriage because one of you has had a sexual relationship with someone else?" (yes/no) – if yes: who?	What are distal (sociodemographic) and proximal (relationship characteristics) predictors of extramarital sex?	Data from Panel Study of Marital Instability over the Life Course: U.S. representative sample in terms of age, race, presence of children, household size, home ownership drawn through random-digit dialing (analysis based on $N = 1,270$ (778 female), age: 55 years and younger (at T1) – omission of participants that reported infidelity prior to T1 (see also Amato & Rogers, 1997; Amato & Previti, 2003 and Previti & Amato, 2004)	telephone interviews 1980, 1983, 1988, 1992, 1997, 2000; sociodemographics and time-invariant predictors at T1, time-variant predictors at all waves like marital quality indices and infidelity	survival analysis using cloglog regression	7.8% reported infidelity across all five follow-ups ($n = 99$); significant time-invariant predictors: ever separated due to marital problems, years of marriage (-), divorced parents, religiosity (-); non-significant time-invariant predictors: cohabitation before marriage, minority respondent, nonmarital sexual experience / significant time-varying predictors: spousal violence, divorce proneness, marital interaction (-), education; non-significant time-varying predictors: marital happiness, sexual dissatisfaction, presence of children, presence of workplace opportunities (irregular hours, overnight trips, meetings) for one or both, divorce tolerance, power imbalance; $R^2 = .121$ for the whole model	(+) longitudinal data; (+) large, nearly representative sample (apart from deviations due to drop-out); (+) omission of cases where infidelity happened prior to data collection; (-) relationship agreement not measured; (-) infidelity-item implies several aspects: infidelity causes problems, respondents have knowledge about partners infidelity → if participants understood item correctly, only where infidelity has caused problems does it predict divorce – no conclusion about unknown infidelity of one's partner or self-reported unproblematic infidelity possible
A. D. Fisher et al. (2009) [empirical] → see also Table 6.2.5 (p. 76)				Results: Married men with occasional or stable affairs and sexual dysfunctions reported more relational problems [among other associations].			
Hall and Fincham (2009) [empirical, partially longitudinal] → see also Table 5 (p. 115)	Study 1: "Have you ever done anything physically and/or emotionally unfaithful to your current partner?" (yes/no) and indication of the type (sexual, emotional or both) + if yes: + other descriptive information (type of infidelity) / Study 2: EEQ (Allen & Baucom, 2004) + subjective infidelity: "Have you been emotionally and/or physically unfaithful within the past month?" (yes/no) + "Have you done something within the past month your partner regards as infidelity?" (yes/no)	Is psychological distress precursor or consequence of dating infidelity?	Study 1: 287 heterosexual undergraduates (95 male) involved in an exclusive dating relationship of at least four months duration ($M = 20.3$ months), mean age was 19.5 years, mostly Caucasian / Study 2: 284 heterosexual undergraduates (94 male) involved in an exclusive dating relationship, mean age was 19.4 years, mean relationship duration was 19.1 months, mostly Caucasian	Study 1: questionnaire that measured sociodemographics, depression, anxiety, well-being, infidelity (unfaithful participants completed remaining measures with regard to their infidelity while the faithful participants had to think about their most hurtful other transgression towards their partner), negative reactions (shame, guilt), self-forgiveness, impact of event (posttrauma symptoms), transgression severity (how upset partner was or would be) / Study 2: two measurements, four weeks apart; four different measures of relationship satisfaction, depression, anxiety, well-being, shame and guilt, extradyadic experiences questionnaire (Allen & Baucom, 2004), and subjective extradyadic involvement	Study 1: correlation: AN(C)OVA / Study 2: hybrid SEM	Study 1: 35% reported emotional and/or physical infidelity (of those 29% classified their behavior as physically unfaithful, 28% as emotionally unfaithful, and 43% as both); significant differences between unfaithful and faithful participants on depression, shame, guilt, intrusions (of event), avoidance (of event) [unfaithful > faithful] as well as well-being and self-forgiveness [unfaithful < faithful], no difference on anxiety → effects did hold, when transgression severity included as covariate, because unfaithful behavior was assessed as more severe than other offenses / Study 2: 23% reported infidelity at T1 (within the past month) and 14% at T2 (interval was four weeks) – mostly labeled as emotional infidelity; T1-infidelity ($\beta = .43$) and T1-distress ($\beta = .23$) but not relationship satisfaction ($\beta = .01$) predicted T2-infidelity; T1-infidelity neither had an effect on T2-satisfaction ($\beta = -.01$) nor T2-distress ($\beta = .00$)	(+) Study 2 is based on longitudinal data BUT (-) small sample for SEM-analyses; (+) consideration of intradyadic infidelity-norms in the second study

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Fincham et al. (2010) [empirical, longitudinal]	Study 1: whether participants engaged in four extradyadic activities in the past month with someone other than their romantic partner (kissing, caressing, sexual intimacy without intercourse, sexual intercourse) (yes/no) → answers summed: higher scores reflect higher levels of infidelity / Study 2: composite of emotional and physical infidelity: 9-item scale developed by Drigotas et al. (1999) (see below)	How is prayer in romantic relationships related to extradyadic behavior?	Study 1: 375 paired undergraduates (320 female) aged between 17 and 29 ($Md = 19$ years) / Study 2: 83 paired undergraduates (74 female) aged between 18 and 34 ($Md = 19$ years) who engaged at least in a minimal level of prayer / Study 3: 23 paired undergraduates aged between 18 and 32 ($Md = 19$) who reported being comfortable with prayer	Study 1: questionnaire completed on two waves with a 6-week interval, measuring prayer for partner, infidelity, relationship satisfaction / Study 2: questionnaire completed on two waves with a 4-week interval, measuring infidelity thoughts and acts (analog to the 9-item infidelity scale of emotional and physical infidelity developed by Drigotas et al., 1999), perceptions of a sanctified relationship – in between the four weeks, participants were assigned to one of four conditions (+ instructed to keep log about how many minutes they spent on the activity assigned to them): 1 prayer for partner: pray for the well-being of the partner daily for the next four weeks; 2 neutral condition (activity control): think daily about what you have done that day; 3 undirected prayer condition: pray everyday; 4 partner positive condition: think positive thoughts about your partner every day – additionally, participants logged on to an online journal every three days to report their log and describe their assigned activity / Study 3: similar to Study 2 but only measures of relationship characteristics and two conditions: prayer for partner and positive thoughts for partner – after four weeks filmed interaction between 23 participants and their partners: independent observers rated participants commitment	Study 1: structural equation modeling with full information maximum likelihood estimates (cross-lagged) / Studies 2 and 3: ANCOVA	Study 1: T1-prayer for partner ($\beta = -.11$) significantly predicted T2-infidelity over and beyond relationship satisfaction ($\beta = -.06$, <i>ns</i>) and T1-infidelity ($\beta = .58$); authors controlled additionally for sex, relationship length, relationship status, and ethnicity but did not report the specific effect sizes / Study 2: significant main effect of condition; planned comparisons revealed that those in the prayer for partner condition reported significantly lower rates of infidelity than those in the three other conditions [when participants in the undirected prayer condition who chose to pray for their partners were excluded ($n = 4$)]; this finding was true for infidelity thoughts and actual behaviors – the latter was tested with using only the answers on the “How emotionally resp. physically intimate were you with this person?” as criterion / Study 3: participants in the prayer for partner condition were rated as being more committed than those in the positive thoughts condition	(+) longitudinal and experimental data; (-) homogeneous sample in terms of age, sex, and education; (-) relationship agreement not measured
Plack et al. (2010) [empirical] → see also Tables 5 (p. 115) and 6 (p. 119)	no details in the methods section but the authors report prevalence, type (one-night stand or affair), and duration of extradyadic relationship	What are risk factors (individual, contextual) for infidelity?	768 participants (410 female) aged between 18 and 40 ($M = 28.9$); 72% students or working in academic sector; 72% had romantic partner with a duration between 0.5 and 10 years ($M = 4.9$)	questionnaire: several standardized instruments for the measurement of infidelity, attachment style (secure, preoccupied, dismissive, fearful), sexual and emotional relationship satisfaction, religiosity	logistic regression	39% of women and 42% of men reported extradyadic relationships ever and 29% vs. 27% currently had an extradyadic relationship; significant predictors of binary coded infidelity were: age (-), religiosity (-), relationship and sexual satisfaction (both -), relationship duration, business-related travel days per year, opportunity; not significant: sex, religious affiliation, vocational status, attitudes towards monogamy and fidelity, attachment style	(+) large, heterogeneous sample; (-) cross-sectional; (-) insufficient detail in method and results section (for example no details on how infidelity and other predictor variables were measured); (-) irregularities in statistical results (misfit of reported <i>B</i> and <i>OR</i>); (-) no consideration of more complex associations
Havlicek et al. (2011) [empirical, partially longitudinal?, dyadic data] → see also Tables 3 (p. 84) and 5 (p. 115)				<u>Results:</u> significant association between EDS and relationship quality in women (-), sexual satisfaction (-); significant associations between falling in love with someone else than the current partner and sexual satisfaction (-), no association with relationship quality [among other significant and insignificant effects]			

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Mark et al. (2011) [empirical] → see also Table 5 (p. 115)	“Have you ever cheated on your partner in your current romantic relationship (i.e., engaged in sexual interactions with someone other than your primary partner that could jeopardize, or hurt, your relationship)?” (yes/no)	What are predictors (demographic, interpersonal, individual) of sexual infidelity?	918 (412 women) heterosexual participants in sexually exclusive relationships; mean age men $M = 32.9$ years, women $M = 27.7$ years, range: 18 to 63; mean relationship duration was 7 years (range: three months to 43 years)	online questionnaire: sociodemographic items, several standardized instruments for the measurement of sexual excitation and inhibition, tendency to engage in regretful sexual behavior, relationship and sexual satisfaction	chi-square and t -tests; multiple linear regression	21.5% indicated they have “cheated” in their current relationship; univariate analyses: unfaithful participants were significantly older, rather employed than unemployed, found religion less important, reported more one-night-stands over their life course; no effects of gender, marital status, income, race, education sexual activity, and masturbation frequency / in men effects of relationship happiness (-), sexual satisfaction (-) and sexual compatibility (-), in women only effect of happiness in relationship (-); additional effects for both sexes of sexual excitation, inhibition (-) and tendency to engage in regretful sexual behavior when in certain moods / Multivariate analyses (all significant effects in prior univariate analyses were regarded): in men only sexual excitation, inhibition (-), and regret remained significant predictors ($R^2 = .17$), in women relationship happiness (-), compatibility in sexual values (-), sexual inhibition (-), and regret remained significant predictors ($R^2 = .21$)	(+) large, heterogeneous sample; (+) relationship agreement measured and considered; (-) cross-sectional; (-) global, infidelity-measure; (-) no consideration of more complex associations
Omarzu et al. (2012) [empirical]	extramarital relationship	What are motivations for and emotions from marital infidelity?	77 participants between 23 and 63 ($M = 45.5$), 73% currently married	participants were recruited on a website for adults engaging in marital infidelity and were asked to complete an online questionnaire measuring: demographics and open-ended questions about the extramarital relationships including motivations for and emotions resulting from marital infidelity	descriptive analysis (after coding open-ended answers), chi-square-tests	all of the participants engaged in at least one EMR (range: one to 22, $M = 3.94$); type was mostly ongoing affairs (53.2%) or sporadic encounters (19.5%) or one-night stands (6.5%); 52.1% of the EMR's lasted longer than a year; named motivations stemmed from eight categories: lack of sexual and emotional satisfaction in marriage, desire for additional sexual encounters (m>w) and emotional connection or validation from others (w>m), falling out of love with primary partner, falling in love with EMR partner, revenge (w>m), curiosity or sensation seeking; positive emotions: desirability, happiness, love, sexual satisfaction, friendship, energy, openness (see p. 159 in original paper for detailed descriptions); negative emotions: guilt/shame, disappointment, anxiety, jealousy, depression	(-) small sample; (-) cross-sectional; (-) relationship agreement not measured; (-) mostly descriptive
Adamopoulou et al. (2013) [empirical, longitudinal, representative sample (US)] → see also Table 6 (p. 119)	extradyadic sex: “During the time you and your current partner have had a sexual relationship have you ever had any other sexual partners?”	What are sociodemographic and relationship-related predictors of infidelity? Does infidelity show a seasonality-effect?	Data from waves III (2001/2, age between 18 and 26) and IV (2008, 24-34) from the Longitudinal Study of Adolescent Health	in-home interviews regarding sociodemographics, past relationship history and infidelity, relationship-related measures	regression analysis	clear effect of season: Infidelity peaked in summer (timeframe: 1996 to 2001); at wave IV: 21.5% (12.9% of married) participants have had an extradyadic sexual relationship besides their current partners; significant predictors were: sex = female (-), married (-), race (+: African American), religiosity (-), children (-), relationship dissatisfaction and duration, number of prior relationships, ever cheated in prior relationships / non-significant: age, age ² , beauty, income, education ($R^2 = .144$)	(+) longitudinal; (+) large, representative sample of young adults; (-) relationship agreement not measured
Russell et al. (2013) [empirical, longitudinal, dyadic data] → see also Table 5 (p. 115)	Marital infidelity – two items: 1) “Have you had a romantic affair/infidelity within the past six months?” (yes/no); 2) “Did you find out your partner had been unfaithful within the past six months?” (yes/no) → individual coded with 1, if they themselves reported having been unfaithful and/or their partner observed his/her partner's infidelity at least once, otherwise coded with 0	Does the partners' attachment style add incremental validity to one's own attachment style in the prediction of marital infidelity?	Study 1: 72 newlywed couples, mean age was 24.9 years for husbands and 23.5 years for wives; mostly Caucasian / Study 2: 135 newlywed couples, mean age was 25.9 years for husbands and 24.2 years for wives, again mostly Caucasian; all participants recruited through newspaper ads and announcements in bridal shops → data was analyzed together (see also McNulty & Widman, 2014)	questionnaires via mail (every six to eight months, in sum seven time points of data collection – spanning 3.5 years in Study 1 and 4.5 years in Study 2): self-reports of attachment insecurity, marital satisfaction, frequency of intercourse, Big Five	two-level actor-partner-interdependence models with HLM; criterion: binary-coded infidelity	total of 22 participants (5.3%) have been unfaithful (according to themselves and/or their partners) over the course of the study; significant effects on infidelity had openness ($B = -.07$, $OR = 0.93$), own attachment anxiety ($B = .74$, $OR = 2.10$), partner attachment anxiety ($B = .44$, $OR = 1.56$), partner attachment avoidance ($B = -.80$, $OR = 0.45$) and Study ($B = -.89$, $OR = 0.41$) / no effects of own attachment avoidance, rest of the Big Five, attrition, gender, frequency of sex, marital satisfaction – attachment explained 6.1% of variance in this model; in an additional model test for IA-effects regarding attachment dimensions: only own*partner attachment anxiety-interaction was significant ($B = -.95$, $OR = 0.38$, lower probability of infidelity only for those low in anxiety that are married to low anxious partners) – attachment and interactions explained 13.6% of variance in this model	(+) longitudinal; (+) dyadic data; (+) analysis strategy; (-) relationship agreement not measured BUT wording implies norm breach
Klapilová et al. (2014) [empirical, representative sample (CZ, ♀)] → see also Table 3 (p. 84)				Results: Sexual dissatisfaction of Czech women significantly predicted engaging in extradyadic sex within the past year [among other associations].			

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
McNulty and Widaman (2014) [empirical, longitudinal, dyadic data] → see also Table 5 (p. 115)	Marital infidelity: see Russell et al. (2013)	Is sexual narcissism better suited to predict marital infidelity as compared to "regular" narcissism?	123 newlywed couples (sub-samples from the two Studies reported by Russell et al. (2013)), husbands at baseline on average 25.4 years old and had completed 15.8 years of education, wives on average 24.2 years old with 17.8 years of education, more than 90% of the sample was Caucasian	paper-pencil questionnaires (completed separate from each other) over the course of the first four years of marriage, every six to eight months; measures: sociodemographics, global narcissism, sexual narcissism, marital and sexual satisfaction	two-level actor-partner-interdependent models with HLM; criterion: binary-coded infidelity	total of 13 participants (5.3%) engaged in infidelity over the course of the study; significant effects on prediction of sexual infidelity had own sexual narcissism ($\beta = 2.20$, $OR = 9.02$) and own sexual satisfaction ($\beta = -.04$, $OR = 0.96$), no significant effects of own narcissism, partner sexual narcissism and partner narcissism, own marital satisfaction, participant sex, and Study	(+) longitudinal data; (+) dyadic data; (+) analysis strategy; (-) relationship agreement not measured BUT wording implies norm breach; (-) same data and criterion as Russell et al. (2013) but different IV's
Graga Pereira et al. (2013) [empirical] → see also Table 5 (p. 115)	composite of emotional and physical infidelity: 9-item scale developed by Drigotas et al. (1999) (see below)	What are relationship-related correlates of infidelity?	345 paired students with an average age of $M = 1.5$ years and 25% males	questionnaire: demographics, loneliness, relationship satisfaction, psychological (more or less depression-symptoms), and physical morbidity (psychosomatic symptoms like fatigue, dizziness), attachment, infidelity	descriptive statistics; Pearson correlation; SEM	no significant univariate associations between composite infidelity and loneliness, psychological and physical morbidity; significant univariate associations with praying for the partner ($r = -.12$), relationship satisfaction ($r = -.27$), avoidant attachment ($r = .26$) and anxious attachment ($r = .13$); SEM showed two direct paths from infidelity to relationship satisfaction (-) and to loneliness (-), while allowing for correlations with both anxious and avoidant attachment	(-) homogeneous sample; (-) cross-sectional; (-) modification indices used; (-) no real derivation of theorized associations; (0) causal and argumentative direction changed: How does infidelity affect satisfaction?
Equity Theory							
Hatfield et al. (1978) [empirical, representative sample (US)]	extradyadic sex: "When, after your present marriage or cohabitation, did you first have sex with someone else?" 1 = never to 8 = less than a year; number of extradyadic partners: "With how many other persons have you had sex during your present or most recent marriage or cohabitation?" 1 = none to 7 = more than 50	Are people in inequitable relationships more often sexually unfaithful?	2,000 out of > 62,000 respondents to a call in Psychology Today (1972); stratified on sex (50/50) and age ($45\% \leq 24$ years, 25% between 25 and 44 years, 30% ≥ 45 years old) to national representativeness; out of the 2,000 13% were cohabiting with partner and 48% married → final sample	109-item questionnaire: 1-item measure for (in)equity: "Describe your partner's desirability" from 1 = much more desirable than I to 5 = much less desirable than I; extradyadic sex; number of extradyadic partners	planned contrasts; ANOVA	Duration until first extradyadic sex: largest for overbenefited and equal participants (12 to 15 years), shorter for underbenefited (9 to 11 years); Number of extradyadic partners: overbenefited < equal < underbenefited; effects robust when length of relationship and sex was controlled	(+) representative sample in terms of age and sex; (-) cross-sectional; (-) relationship agreement not measured
Prins et al. (1993) [empirical]	extramarital relationships: "How many extramarital relationships have you had during your marriage or cohabitation?" (answer range: 0 to 5)	How do equity, norms and satisfaction relate to extradyadic sex?	214 mostly married (87%, 11% cohabiting, 2% divorced or widowed) participants (82 men) recruited through newspaper announcement, mean age=41 years	questionnaire: 1-item (in)equity measure: "Considering what you put into your relationship compared to what you get out of it and what your partner puts into it compared to what (s)he gets out of it, how does your relationship 'stack up'?" 1 = my partner is getting a much better deal to 7 = I am getting a much better deal; marital satisfaction: relationship (eight items) and sexual (four items) satisfaction; normative disapproval of extramarital sex (eight items)	ANCOVA	30% have had extramarital relationships; in women: significant effect of inequity whereas relationship satisfaction and norms were significant covariates ($R^2 = .27$); in men only normative disapproval predicted EMR ($R^2 = .14$)	(-) selective sample with mostly married people; (-) conceptual imprecision (extramarital relationship vs. extramarital sex); (-) relationship agreement not measured
Investment Model							
Buunk and Bakker (1997) [empirical]	extradyadic sexual willingness: "Would you engage in sexual intercourse with someone else than your steady partner if an occasion were to present itself?" 1 = absolutely not to 5 = absolutely yes; past sexual infidelity: "How often have you had a one-time sexual contact with someone other than your steady partner during the preceding 5 years?" 1 = never to 5 = more than 10 times	Can investment model help to explain willingness to engage in extradyadic sex?	251 paired participants (71% women); mean age=29 years; mean relationship length=six years; relationship status: 26% married, 23% cohabiting, 37% steady partner, 14% more or less steady partner	questionnaire: commitment (four items), satisfaction (two items), quality of alternatives (two items), investment (two items), past extradyadic sex, extradyadic sexual willingness	multiple linear regression	Independent predictors of willingness to engage in extradyadic sex were: past sexual infidelity ($\beta = .46$), commitment ($\beta = -.30$), satisfaction ($\beta = -.15$), gender male ($\beta = .21$), relationship status ($\beta = -.16$) → $R^2 = .53$; no significant effects of quality of alternatives and investment	(-) small sample; (-) criterion was not actual infidelity; (-) cross-sectional; (-) relationship agreement not measured

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Drigotas et al. (1999) [empirical, longitudinal] → see also Table 6 (p. 119)	"We want you to think of a person since Time 1 that you were most attracted to besides your partner...": 1) emotional infidelity: "How emotionally intimate were you with this person?"; 2) physical infidelity: "How physically intimate were you with this person?" 1 = <i>not at all</i> to 8 = <i>extremely</i>	Can investment model (IM) help explain actual infidelity?	Study 1: 74 (14 men) paired heterosexual undergraduates involved in dating relationships; age: $M = 18.2$ years; relationship duration: $M = 28.2$ months; 72% in exclusive relationship; 80% in a serious relationship / Study 2: 37 paired heterosexual undergraduates involved in dating relationships; age: $M = 19.1$ years; duration $M = 18.4$ months; 92% in exclusive relationship; 79% in a serious relationship	Study 1: 2-wave longitudinal study (two months apart) – Time 1/2: demographics, IM-constructs (Time 2 only when relationship still persisted), only Time 2: infidelity, details of relationship dissolution if breakup happened ($n=15$) / Study 2: Time 1: questionnaire two days before spring break (identical to Study 1) + Time 2 to Time 10: everyday diary during spring break: records of opposite-sex interactions longer than 10 minutes	multiple linear regression, ANOVA, (partial) correlations	Study 1: all four IM-constructs (Time 1) predicted composite infidelity (Time 2): commitment with $\beta = -.56$, satisfaction with $\beta = -.40$, quality of alternatives with $\beta = .59$, and investment with $\beta = -.46$; when predicting emotional and physical infidelity separately only commitment and satisfaction remained significant predictors; mediation analyses suggest that effect of distal IM-variables on infidelity is mediated through commitment / Study 2: commitment ($\beta = -.15$) was the only variable that predicted composite friend/stranger intimacy (emotional and physical) during spring break; result pattern for infidelity was similar to Study 1, except <i>ns</i> effect of investment / Consequences (Study1): emotional infidelity significantly (but not physical infidelity) predicted breakup and composite infidelity lead to an erosion of all IM-constructs (lower commitment, satisfaction, and investment, higher alternative quality – even when T1-values were controlled)	(+) longitudinal; (+) clear distinction between emotional and physical infidelity; (+) relationship agreement measured and considered (non-exclusivity yielded similar results); (-) very small, selective sample
Le et al. (2010) [empirical, longitudinal] → see also Table 6 (p. 119)	physical infidelity analog Drigotas et al. (1999): "Think of a person over the past week that you were most attracted to besides your partner...: How physically intimate were you with this person?" 1 = <i>not at all</i> to 9 = <i>extremely</i>	Does missing the partner during separation mediate the relationship between commitment and physical infidelity?	88 paired undergraduates (59 female) who spent the winter break (four weeks) apart from their partner; mean relationship duration $M = 12.6$ months; majority of 96.5% reported being in an exclusive relationship	online data-collection at four times: Time 1 prior to the break, Times 2 to 4 near beginning, middle, and end of separation; Time 1: commitment-subscale (7 items, Rusbult et al., 1998), times 2-4: infidelity, extent of missing the partner (Missing in Interpersonal Separation Scale; MISS developed by Le et al., 2008), short measure of commitment	mediation analysis according to Baron and Kenny (1986)	missing the partner during separation fully mediated the relationship between commitment and physical infidelity ($R^2 = .16$)	(+) longitudinal; (+) relationship agreement measured; (-) small, selective sample; (-) outdated analysis strategy
DeWall et al. (2011) [empirical, partially longitudinal] → see also Table 5 (p. 115)	Studies 3 and 7: 9-item version of the infidelity-questionnaire (emotional, physical, and composite infidelity) from Drigotas et al. (1999) / Studies 4 and 8: Participants were asked whether they engaged in four extradyadic sexual activities: kissing; hugging/caressing; sexual intimacy without intercourse; sexual intercourse	How does avoidant attachment relate to infidelity and is its effect mediated by commitment?	extensive research consisting of eight different studies – please see original publication for study details	experimental tasks and questionnaires – please see original publication for details	multiple linear regression; multi-level modeling	only four of the eight studies used infidelity as the criterion variable, therefore only these results will be reported here: Study 3: In a 6-week longitudinal study (two times of measurement) T1-composite-infidelity ($\beta = .52$) and avoidant attachment ($\beta = .10$) predicted composite-infidelity at T2 (while controlled for gender and anxious attachment – <i>ns</i>) – Study 7 used the same design and replicated the findings; in addition, the association between avoidant attachment and composite infidelity was mediated through commitment, but not through relationship satisfaction and closeness / Study 4: In a 2-month longitudinal study (2 times of measurement) T1-sexual infidelity ($\beta = .40$) and avoidant attachment ($\beta = .11$) predicted sexual infidelity at T2 (while controlled for gender and anxious attachment – <i>ns</i>) – Study 8 used the same design and replicated the findings and again, illustrated the mediating role of commitment (but not satisfaction and closeness)	(+) exemplary research program with replication and extension of effects in different samples; (+) partially experimental research; (+) partially longitudinal data; (-) mostly undergraduates

Table 4: Deficit Model of Infidelity

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Foster et al. (2014) [empirical, longitudinal] → see also Table 5 (p. 115)	composite of emotional and physical infidelity: 9-item scale developed by Drigotas et al. (1999) (see above)	Is being mate poached associated with poor relationship functioning (amongst other indicators: a higher risk of infidelity)?	Study 1: $N_{final} = 84$ heterosexual participants, 64% women, $Age = 19.1$ years; $M_{relationshiplength} = 15.3$ months, 95% dating relationships / Study 2: $N_{final} = 138$ heterosexual participants, 71% women, $Age = 20.3$ years; $M_{relationshiplength} = 16.6$ months, 94% dating relationships / Study 3: $N_{final} = 219$ heterosexual participants, 68% women, $Age = 20.5$ years; $M_{relationshiplength} = 15.8$ months, 93% dating relationships	questionnaires (Study 1: paper-pencil; Studies 2 and 3: online) measuring sociodemographics, six indicators of relationship functioning (infidelity among them), mate poaching status and in Studies 2 and 3 additionally several personality traits / Study 1: longitudinal, four waves with 3-week intervals / Study 2: longitudinal, six waves with 2-week intervals / Study 3: cross-sectional	correlations latent growth curve modeling	Study 1: significant univariate correlations between infidelity and mate poached status ($r = .25$), commitment ($r = -.44$), satisfaction ($r = -.47$), quality of alternatives ($r = .33$), and attention to alternatives ($r = .48$), no significant association to investment + mate poached status did not predict initial infidelity-levels (latent intercept) but the slope (while not mate poached participants were less unfaithful with time, the infidelity score of mate poached participants remained stable) / Study 2: significant univariate correlations between infidelity and mate poached status ($r = .18$), investment ($r = -.19$), commitment ($r = -.50$), satisfaction ($r = -.35$), quality of alternatives ($r = .53$), attention to alternatives ($r = .51$), extraversion ($r = .17$), narcissism ($r = .36$), attachment avoidance ($r = -.22$), sociosexuality ($r = .39$), no significant associations to rest of Big Five and attachment anxiety + mate poached status positively predicted initial levels of infidelity (latent intercept) that became insignificant when controlling for narcissism and sociosexuality / Study 3: significant univariate correlations between infidelity and mate poached status ($r = .15$), commitment ($r = -.18$), quality of alternatives ($r = .46$), attention to alternatives ($r = .38$), neuroticism ($r = -.16$), openness ($r = .19$), narcissism ($r = .23$), attachment avoidance ($r = -.20$), sociosexuality ($r = .54$), no significant associations to investment, satisfaction, rest of Big Five and attachment anxiety + effect of mate poaching on infidelity was partially mediated by sociosexuality	(+) longitudinal studies; (+) state-of-the-art statistical models BUT (-) small samples for analytical method; (-) very homogeneous samples in terms of gender and relationships; (-) relationship agreement not measured
Other	Lewandowski Jr. and Ackerman (2006) [empirical]	Do need fulfillment and self-expansion predict susceptibility to infidelity?	109 students (50 men) currently involved in a mostly exclusive (83.5%, rest was dating casually) dating relationship; relationship length ranged from six to 324 weeks, $M = 75$; aged between 18 and 25 years ($M = 19.5$); mostly Caucasian	questionnaire including measures for need-fulfillment: one item for each need, self-expansion, inclusion of the other in the self, potential for self-expansion, infidelity intentions, susceptibility to infidelity	correlations; hierarchical regression - criterion: combined hypothetical infidelity measures (due to high intercorrelations)	all predictor variables correlated univariately and significantly with susceptibility to infidelity (moderate to high magnitude); hierarchical regression yielded significant effects of gender (m>w; $\beta = -.29$); security needs ($\beta = -.23$), inclusion of other in self ($\beta = -.27$) and potential for self-expansion ($\beta = -.45$), no significant effects of relationship length, remaining needs (intimacy, companionship, sexual, emotional-involvement), self-expansion - whole model accounted for 44% of variance	(-) small, homogeneous sample; (-) cross-sectional; (-) no actual infidelity measured; (+) relationship agreement measured BUT (-) not considered; (+) first study that considered these constructs

Note.

The Table contains only information relevant to infidelity – hence, other research questions, measures, and results of the reviewed studies are not reported.

6.5 The Dispositional Approach

The broad label “dispositional” (which could also be labeled “individual”) for this approach has been chosen on purpose to allow for coverage of a wide array of construct groups. Within this approach interindividually varying constructs like personality traits, motives, and attitudes are employed to explain why some individuals engage in unfaithful behavior while others stay faithful.

Representatives of this approach can be sorted into the theoretical corner of dispositionists, who put their faith into the classical trait-paradigm and assume that the best predictive validity for behavior is held by stable dispositions. This is at least true for scholars who work with personality traits such as the Big Five as explanatory variables for infidelity. Consequentially, behavior should be conceptualized in the following fashion, namely as a function of the person:

$$B = f(P) \quad (4)$$

The further consideration of more fluid constructs like attitudes adds some more spice and brings the process-like character of infidelity more to attention, which is not free of problems, though.

An overview of studies that worked with this approach can be found in Table 5 (p. 115).

6.5.1 Personality Constructs

Although some research has been conducted to link for example personality traits to infidelity, the existing narrative literature reviews do not reserve that much space to the corresponding empirical results, the only exception being Tsapelas et al. (2010).

The Big Five (and Honesty-Humility). The Big Five of Personality can be seen as one broad dimensional system of constructs wherein the main aspects of an individual's personality can be described. It has first been deduced systematically with the psycho-lexical approach by Allport and Odbert (1936) based upon the sedimentation hypothesis (Galton, 1884) that assumes, descriptors of personality will be reflected in a culture's language. The bulk of descriptors that Allport and Odbert (1936) extracted from Webster's New International Dictionary (1925-edition) was then reduced to the five broad measures with factor analysis. The term Big Five itself has been coined by Goldberg (1990). These five factors *neuroticism*, *extraversion*, *openness to experience*, *agreeableness*, and *conscientiousness*, that can each be differentiated into six smaller facets, are regarded as relatively stable (Specht, Egloff, & Schmukle, 2011), relatively independent factors that are mostly cross-culturally replicable and therefore universal (although recent studies suggest it is not that simple, see e.g., Gurven, von Rueden, Massenkoff, Kaplan, & Lero Vie, 2013); cf. emic [cultural specificity] vs. etic [universality] approaches). Although there is some disagreement on how to measure, label, and describe the specific factors or whether it would be better to add a sixth factor (like H.-J. Lee et al., 2009 suggest), the Big Five of personality may represent the one language most personality psychologists can agree upon. The following short descriptions of the factors are based upon the manual from NEO-PI-R and NEO-FFI from Costa and McCrae (1992). Individuals that score high on neuroticism as opposed to emotional stability, tend to ruminate and are more often in negative affective states. In addition, they have difficulty dealing with stressful situations. Highly extraverted individuals are outgoing, cheerful, and enjoy social events. Less extraverted individuals enjoy being alone and are more reserved. Open individuals are self-reflected, imaginative, and interested in the fine arts. Less open individuals are rather inflexible in their opinions and tend to be more conservative. A highly agreeable person does not like arguments, is cooperative, and strives for harmony. Individuals with low scores on agreeableness have a more competitive nature and are distrustful. Finally, conscientious persons keep their things neat and tidy, have a talent of planning and executing tasks, and are punctual, hard-working, and disciplined. Individuals scoring low on this factor are more careless and do not pursue their goals with that much dedication.

The empirical evidence regarding the effect of the Big Five dimensions on infidelity is mixed. In a study that employed the lexical approach, Schmitt and Buss (2000) developed the Sexy Seven-questionnaire. This

instrument consists of 67 sexuality-related adjectives (to be rated from 1 *extremely inaccurate* to 9 *extremely accurate*), distributed over the following 7 dimensions: Sexual attractiveness, relationship exclusivity (decomposable into the facets infidelity [e.g., adulterous, unfaithful] and promiscuity [e.g., loose, promiscuous]), gender orientation, sexual restraint, erotophilic disposition, emotional investment, and sexual orientation. The authors assume, these dimension exhibit trait-like qualities that are distinct from the Big Five. Preliminary correlational analyses with data from a small student sample revealed small to moderate associations between relationship exclusivity and extraversion ($r = .21$) in men and agreeableness ($r = -.37$) and conscientiousness ($r = -.23$) in women. The Sexy Seven have been distributed again within the context of the International Sexuality Description Project (Schmitt, 2004; Schmitt & Shackelford, 2008). Over 16,000 people from 52 nations participated in this study: Although there were regional differences, also cross-regional (and -cultural) trends emerged: Relationship infidelity was associated with agreeableness ($r_{\mathcal{M}} = -.21$, $r_{\mathcal{F}} = -.18$) and conscientiousness ($r_{\mathcal{M}} = -.16$, $r_{\mathcal{F}} = -.19$) in men and women consistently across all world regions. In addition, a number of smaller (mostly below the convention of $r = .10$ for a small effect according to Cohen, 1988), but still significant associations between infidelity and other Big Five dimensions were found in different world regions. However, the significance is probably due to the impressive sample sizes, whereas the magnitude of the effects is negligible. For further details on smaller effects in Western Europe and North America, please consult Table 5 or the original publications. Another five studies investigated the association between infidelity and the Big Five as well: While Egan and Angus (2004) report only a significant negative effect between lifetime-infidelity and agreeableness in their small but heterogeneous sample, Barta and Kiene (2005) detected in addition to a negative effect of agreeableness that students who admitted having been unfaithful in a dating relationship (emotionally and/or sexually) were furthermore less conscientious and more neurotic (an association to neuroticism was also reported by Whisman et al., 2007) than faithful students. Orzeck and Lung (2005) found for their small sample of paired undergraduates self-categorized cheaters to be significantly more extraverted, more open, and less conscientious than non-cheaters. In contrast, Russell et al. (2013) only found a small negative effect of openness on extra-marital sex in their longitudinal study over the course of 3.5 to 4.5 years with 207 newlywed couples. Finally, Foster et al. (2014) report small and inconsistent effects of neuroticism (-), extraversion (+), and openness (+) on composite infidelity (emotional and physical infidelity) in their longitudinal and cross-sectional studies with small samples of undergraduates. Thus, taking all mixed empirical results into account, it seems reasonable to put the highest bet on the study results of Schmitt (2004) because they are based on the highest number of participants – hence, low agreeableness and low conscientiousness should be regarded as the strongest predictors of infidelity among the Big Five.

The Big Five probably represent the most commonly applied taxonomy of personality although there are competing structural models. The HEXACO-model of personality (e.g., Ashton & Lee, 2007; K. Lee & Ashton, 2004) for example has been derived with the lexical approach just as the Big Five. It proposes six factors instead of five of which another three closely resemble their counterparts in the Big Five model: eXtraversion, conscientiousness, and openness. Differing and more complex associations to the Big Five exhibit honesty-humility, emotionality, and agreeableness. Honesty-humility includes facets such as sincerity, fairness, and unpretentiousness. Only one study analyzed and compared the relationships between the HEXACO- respectively the Big Five-Factors and relationship exclusivity, the infidelity dimension of the Sexy Seven (Bourdage, Lee, Ashton, & Perry, 2007). Their results, based on data of 230 undergraduates, revealed only two significant associations: Honesty-humility of the HEXACO-model and Big Five-agreeableness were moderately ($r = .30 - .40$) correlated with relationship exclusivity in the predicted direction, whereas all other associations turned out negligible.

The Dark Triad. The Dark Triad consists of three traits that can be problematic in interpersonal situations: Narcissism, machiavellianism, and psychopathy (Paulhus & Williams, 2002). The legend of Narcissus from greek mythology tells the story of a beautiful young man who is self-centered and rejects everyone who confesses their love to him. The goddess of revenge, Nemesis, decides to punish him and forces him to fall hopelessly in love with his own reflection in a pond. In one version he drowns while trying to unite himself with his reflection,

in another he commits suicide because he realizes that his love can never be satisfied. Accordingly, narcissism in personality psychology means a subclinical sense of self-centeredness, egotism, and grandiosity (Raskin & Hall, 1979). Machiavellianism got its name from the Italian philosopher Niccolò Machiavelli (*1469, †1527) who proposed that the end of gaining and keeping political power justifies all means, regardless of ethics and moral (printed first in 1532, Machiavelli, 1986). Therefore, a person that scores high on machiavellianism exhibits cold and manipulative behavioral patterns (Christie & Geis, 1970). Psychopathy as a subclinical trait manifests itself in antisocial behavior, a lack of both empathy and anxiety paired with high impulsivity. While it was originally researched and applied exclusively in clinical, mostly forensic settings (Hare, 1970) it has been validated in its subclinical form in the general population as well (Forth, Brown, Hart, & Hare, 1996). It is very important to note that all three traits as described here are to be conceptualized in a subclinical fashion and while they may sound similar in description and empirically do overlap, they are not identical (e.g., Paulhus & Williams, 2002).

One very recent study investigated the association between the Dark Triad and lifetime infidelity in a large heterogeneous online sample (Jones & Weiser, 2014). The authors found positive effects of psychopathy on infidelity for both sexes ($r_{\sigma} = .21$, $r_{\varphi} = .19$) as did Adams, Luevano, and Jonason (2014). Among the predictive validity of the Big Five for infidelity, Egan and Angus (2004) also investigated the role of psychopathy and found a positive effect. In women, machiavellianism additionally had a positive effect on infidelity ($r_{\varphi} = .19$) in the study of Jones and Weiser (2014). Conversely, McHoskey (2001) unraveled a positive effect of machiavellianism on infidelity only for men in his sample of undergraduates. Adams et al. (2014) found no effect of machiavellianism on lifetime infidelity at all. Finally, Jones and Weiser (2014) and McNulty and Widman (2014) did not find an effect of narcissism on lifetime infidelity while Foster et al. (2014) report moderate associations between composite infidelity (emotional and physical) and narcissism in both one longitudinal and one cross-sectional study. Similar cross-sectional results were reported by Hunyady, Josephs, and Jost (2008). Another study could not differentiate couples with a history of infidelity from faithful couples with individual levels of narcissism (Atkins et al., 2005). However, in this case it remains unclear whose narcissism levels were considered. Almost conform with these results, Wiederman and Hurd (1999) only found a small positive association between the narcissism facet *entitlement*, no associations were apparent between another narcissism facet *exploitiveness* and extradyadic sexual involvement.

Narcissism, although seemingly not very predictive in its subclinical form (Adams et al., 2014; Jones & Weiser, 2014; McNulty & Widman, 2014; Wiederman & Hurd, 1999), might actually have an effect on infidelity in its clinical shape, as has been previously demonstrated: A significantly bigger portion (45.7% vs. 20.0%) of a male sample diagnosed with narcissistic personality disorder admitted extramarital sexual adventures as compared with a psychologically healthy male sample (Hurlbert, Apt, Gasar, Wilson, & Murphy, 1994). In addition, other empirical results indirectly point in the direction that narcissism might be associated with infidelity as it is for example associated with short-term mating strategies (Holtzman & Strube, 2011). One other promising route was suggested by McNulty and Widman (2014) who pointed out that narcissism may not be specific enough. Instead, they demonstrated that narcissism predicts infidelity only, when activated in the sexual domain with longitudinal data from a sample of 123 newlywed couples. Sexual narcissism was conceptualized along four domains: Sexual exploitation, sexual entitlement, lack of sexual empathy, and grandiose sense of sexual skill.

Sensation Seeking. The construct of sensation seeking has first been described by Zuckerman, Kolin, Price, and Zoob (1964). In its most recent form it is “a trait defined by the seeking for varied, novel, complex, and intensive sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experiences” (Zuckerman, 1994, p. 27). It seems likely that high sensation seekers are more susceptible to the Coolidge effect which means sexual boredom when exposed to the same sexual partner for a longer period of time (see also p. 74). Alternatively, and given that the Coolidge effect is conferrable to humans, it may be explained, at least partially, by differential expressions of this trait.

The association between sensation seeking and risky sexual behavior, such as unprotected sexual encounters or large numbers of sexual partners, has been shown numerous times (e.g., Donohew et al., 2000; Horvath &

Zuckerman, 1993; Mashegoane, Moalusi, Ngoepe, & Peltzer, 2002; Zuckerman & Kuhlman, 2000) and even meta-analytically (Hoyle, Fejfar, & Miller, 2000). Infidelity as a key construct on the other hand, although certainly also being one kind of a risky behavior, has been rarely investigated. If so, empirical results point into a positive association between the two. Ripa, Hansen, Mortensen, Sanders, and Reinisch (2001) report significant positive associations between extramarital sex and all sensation-seeking facets according to Zuckerman, 1994: thrill and adventure seeking, excitement seeking, disinhibition, and boredom susceptibility⁵. The correlation of extramarital sex with global sensation seeking was $r = .30$. In a slightly older study, sexual sensation seeking predicted the extent of extradyadic sexual involvement in dating relationships (Wiederman & Hurd, 1999).

Self-Control. The construct of self-control has a lot of synonyms or at least constructs that exhibit some similarities within the psychological research literature such as executive control, impulse control, impulsivity or self-regulation. In the context of infidelity-research the definition proposed by Tangney, Baumeister, and Boone (2004) seems to be the most appropriate: Self-control is “the ability to override or change one’s inner responses, as well as [the ability] to interrupt undesired behavioral tendencies (such as impulses) and refrain from acting on them” (p. 274).

This construct has received heightened attention within infidelity-research during the past years. The empirical results mostly point into the direction that self-control in fact does exhibit negative associations to infidelity or at least its preliminary stages. With an impressive series of well-designed experiments Pronk et al. (2011) were repeatedly able to demonstrate the link between low levels of executive control – measured with executive control experimental tasks, e.g., the Stroop task – and the (self-reported) difficulty to stay faithful (Study 1), higher levels of flirtatious behavior of paired men with an attractive confederate (Study 2) and the willingness to meet an attractive confederate although in a relationship with another person (Study 3). Ciarocco et al. (2012) went one step further and manipulated self-regulation in an elaborate experimental design. Their results indicated that paired individuals whose self-control was depleted (they had to resist a plate of freshly baked cookies) were more likely to give away their phone number and agree to a coffee-date with an attractive stranger than individuals who were allowed to eat the cookies. Another pair of studies investigated whether sex differences in giving in to sexual tempting situations are ascribable to differences in self-control or impulse strength (Tidwell & Eastwick, 2013). In their first online questionnaire study, 218 participants were asked to describe a situation where they felt sexually attracted to another person although they knew it would be wrong to follow up on that desire. In addition, the sexual impulse strength, intentional control attempts, and behavioral enactment as the criterion (was sexual behavior, e.g., kissing, making out, having sex, initiated or not?) were measured. 29% described a situation where they were in a relationship with someone else at that time. Accordingly, behavioral enactment could have meant infidelity, although the authors did not report specific rates of behavioral enactment for each situational category. Men did report higher behavioral enactment rates and the results of two separate mediation analyses revealed that this was due to men’s stronger sexual impulses not their lack of controlling them. However, trait self-control did moderate the effect of the impulse strength-behavioral enactment link. The second study adopted a priming paradigm, where the participants were shown pictures of (un)desirable opposite-sex individuals together with primes indicating accept or reject. The trial-type (congruent vs. incongruent) affected men’s error rate stronger than women’s. In addition, the test of further experimental parameters indicated again that this results from stronger impulses to hit the button, not lesser levels of self-control in men. McIntyre, Barlow, and Hayward (2015) took a different angle: The authors hypothesized that self-control moderates the link between sexual desire and infidelity which they were able to demonstrate in one cross-sectional questionnaire and one experimental design with an ego-depletion vs. control task and a hypothetical scenario where the participants had to assess the likelihood of engaging in several sexual behaviors with an attractive stranger while in a relationship. Sexual desire was associated with lifetime infidelity only in participants with low trait self-control (Study 1). In their second study, the results implied

⁵Other conceptualizations of the construct exist, too. Roth and Hammelstein (2012) for example conceptualize sensation seeking as a need or motivational disposition rather than a trait and decompose it into the two facets need for stimulation and avoidance of rest.

a different pattern: Low sexual desire is only associated with a lower risk of infidelity when self-control is low. This result is somewhat puzzling and the authors failed to provide a plausible interpretation. As this marks the first study investigating the link, replication of this effect is needed. Finally, some research on addiction, which is not unrelated to self-control-issues, implies a relation to infidelity: Hall, Fals-Stewart, and Fincham (2008) report higher rates of extramarital affairs among men diagnosed with an alcohol addiction as compared with demographically stratified men without that addiction.

An interesting new study suggests that the mechanism behind the success of not giving in to temptations in people with high self-control lies to a larger extent in avoiding them altogether instead of resisting when facing them (Ent, Baumeister, & Tice, 2015). However, this association has only been shown in a work-related context: Undergraduates with higher trait self-control tended to choose a lab room over the more appealing but distracting graduate lounge for completing an anagram-solving task. Maybe the effect of self-control on infidelity lies more in people avoiding tempting situations like going to a bar or a club without their current romantic partner than resisting when being really tempted by an attractive third person.

Distress. In a longitudinal study, Hall and Fincham (2009) discovered that T1-distress predicted T2-infidelity. Distress was operationalized in this study as a conglomerate of guilt, shame, general well-being, state-trait anxiety, and depression. Therefore, it is highly unclear what specific state or trait is responsible for that effect. Maybe another label such as general negative affectivity would fit the group of variables better than distress? Unfortunately, it seems to be the only study to date that investigated distress not only as a consequence but also as a predictor of infidelity. Future research should attempt to shed some light on the relevance of this group of psychological variables.

Attachment. The psychological construct of attachment always refers to a current relationship with a specific person. John Bowlby (1975), the founder of attachment theory, believes, attachment is a primary need such as feeding or sleeping. Usually one person, mostly the mother, represents the first attachment figure a child bonds with. If a child exhibits attachment behavior, which could be expressed through crying or following the mother when she leaves the room (as documented for example by Ainsworth, Blehar, Waters, & Wall, 1978 in her famous “strange situation”-experiments), the mother should react with complementary caregiver-behavior when she returns, e.g., consoling or rocking the child back and forth. The individual experiences a child makes with its attachment figure may differ from one another which in turn leads to differential and stable *internal working models* (Bowlby, 1975) that become visible through different attachment styles: Mary Ainsworth (1978) identified three styles which were the *secure* (children react calm when mother leaves the room because they trust that she will return), the *insecure-avoidant* (children become stressed when mother leaves the room and react avoidant when she returns), and the *insecure-ambivalent* (children react with stress and behave ambivalent upon the mothers return) attachment style. Main, Kaplan, and Cassidy (1985) added the *insecure-disorganized* style (children behave inconsistently and do not exhibit a clear behavioral strategy).

These internal working models influence attachment behavior in adolescence as well, for example in romantic relationships (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Hazan & Shaver, 1987, 1994a) – the experiences an individual has made as a child with its attachment figure leads to the adult belief to know the reactions of other attachment figures, like a romantic partner, before they actually happen. Congruent behavior to the anticipated reactions is the result. According to attachment theorists, new experiences have to be very strong to be able to modify the present internal working models and in turn change the exhibited attachment style. The following four romantic attachment patterns, along the two dimensions dependence (model of self) and avoidance (model of other), have been identified in adults, which are fairly similar to the attachment styles observed in children: *secure*, *preoccupied*, *dismissive*, and *fearful* (Bartholomew, 1990; Bartholomew & Horowitz, 1991; Brennan, Clark, & Shaver, 1998).

The construct of attachment is not yet understood fully (Hazan & Shaver, 1994a). Several questions have been raised throughout the years that are partially still awaiting a definite answer: Is attachment better viewed as a trait and therefore as a personality construct rather than a relationship construct (Kobak, 1994)? Is attachment related to only one or to multiple relationships (Lewis, 1994)? How stable is an individuals’ attachment style

really? Hazan and Shaver (1994b) provided some tentative answers to some of the questions dropped here. With acknowledging these unsettled questions, attachment is categorized within the category of individual factors for the sake of convenience and because, although not independent from romantic experiences in adolescence and adulthood, formed in early childhood and relatively stable (Fraley, Vicary, Brumbaugh, & Roisman, 2011; Kirkpatrick & Hazan, 1994).

Attachment has been widely included as a predictor variable in infidelity-related research. In short, the evidence is mixed. What makes an integration of the existing results even more complicated is the variety of operationalizations: While some researchers conceptualize attachment along the dimensions avoidance and anxiety others work with three or four attachment styles.

In their study on the role of fluctuating asymmetry in infidelity-prediction (see section 6.3, p. 77), Gangestad and Thornhill (1997) controlled for effects of attachment: In women, avoidance had a negative and anxiety a positive effect on the number of extradyadic sexual partners. In men, attachment had no effect at all. Conversely, Helms and Bierhoff (2001) report a positive association between avoidance and composite infidelity but in line with prior results no association with anxiety. Similar results were reported by DeWall et al. (2011) in a series of four longitudinal studies: No effect of anxiety but positive effects of avoidance on composite infidelity. Yet again, contrary to the last two results, Fish, Pavkov, Wetchler, and Bercik (2012) report no effects of avoidance but a positive effect of anxiety on infidelity in their cross-sectional study. Notably, DeWall et al. (2011) and Fish et al. (2012) used the same measure for infidelity. Bogaert and Sadava (2002) found a small positive effect of anxious attachment on whether an affair occurred in the past year that disappeared after controlling for age, physical attractiveness (self-rated), income, and relationship status (serious or not serious). Another recent study on attachment and infidelity investigated the link with longitudinal dyadic data of newlyweds: One's own attachment anxiety as well as the partner's attachment anxiety and avoidance (-) predicted one's own occurrence of extramarital sex (Russell et al., 2013). Own attachment avoidance was unrelated which is in line with results of Fish et al. (2012) but contrary to the results of DeWall et al. (2011). In addition, one's own and partner attachment anxiety interacted in the way that only low anxious individuals that are married to partners also low in anxiety had a lower risk of extramarital sex. Finally, Graça Pereira et al. (2013) report positive associations between composite infidelity and the anxious as well as the avoidance dimension of attachment with cross-sectional data. The most puzzling results are possibly the negative associations between avoidance and extradyadic sex (Foster et al., 2014; Gangestad & Thornhill, 1997) and between partner avoidance and extramarital sex (Russell et al., 2013). Gangestad and Thornhill (1997) hypothesize this open and outgoing attachment structure might also be beneficial for sex outside the primary relationship. However, the first finding has only once been replicated with small samples of undergraduates and the latter finding has not been replicated at all to date so their meaning should maybe not be overemphasized. It makes more sense to expect positive associations between both dimensions, anxiety and avoidance, and infidelity. In fact, both associations have been demonstrated previously, although inconsistently. Romantically paired individuals that score high on both dimensions and are unfaithful would minimize the risk of getting hurt from their primary partners –he/she cannot be that important, otherwise they would stay faithful – and simultaneously would arrange for the primary relationship to not get past a certain level of emotional and/or spatial depth and closeness. In addition, sexual infidelity might serve as a tentative attempt of looking for an alternative partner.

Mixed is also the best term to describe results of studies, where attachment was conceptualized in the form of attachment styles: Whereas two studies found no effect of specific attachment styles (secure, preoccupied, dismissive, fearful) on sexual infidelity (Feldman & Cauffman, 1999; Plack et al., 2010), Allen and Baucom (2004) report a positive effect of the dismissive style in men and of the preoccupied style in women on infidelity. However, these effects were only apparent in a sample of undergraduates, not in a more heterogeneous community sample.

Love Styles. Although a wide variety of psychological theories about love exist, to my knowledge only love styles have been linked with infidelity to date. The concept of love styles stems from the Canadian sociologist John Alan Lee (J. A. Lee, 1973, 1977) who distilled six mutually exclusive, distinct conceptualizations of love

with both qualitative and quantitative methods. These love styles, or colours of love as he calls them, can characterize the kind of affiliation that prevails in adult relationships. The six styles can shortly be described as follows (J. A. Lee, 1977; Neumann & Bierhoff, 2004; Orlinsky, 1979; Regan, 2008): *Storge* is a type of love that develops slowly from a friendship and grows with time. *Agape* can also be identified as altruistic love: The agapic lover is very forgiving and helps the love-object no matter the cost. *Mania* or possessive love describes a very obsessive form of love, where jealousy is prevalent and positive and negative affective states alternate. *Pragma* – the pragmatic lover has weighed pros and cons of a person before he or she dedicates this kind of love. Therefore it is a cognitively loaded type of loving. *Ludus* or playful, gameplaying love expresses itself mainly in the form of short-term sexual adventures. *Eros* is a concept that can be also labeled romantic love. While eros, ludus, and storge represent primary love styles, the remaining three represent secondary styles that are built from combinations of the primary ones: Pragma is a combination of storge and ludus, mania is built from eros and ludus, and agape is a combination of eros and storge.

According to Hendrick and Hendrick (2006) love styles should best be construed as “partially attitudes/beliefs, partially facets of personality, [that] are related, at least loosely, to patterns of romantic social behavior” (p. 150). Similar to attachment styles, they are categorized in this category for the sake of convenience.

One major critique of the love styles was formulated by Shaver and Hazan (1988), who posited that three love styles should be subsumed by attachment styles [eros= secure, avoidant= ludus, anxious/ambivalent = mania] while the remaining three clearly do not represent real patterns of love at all. Hendrick and Hendrick (2006) conclude that romantic love is not captured solemnly in attachment styles, rather love styles and attachment styles build two separate systems that are, together with sexuality, the three most important factors of adult pair-bonding (p. 163). In addition, the authors praise the high face validity of the love styles that have proven very useful in practical settings such as couples therapy. However, face validity alone does not constitute a good theory.

There are very few studies that investigated the role of love styles in predicting infidelity. However, the results are consistent: Two studies report positive associations between the ludic love style and extradyadic dating (Wiederman & Hurd, 1999), extradyadic sexual involvement (Wiederman & Hurd, 1999), and composite emotional and physical infidelity (Helms & Bierhoff, 2001). Furthermore, Helms and Bierhoff (2001) measured all six love styles (while Wiederman & Hurd only measured ludus) and found a negative effect of eros, too. Ludus and eros independently predicted composite infidelity together with sexual permissiveness. When analyzed separately, eros and ludus again predicted emotional infidelity while only ludus remained a significant predictor of sexual infidelity.

6.5.2 Attitudinal Constructs

At first it is important to distinguish between attitudes and social norms. *Attitudes* in the most basic sense are subjective, affective evaluations of objects, social groups, situations etc. that are learned and predispose actions (Fishbein & Ajzen, 1975, pp. 5–13). *Social norms* on the other hand constitute societal expectations from individuals respective their behavior (Bicchieri & Muldoon, 2011). They are mostly well accepted by the majority of a society (e.g., a person should chew food with the mouth closed) and therefore help to structure social interactions and reduce the probability of conflict. Because of that distinction it seems reasonable to file social norms as explanatory constructs under the socio-cultural approach while attitudinal aspects are dealt with here.

Self-Esteem. Although the definition is far from easy or even established, self-esteem can be defined globally as an attitude towards oneself which includes cognitive, affective, and evaluative components (see Mruk, 2013). He integrates several definitions from throughout the field and finally proposes to conceptualize self-esteem as “[...] the lived status of one’s competence at dealing with the challenges of living in a worthy way over time” (Mruk, 2013, p. 27).

When justifications for infidelity are regarded, some studies find that participants report the ego-bolstering effects of infidelity on self-esteem as a reason why they engaged in infidelity (e.g., Allen & Baucom, 2004; Brand,

Markey, Mills, & Hodges, 2007; Omarzu et al., 2012). Accordingly, one would expect a negative relationship between infidelity and self-esteem. However, the results are in fact mixed and contradictory on that matter: While two studies report no association between extradyadic sex and self-esteem at all (Buunk, 1995; Shackelford, 2001), two others (see also section 6.7, p. 120) report small negative associations with infidelity in the current relationship (Træen, Holmen, & Stigum, 2007) resp. extramarital sex (Whisman et al., 2007). The latter, however, disappeared when controlling for marital dissatisfaction. Confusingly, Lammers, Stoker, Jordan, Pollmann, and Stapel (2011)⁶ report a positive effect of the confidence in the ability to attract a romantic partner and infidelity. Admittedly, this does not exactly constitute self-esteem but I think it is safe to assume both are not independent from one another, either. One additional interesting effect arose in the dyadic data of Shackelford (2001): Husbands of unfaithful women reported lower levels of self-esteem than wives of unfaithful husbands. Due to the cross-sectional nature of the data, cause and effect are not distinguishable, though – both directions are plausible.

To make matters worse, no longitudinal study investigated the role of self-esteem on infidelity to date at all, although it seems plausible that an affair might have an effect on own self-esteem and not just vice versa or on the partner as indicated above. Even more valuable insights could be provided by an empirical study on differential effects of implicit and explicit self-esteem on infidelity.

Sociosexuality. *Sociosexuality* or *sociosexual orientation* was originally proposed by Kinsey et al. (1948, 1953) and reintroduced by Snyder, Simpson, and Gangestad (1986). The construct represents the individual tendency of a person towards promiscuous behavior, e.g., having uncommitted sex with other people. The degree of an individual's sociosexual orientation can be depicted on a continuum ranging from restrictive towards permissive sociosexual orientation. Persons with a restrictive sociosexual orientation usually have long-term romantic relationships, less sexual partners, and rarely or never one-night stands. Permissive oriented individuals on the other hand have a more short-term-oriented mating strategy with more sexual partners and one-night stands (Simpson & Gangestad, 1991; Penke & Asendorpf, 2008).

Simpson and Gangestad (1991) developed a broad and global measure for sociosexuality, the SOI, consisting of 7 items (see Penke & Asendorpf, 2008, p. 1114). The concept of sociosexuality, as the items of the SOI imply, is a global, motivationally rooted orientation that does exhibit trait-like, stable qualities (2-month test-retest reliability was $r = .94$ in the validation studies) and includes behavioral tendencies, sex-related attitudes, and affective aspects, like spontaneous sexual fantasies (Simpson & Gangestad, 1991). However, the scales' psychological soundness was questionable, because it consists of a variety of different aspects (Penke & Asendorpf, 2008). Accordingly, Penke and Asendorpf (2008) revised the SOI and proposed a three-faceted structure with nine items (three for each facet) that allowed for a global score as well as facet-scores: *Sociosexual behavior*, *attitude*, and *desire*. The validation of this new measure revealed a high stability of the construct as well: 1-year test-retest reliability was $r_{tt} = .83$ in men and $r_{tt} = .78$ in women. Due to its high stability and the original description, sociosexuality exhibits great overlap to personality traits and could as well be categorized above under personality constructs.

Sociosexuality has been often a focal variable in infidelity-research with consistent results: Its positive association with sexual infidelity has been verified multiple times in experimental studies that investigated the role of sociosexuality in the prediction of preliminary stages of infidelity (Seal et al., 1994) as well as in cross-sectional (Barta & Kiene, 2005; Bourdage et al., 2007; Feldman & Cauffman, 1999; Foster et al., 2014; Havlicek et al., 2011; Helms & Bierhoff, 2001; Penke & Asendorpf, 2008) and longitudinal questionnaire-based studies (Foster et al., 2014). Except Helms and Bierhoff (2001), who measured sexual permissiveness with another instrument, all studies worked with the SOI and SOI-R, respectively. However, sociosexual behavior and desire might be confounded with actual sexual or emotional infidelity, depending on the timeframe investigated and the intradyadic relationship norms. If, for example, the criterion is whether extradyadic sex occurred within the past year and the relationship length exceeds one year, the answer to the first SOI-R item ("With how many

⁶This paper has been investigated due to the academic fraud scandal around the former supervisor of the first author, Diderik Stapel. However, it has been cleared of any data-fraud suspicion (Lammers, 2016).

different partners have you had sex within the past 12 months?") must be larger than one if the participant has been sexually unfaithful. Likewise, if sexual fantasies with other individuals are regarded as infidelity within a romantic relationship, the SOI-desire facet would actually measure infidelity. Unfortunately, those interdependencies have not been considered or even acknowledged in most of the studies cited above.

6.5.3 Motives

The concept of power is widespread throughout the scientific community – it is an important concept in political sciences, sociology and psychology to only name a few. According to Schmalt and Heckhausen (2010) power indicates an area-specific asymmetrical dyadic relationship regarding access to resources and status and manifests itself in a one-way control of behavior (translated from German, p. 213).

McClelland's monograph "Human Motivation" gave new impetus to the psychological research on motivation. He proposed three elementary needs or motives that trigger human behavior that differ interindividually in their relative level: the need for achievement (n-ach), the need for power (n-pow), and the need for affiliation (n-aff). In this context, he defined the need for power a little tautological as "the need primarily to feel strong, and secondarily to act powerfully. Influencing others is just one of several ways of satisfying the need to feel strong" (McClelland, 1975, p. 77).

Although the role of power motivation for the occurrence of infidelity has not been investigated to date, there is one study that linked actual power in the workplace and infidelity: Lammers et al. (2011) found a positive effect of workplace power on sexual infidelity. Its effect was completely mediated through one's own confidence to attract a romantic partner (measured with four items specifically developed for the study), though. In addition, Atkins, Baucom, and Jacobson (2001) combined the employment status of their participants to a dummy-coded predictor variable of extramarital sex that contained opportunity-aspects as well as aspects of power within the relationship: Their results indicated that unequal relationships with the respondent working and the spouse at home were most susceptible to infidelity in the direction that the respondents were most likely to admit extramarital sex when compared to the three other possible groups, namely both working, both home, and respondent home-spouse working. In addition, actual power in a relationship might also not be that far from the concept of commitment, introduced in the section above (section 6.4, p. 85) as illustrated by an interpretation of the negative commitment-extradynamic sex link applied by Blumstein and Schwartz (1983). They suggested that being the one who loves less (asymmetrical commitment) gives that person more power in the relationship which in turn makes extradynamic sex more likely (p. 283).

6.5.4 Summary and Critique

To sum this section up: Several personality, attitudinal, and motivation-related constructs which vary interindividually have been investigated with either very clear patterns of results (e.g., sociosexuality) or mixed patterns of results (e.g., attachment). However, to consider individual, dispositional factors when it comes to explaining infidelity seems necessary to get a global grasp of what leads to infidelity. One major point of critique is that the correlations between personality variables and the criterion variable of infidelity rarely exceed .30. These results conform with the critique of dispositionism and the lack of cross-situational consistency that was expressed for the first time by Walter Mischel way back in 1968. One potential factor that might be responsible for the small effect is the bandwidth-fidelity dilemma: While personality dimensions like the Big Five or the Dark Triad constitute relatively broad dimensions of person description, infidelity constitutes a relatively specific domain of behavior. To my knowledge, however, no researcher attempted to date, to analyze personality-infidelity associations on a hierarchically lower level, like Big Five facets.

What further complicates the interpretation of empirical results collected within this approach are both content- and analysis-related issues. The main issue is the lack of consistent definitions and operationalizations – take attachment, for example: It seems that half of the researchers conceptualize adult attachment along the two dimensions avoidance and anxiety (e.g., Helms & Bierhoff, 2001), while the other half uses attachment styles (e.g., Feldman & Cauffman, 1999) that also differ in number and description from study to study. While some authors report univariate associations in addition to multivariate analyses (e.g., Bogaert & Sadava, 2002),

others do not (e.g., Allen & Baucom, 2004). Some of these univariate associations between dispositional factors and infidelity subsequently disappear, when multiple predictors are analyzed simultaneously as in regression analyses.

Finally dispositional characteristics are not independent from one another. Instead, they share small or occasionally even large portions of variance (see for associations between Big Five and Dark Triad, e.g., Paulhus & Williams, 2002): If several of intercorrelating personality variables are employed as predictors of infidelity this might pose multicollinearity issues which goes hand in hand with interpretational problems. This fact might be a cause of some of the conflicting results presented above: Depending on what constructs were considered and entered in a study, other constructs might or might not have an effect on infidelity. One option, although certainly contradictory to the facet-level-analysis-proposal above, would be to reduce the dimensionality of dispositional characteristics before investigating their predictive validity for infidelity.

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Personality Traits							
Big Five + Honesty/Humility of the HEXACO-Model							
Schmitt and Buss (2000) [empirical]	dimension relationship exclusivity in the Sexy Seven-questionnaire: self-rating from 1 = <i>extremely inaccurate</i> to 9 = <i>extremely accurate</i> on the following adjectives (see also Schmitt, 2004; Schmitt & Shackelford, 2008): faithful, unfaithful (-), monogamous, polygamous (-), promiscuous (-), adulterous (-), devoted, loose (-)	Do sexual dimensions of person description represent discrete categories or should they be subsumed by the Big Five? → development of the Sexy Seven-questionnaire with a lexical approach	367 participants (217 women), mostly Caucasian and single, $M = 23$ years	questionnaire: sociodemographics, Big Five (adjectives), Sexy Seven, established sexuality measures for validation purposes	EFA; correlation analyses	effect of gender on relationship exclusivity with $w > m$, $d = . - 67$; significant correlations between relationship exclusivity and extraversion in men ($r = -.21$), agreeableness ($r = .37$), and conscientiousness ($r = .23$) in women; no other significant associations between Big Five and relationship exclusivity	(-) small homogeneous sample consisting mostly of young, single students; (-) the authors note that the dimension of relationship exclusivity might be decomposable into the facets promiscuity and infidelity without testing it; (-) questionable view of the Sexy Seven (including relationship exclusivity) as personality traits
Egan and Angus (2004) [empirical]	lifetime-sexual infidelity: one item asking, whether participant had (ever) engaged in sexual relations with someone other than their primary partner; number of relationships where infidelity was committed; indication whether affair was primarily sexually or emotionally driven (5-point Likert-type scale with three meaning both factors were relevant)	How does personality relate to infidelity?	84 workers (29 male) in a large non-academic office between 17 and 53 years ($M = 30$), 54 were single, 23 married and seven divorced, two were homosexual	questionnaire measuring sociodemographics, infidelity, Big Five, Psychopathy, mating effort (intrasexual competition), social desirable responding	two-way ANOVA; PCA for dimensional reduction of predictors	44.4% reported having been unfaithful at least once (no sex difference, although men exhibited higher rates of infidelity), main effects of psychopathy, mating effort (both unfaithful > faithful), agreeableness, and social desirability (both unfaithful < faithful); PCA revealed three components accounting for 71.6% of variance, labeled: social dominance, manipulateness (psychopathy, agreeableness, mating effort), and outgoingness → significant main effect of manipulateness on infidelity + significant sex-affair-IA on dominance: unfaithful males and faithful females were high in dominance whereas faithful males and unfaithful females were not	(+) heterogeneous sample; (-) small sample; (-) relationship agreement not measured; (-) cross-sectional
Schmitt (2004); Schmitt and Shackelford (2008) (nearly identical sample, similar numbers) [empirical]	relationship infidelity: self-rating on the following adjectives from 1 = <i>extremely inaccurate</i> to 9 = <i>extremely accurate</i> : adulterous, devoted (-), faithful (-), monogamous (-), polygamous, unfaithful [items from the Sexy Seven questionnaire (relationship exclusivity-dimension), see also Schmitt & Buss, 2000]	How does personality relate to sexual risk-taking, especially infidelity and promiscuity?	International Sexuality Description Project: 16,352 participants from 52 nations	questionnaire: sociodemographics, personality measure: 44-item Big Five Inventory (BFI, Benet-Martínez & John, 1998); sexuality measure: Sexy Seven measure consisting of 67 sexuality-related adjectives (Schmitt & Buss, 2000 - assesses sexual attractiveness, relationship exclusivity (two subscales: infidelity and promiscuity), gender orientation, sexual restraint, erotophilic disposition, emotional investment, sexual orientation	correlations	Consistently across all world regions, associations between infidelity and agreeableness ($r = -.21$ in men; $r = -.18$ in women), and conscientiousness ($r = -.16$ in men; $r = -.19$ in women); additionally significant relations to extraversion ($r = .08$ vs. $r = .04$); in women: neuroticism ($r = .02$ vs. $r = .03$); in men: openness ($r = -.04$ vs. $r = .00$ ns) BUT very small / western Europe: agr ($r = -.16$ both sexes); con ($r = -.16$ vs. $r = -.17$) [and ext in women: $r = .05$] / north America: agr ($r = -.20$ vs. $r = -.22$); con ($r = -.16$ vs. $r = -.24$) [and ext in men: $r = .10$; neu in women: $r = .06$; ope in men: $r = -.07$]	(+) huge sample; (+) cross-cultural; (-) relationship agreement not measured BUT adjectives imply norm breach
Barta and Kiene (2005) [empirical]	dating infidelity: "In a dating relationship, have you ever made an agreement not to get involved with someone else?" + "Did you get involved with someone else, either emotionally or sexually, anyway?" → yes to both questions = dating infidelity	Can infidelity motivations best be described on two dimensions (emotional, sexual)? What effects does personality have on infidelity?	432 heterosexual and unmarried students (116 male), 59% sexually experienced, $M_{age} = 19$ years	questionnaire: sociodemographics, Big Five, motivations for infidelity	EFA; CFA; ANOVA; MANCOVA	32.3% have been unfaithful (ever, no sex difference); 4-factorial solution for motivations-items: dissatisfaction, neglect, anger, sex; positive association between infidelity and sociosexuality ($d=.75$), neuroticism ($d=.36$), number of prior sexual partners ($d=.81$); negative association with agreeableness ($d=.27$), conscientiousness ($d=.52$); no effects of extraversion, openness	(+) relationship agreement measured and considered; (+) fairly large sample BUT (-) homogeneous; (-) no distinction between sexual and emotional infidelity
Orzeck and Lung (2005) [empirical]	sexual infidelity: participants classified themselves and their partners as (non-)cheaters based on extradyadic kissing, petting and intercourse	How do the Big Five relate to sexual infidelity?	104 paired, monogamous and heterosexual university students (59 females) aged between 18 and 25 ($M = 20.5$)	questionnaire: sociodemographics, Big Five (trait rating adjectives), cheating	MANOVA; ANOVA	35 (33.7%) identified themselves as cheaters, the partners where all classified as non-cheaters; significant differences between cheaters (c) and non-cheaters (nc) emerged on extraversion ($c > nc$), openness ($c > nc$), and conscientiousness ($c < nc$); no differences on agreeableness and neuroticism	(-) small sample; (-) cross-sectional; (+) relationship agreement measured

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Bourdage et al. (2007) [empirical]	dimension relationship exclusivity in the Sexy Seven-questionnaire (see above at Schmitt and Buss (2000) for details)	Do the Big Five and Honesty-Humility predict relationship exclusivity?	230 undergraduates ($n = 122$ female), aged between 19 and 52 ($M = 22.5$)	questionnaires measuring Big Five and Honesty-Humility, the Sexy Seven and Sociosexuality	zero-order correlations with and without controlling for sex; multiple correlations	main predictors of relationship exclusivity were honesty-humility ($r = .38$) and NEO-FFI agreeableness ($r = .34$); HEXACO-model in whole yielded significantly larger multiple correlations with relationship exclusivity than NEO-FFI model ($R = .45$ vs. $R = .35$); sociosexuality was strongly associated with relationship exclusivity ($r = -.70$)	(-) small, homogeneous sample; (-) cross-sectional; (+) relationship agreement not measured; no significances of zero-order correlations reported
Russell et al. (2013) [empirical, longitudinal, dyadic data] → see also Table 4 (p. 98)				<p>Results: total of 22 participants (5.3%) reported own and/or their spouses infidelity; significant effects on infidelity had openness ($B = -.07$, $OR = 0.93$), own attachment anxiety ($B = .74$, $OR = 2.10$), partner attachment anxiety ($B = .44$, $OR = 1.56$), partner attachment avoidance ($B = -.80$, $OR = 0.45$), and study ($B = -.89$, $OR = 0.41$) / no effects of own attachment avoidance, rest of the Big Five, attrition, gender, frequency of sex, marital satisfaction - attachment explained 6.1% of variance in this model; in an additional model test for IA-effects regarding attachment dimensions: only own*partner attachment anxiety significant ($B = -.95$, $OR = 0.38$, lower probability of infidelity only for those low in anxiety that are married to low anxious partners) - attachment and interactions explained 13.6% of variance in this model</p> <p>Results: Study 2: significant univariate correlations [among others] between infidelity and extraversion ($r = .17$), narcissism ($r = .36$), attachment avoidance ($r = -.22$), and sociosexuality ($r = .39$), no significant associations to rest of Big Five and attachment anxiety / Study 3: significant univariate correlations [among others] between infidelity and neuroticism ($r = -.16$), openness ($r = .19$), narcissism ($r = .23$), attachment avoidance ($r = -.20$), and sociosexuality ($r = .54$); no significant associations [among others] to rest of Big Five and attachment anxiety</p>			
Foster et al. (2014) [empirical, longitudinal] → see also Table 4 (p. 98)				<p>Results: Study 2: significant univariate correlations [among others] between infidelity and extraversion ($r = .17$), narcissism ($r = .36$), attachment avoidance ($r = -.22$), and sociosexuality ($r = .39$), no significant associations to rest of Big Five and attachment anxiety / Study 3: significant univariate correlations [among others] between infidelity and neuroticism ($r = -.16$), openness ($r = .19$), narcissism ($r = .23$), attachment avoidance ($r = -.20$), and sociosexuality ($r = .54$); no significant associations [among others] to rest of Big Five and attachment anxiety</p>			
Dark Triad							
Hurlbert et al. (1994) [empirical]	extramarital affairs	Is narcissistic personality disorder related to extramarital sex?	two samples of married men (35 each) matched on age, education, marriage length, and religion: one sample diagnosed with narcissistic personality disorder vs. one mentally healthy sample	questionnaire battery to validate the Hurlbert Index of Sexual Narcissism	chi-square test	45.7% (16/35) of men in narcissistic group vs. 20% (7/35) of comparison group have been involved in extramarital affairs	(+) stratified comparison sample; (-) small sample; (-) relationship agreement not measured
Wiederman and Hurd (1999) [empirical]	extradyadic dating: Ever gone out on a date with someone else while in a serious relationship? / extradyadic sexual involvement: Ever ... (kissed, made out, performed resp. received oral sex, had sexual intercourse) with someone else while in a serious relationship?	What are predictors of (sexual) dating infidelity?	691, mostly Caucasian, students (299 male) aged between 18 and 24 ($M = 18.9$), 45.6% in a serious relationship, 32.4% single, 22% casually dating one or more persons	questionnaire: sociodemographics, sex-love-marriage association (measures how much participants views the three aspects as belonging together), sexual sensation seeking, narcissism facets entitlement and exploitiveness, ludic love style, ability to deceive partner, extradyadic dating, and extradyadic sexual history	chi-square test; logistic regression; multiple linear regression	extradyadic dating: 44.7% of men and 39.5% of women (<i>ns</i>) reported extradyadic dating (ever); significant predictors of binary coded extradyadic dating (yes/no): exploitiveness (partial $r_{xy.w} = .05$), sexual sensation seeking (partial $r_{xy.w} = .08$), ludic love style (partial $r_{xy.w} = .21$); not significant: age, religiosity, sex-love-marriage, entitlement, ability to deceive / extradyadic sexual involvement: men were sexually more intimate than women ($d = .35$), significant predictors of composite sexual infidelity (0 to 1): ludic love style ($\beta = .18$), sexual sensation seeking ($\beta = .17$); not significant: religiosity, narcissism facets, age, sex-love-marriage association, ability to deceive	(+) large BUT (-) homogeneous sample; (-) relationship agreement not measured; (-) distinction between extradyadic dating and extradyadic sexual involvement
McHoskey (2001) [empirical]	infidelity: "I frequently cheat on my girlfriend/boyfriend (i.e. "necking" or more with someone else)." on a 5-point Likert-type scale from 1 = strongly disagree, 3 = neither disagree nor agree, 5 = strongly agree	Is machiavellianism related to infidelity?	159 undergraduates between 18 and 21, mostly Christian	questionnaire with sociodemographic items, measures of machiavellianism and cheating (among others)	correlation	machiavellianism is significantly related to cheating in men ($r = .43$), no significant association in women ($r = .03$)	(-) small, homogeneous sample; (-) cross-sectional; (-) relationship status and agreement not measured BUT wording of cheating-item implies norm-breach
Egan and Angus (2004) [empirical]: see above				<p>Results: no significant effect of narcissism on the prediction of the occurrence of an affair within a couple [among other significant and insignificant effects]</p>			
Atkins et al. (2005) [empirical, dyadic data] → see also Table 4 (p. 98)				<p>Results: paper-pencil questionnaires measuring sociodemographics, narcissism, family and relationship history including infidelity</p>			
Hunyady et al. (2008) [empirical]	infidelity: "Did you ever have an ongoing affair while you were in a committed relationship?" (yes/no); "How many of your romantic partners did you cheat on in the past?" (range: 0-17)	Is narcissism related to infidelity?	316 undergraduates (70 men), $M = 22$ years old, 66.9% Caucasian, 90.3% had been or were currently in a romantic relationship, 79.3% had experience with sexual intercourse	paper-pencil questionnaires measuring sociodemographics, narcissism, family and relationship history including infidelity	correlation	29.7% admitted having cheated at least on one romantic partners / both indicators of infidelity (had affairs, number of partners cheated on) consistently correlated with narcissism ($r = .23$ vs. $r = .28$) and self-rated own jealousy ($r = .17$), only one criterion (had affairs) significantly correlated with parental infidelity ($r = .18$), no association with parental separation; intercorrelation of both infidelity-measures: $r = .59$	(-) small, homogeneous sample; (+) two infidelity-indicators; (-) cross-sectional; (-) relationship agreement not measured (although wording implied norm breach); (-) seemingly participants without experience with romantic relationships and/or sexual intercourse not excluded from analysis

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Adams et al. (2014) [empirical]	extra-pair relationship: number of times the participants engaged in One Night Stands (ONS), Booty calls, friends-with benefits or serious, romantic relationships while in a committed, monogamous relationship – used criterion was number of extrapair partners, separately for each type of relationship	Are Dark Triad traits associated with experiences with extra-pair relationships?	210 participants (119 women) between 18 and 68 ($M = 33.6$ years)	online questionnaire on Mechanical Turk (Buhmester, Kwang, & Gosling, 2011): Dark Triad, experiences with relationships (ONS, booty-call-relationships, friends with benefits, and serious, monogamous relationships), experiences with extrapair relationships	negative binomial regression	only psychopathy was significantly (while controlling for other Dark Triad Traits) and uniquely associated to number of extradyadic one night stands and booty calls, no unique associations for machiavellianism and narcissism – one zero-order association of narcissism disappeared when the other two traits were controlled	(-) small sample; (+) heterogeneous sample in terms of age; (-) slightly unusual operationalization of infidelity; (-) cross-sectional
Foster et al. and Jones and Weiser (2014) [empirical]	(2014) [empirical, longitudinal]: infidelity: “Have you ever been unfaithful to your current (or most recent) partner?” (yes/no)	see above and Do Dark Triad-traits predict infidelity and how are they related to consequences of infidelity?	Table 4 884 individuals (457 men), aged 18 to 74 ($M = 30.5$ years), 72% in a romantic relationship, mostly Caucasian	online questionnaire on Mechanical Turk: sociodemographics, Dark Triad, infidelity, did infidelity cause end of relationship	correlations; binary logistic regression	22% reported infidelity; in men: only psychopathy uniquely predicted infidelity ($B = .50$); although univariately all traits significantly correlated with infidelity ($r = .12$ for N and M and $r = .21$ for P); in women: all three predicted infidelity, psychopathy with $B = .49$ ($r = .19$), narcissism with $B = -.36$ ($r = .00$ – probably shared variance with psychopathy), machiavellianism with $B = .33$ ($r = .19$) / among unfaithful participants 21.8% indicated their infidelity was cause of breakup; of the Dark Triad only psychopathy significantly predicted relationship dissolution after committed infidelity ($B = -.57$), no effect of gender	(+) large sample with many men (which is rare); (-) cross-sectional; (-) no information about Pseudo- R^2
McNulty and Widman (2014) [empirical, longitudinal, dyadic data] → see also Table 4 (p. 98)				<u>Results:</u> significant effects on prediction of sexual infidelity [among others] had own sexual narcissism ($\beta = 2.20$, $OR = 9.02$), no significant effects [among others] of own narcissism, partner sexual narcissism, and partner narcissism			
Sensation Seeking							
Wiederman and Ripa et al. (2001) [empirical]	extramarital intercourse (ever; yes/no)	see above Is sensation seeking related to infidelity?	691 individuals (363 male), $Age = 31.7$ years	broad range of questionnaires to validate the Danish version of the Sensation Seeking Scales V + interview	correlations	58% of men and 55% of women reported extramarital sex; extramarital intercourse was significantly related to all subscales of the Danish SSS (correlation with global sensation seeking: $r = .30$)	(+) large sample; (-) relationship agreement not measured
Self-control							
Hall et al. (2008) [empirical]	extramarital sex (vaginal or anal) during the previous year	Is alcoholism linked to infidelity?	two samples, each consisting of 125 married men – one sample ($n = 125$) diagnosed with alcoholism, samples were matched on sociodemographics that have been shown to be associated with infidelity (age, education, income, employment status, length of marriage)	structured and semi-structured interviews + self-report measures on substance use, psychosocial histories and the marital relationship	chi-square test	significantly more men in the patient group reported extramarital intercourse within the last year (14 % vs. 4%, $OR = 4.04$)	(+) matched samples; (-) small sample
Mark et al. (2011) [empirical] → see also Table 4 (p. 98)				<u>Results:</u> effects for both sexes on sexual infidelity [among others]: sexual excitation, inhibition (-), and tendency to engage in regretful sexual behavior when in certain moods Study 1: executive control task, questionnaire: self-reported difficulty in staying faithful / Study 2: other ec-task + flirtatious behavior with confederate during simulated waiting situation / Study 3: Stroop task + self-expressed desire to meet attractive opposite-sex person in an “acquaintance game”			
Pronk et al. (2011) [empirical]	no actual infidelity measured	Does executive control explain why some stay faithful while others do not?	Study 1: 72 paired students (13 men) / Study 2: 21 heterosexual, paired men ($M = 23$ years old) / Study 3: 65 heterosexual students (37 paired)	structured and semi-structured interviews + self-report measures on substance use, psychosocial histories and the marital relationship	correlations; regression analysis	Study 1: positive association between difficulty to stay faithful and reaction times (indicating lower executive control; $r = .30$) / Study 2: higher executive control was associated with less flirting behavior (while attractiveness of confederate and participant controlled) / Study 3: executive control predicted desire to meet attractive stranger, but only in romantically involved participants (controlled for perceived attractiveness of stranger)	(+) compelling experimental work; (+) robustness of effect illustrated with three experiments; (-) no actual infidelity, solely preliminary stages (depending on relationship agreements)

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Ciarocco et al. (2012) [empirical]	no actual infidelity measured but behavioral measures of giving away the phone number and agreeing to a coffee date during online communication with a confederate (rated as somewhat inappropriate in a monogamous relationship during piloting) + self-rated likelihood of giving number and agreeing to coffee date in a questionnaire after interaction	How does impaired self-regulation affect the likelihood of infidelity?	32 paired students (19 female) aged between 18 and 23 in exclusive romantic relationships, mean relationship length was 15.3 months, mostly Caucasian	Cover story: Purpose of study was examination of techniques from a local speed dating service – Procedure: demographic and interpersonal questionnaire (to support cover story); photograph was taken; participants thought another participant (actually confederate) would see – food task: two plates with 1) five radishes and 2) freshly baked chocolate chip cookies: depletion condition was taste test of three radishes, leave the rest including the cookies / control condition: eat three cookies, leave the rest – participants reviewed picture and answers of interpersonal questionnaire and picture of the confederate followed by a 10 minute online communication with that attractive confederate who asked for number and for a coffee date during the communication – questionnaire to rate interaction and manipulation check (open-ended question about what true nature of the study was and how difficult it was to resist)	chi-square test; independent samples t-test; point-biserial correlations	self-control depleted participants were more likely to give away their number ($\phi = .48$) and agree on a coffee date ($\phi = .43$); no significant effects (due to low power) on self-reported likelihood of infidelity (phone number: $d = .58$, $p = .14$, coffee date: $d = .33$, $p = .39$)	(+) experimental design; (–) small sample, even for an experiment; (–) no consideration of potential sex differences
Tidwell and Eastwick (2013) [empirical]	infidelity measured only indirectly (see measures)	Do sex differences in self-control (impulses vs. intentional control) explain sex differences in infidelity?	Study 1: 218 individuals (70 men), aged 18 to 70 ($M = 32.3$ years), mostly Caucasian / Study 2: 600 heterosexual undergraduates (326 men), $M_{age} = 18.6$ years, mostly Caucasian	Study 1: Online questionnaire on Mechanical Turk – participants were asked to describe one instance where they were attracted to someone but this person was wrong to pursue and categorize the content [e.g., self in another relationship (29%), other person in relationship (36%), bad match (36%)], sociodemographics, sexual impulse strength, intentional control attempts, behavior enactment (e.g., kissing, making out, having sex), self-control, sex drive / Study 2: Romantic identification priming task: photographs of (un)desirable opposite-sex individuals shown together with a prime indicating accept or reject – response time measured; subset of participants completed Stroop task to control for executive control; different subset completed measures from Study 1	Study 1: t-test; mediation analyses; moderated mediation / Study 2: repeated-measures-ANOVA	Study 1: Men reported greater behavior enactment and mediation analyses indicated this was a result of men's stronger sexual impulses not their lack of controlling such impulses (second mediation <i>ns</i>); mediated association was overridden by composite of trait-self-control and intentional control attempts that moderated the association between composite of impulse strength and sex drive and behavioral enactment / Study 2: Trial-type (congruent vs. incongruent) had a stronger effect on error rates of men than of women; other parameters further implied that this effect is due to the stronger impulse to hit the button	(+) two studies with two different methods reached nearly the same conclusion; (+) experimental approach; (+) clear distinction of impulse strength and self-control
McIntyre et al. (2015) [empirical]	Study 1: Infidelity: “Did you ever cheat on someone with whom you were in a committed relationship?” (yes/no); frequency of infidelity (total number); total number of extradyadic partners / Study 2: likelihood of engaging in unfaithful behavior with an attractive stranger in a scenario	Does trait-self control moderate the link between sexual desire and infidelity?	Study 1: 321 participants (85% US residents) between 18 and 67 years ($M = 26.0$), 164 men and 155 women, 55.5% in a relationship / Study 2: 120 undergraduates (81 female) between 17 and 72, 38% in a relationship	Study 1: online questionnaire measuring demographics, trait self-control, sexual desire, infidelity / Study 2: experiment with control (crossing all e's out of a text) and self-control depletion-condition (more complex rule: cross out the e's, except those within two vowels; afterwards: infidelity scenario; finally: questionnaire measuring desire-facet of sociosexuality and demographics	hierarchical linear regression; simple slope analysis	Study 1: no unique effects of trait-self control and sexual desire but significant interaction between the two → sexual desire predicts infidelity only when trait-self control is low – similar results for all three infidelity-measures; controlled for gender and relationship status (no information about their effects) / Study 2: sexual desire (measured as SOI-D) and experimental condition interact again → infidelity-likelihood was significantly lower for ego- (and therefore self-control)-depleted participants only when sexual desire was low (no difference between infidelity-likelihood of depleted and non-depleted participants with high sexual desire and non-depleted participants with low desire) → “[...] rather than representing a behavioral catalyst for people with intense underlying sexual desires, depletion may actually allow people with weak sex drives to avoid situations where there may be risks of social embarrassment or rejection”; again: controlled for gender and relationship status (no information about their effects)	(+) multimethodological approach; (+) experimental approach BUT (–) scenario-design and (–) no manipulation check; (–) interpretation of the results in Study 2 not plausible; (–) no simple slopes in Study 1

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Hall and Fincham (2009)	[empirical, partially longitudinal]	→ see also Table 4 (p. 98)		Results: Study 1: 35% reported emotional and/or physical infidelity (of those 29% classified their behavior as emotionally unfaithful, and 43% as both); significant differences between unfaithful and faithful participants on depression, shame, guilt, intrusions (of event), avoidance (of event) [unfaithful > faithful] as well as well-being and self-forgiveness [unfaithful < faithful], no difference on anxiety → effects did hold, when transgression severity included as covariate, because unfaithful behavior was rated as more severe than other offenses / Study 2: 23% reported infidelity at T1 (within the past month) and 14% at T2 (interval was four weeks) – mostly labeled as emotional infidelity; T1-infidelity ($\beta = .43$) and T1-distress ($\beta = .23$) but not relationship satisfaction ($\beta = .01$) predicted T2-infidelity; T1-infidelity neither had an effect on T2-satisfaction ($\beta = -.01$) nor T2-distress ($\beta = .00$)			
Attachment							
Gangestad and Thornhill (1997)	[empirical]	→ see also Table 3 (p. 84)		Results: In women, only anxious and avoidant attachment styles positively predicted number of EPC partners. In men, no effects of attachment [but other effects]			
Feldman and Cauffman (1999)	sexual infidelity: Participants were asked whether they had ever engaged in petting or sexual intercourse with another person while in a monogamous relationship (yes/no)	What are correlates of sexual infidelity?	417 heterosexual college students between 18 and 24 years ($M = 20.4$) who had been in a romantic relationship at least once, 48.5% female	questionnaire: sociodemographics, betrayal behavior, attitudes toward betrayal, attachment style (secure, anxious avoidant, anxious ambivalent), sociosexuality, age at first intercourse, number of romantic relationships	correlations; multiple linear regression	no effects of gender and age; ethnicity: Asian Americans engaged the least and African Americans the most in sexual infidelity – effects disappeared when controlling for age at first sexual intercourse; further predictors of sexual infidelity were sociosexuality ($r = .31$, $\beta = .16$), age at first sexual intercourse ($r = -.30$, $\beta = -.18$), and number of romantic relationships ($r = .30$, $\beta = .22$); no relations between attachment style and sexual infidelity	(-) homogeneous sample; (+) relationship agreement measured
Helms and Bierhoff (2001)	10 dichotomous (yes/no) items measuring emotional (e.g., flirting) and physical infidelity (e.g., affair)	Do sex, attitudes, and personality variables predict infidelity?	96 paired participants, majority students (51 women), aged between 19 and 35; relationship duration between one month and 17 years ($M = 42$ months)	questionnaire with sociodemographic items; measurement of love styles, attachment (on the dimensions anxiety and avoidance), sex role orientation, sexual attitudes (permissiveness, instrumentality, communion, and responsibility; the latter excluded from analyses due to low reliability); self-constructed infidelity-questionnaire	correlations; ANOVA; multiple linear regression	no sex difference in type of infidelity; significant associations between reported composite infidelity and the two love styles eros ($r = -.57$) and ludus ($r = .58$), avoidance ($r = .28$), the sexual attitudes permissiveness ($r = .45$), instrumentality ($r = .26$), and communion ($r = -.22$) / no effects of the other four love styles, anxiety, sex role orientations (masculinity, femininity); linear regression with all significant correlates yielded three independent effects of eros ($\beta = -.35$), ludus ($\beta = .34$), and permissiveness ($\beta = .18$) with an overall- R^2 of .47 on composite infidelity [in separate regressions: only ludus and eros predicted emotional infidelity and only ludus predicted sexual infidelity]	(+) measurement of emotional and physical infidelity BUT (-) mixture of actual and hypothetical infidelity-items; (-) relationship agreement not measured; (-) small sample; (-) cross-sectional; (-) no complex associations regarded
Bogaert and Sadvava (2002)	affair in the past year?; partner had an affair in the past year? (yes/no)	How do infidelity and attachment relate?	792 individuals between 19 and 35 (327 male, $M_{age} = 28$), mostly married or in a relationship (72%)	questionnaire: sociodemographics, attachment (secure, anxious), sexuality related items	PCA; correlations; linear regression	5% indicated they had an affair within the past year; 4% reported, their partner had an affair → combined to infidelity-dimension; univariately infidelity was unrelated to secure attachment and positively related to anxious attachment in women ($r = .14$); effect disappeared when influence of other variables was controlled (age, income, physical attractiveness, relationship status [serious or not serious])	(+) fairly large sample; (-) cross-sectional; (-) combination of own and partner infidelity; (-) relationship agreement not measured
Allen and Baucom (2004)	extradyadic involvement: romantic or sexual behavior with someone other than the primary partner while in relationship	How does attachment style relate to extradyadic involvement?	Sample 1: 504 undergraduates (had to be involved in dating relationships of at least one month duration within last two years) from 17 to 23 years ($M = 19$), mostly Caucasian / Sample 2: 251 community participants (132 female) currently or previously married, aged between 21 and 84 ($M = 40$), mostly Caucasian	questionnaire: sociodemographics, extradyadic experiences questionnaire (93 items and 22 scales) including: onset of EDI, reactions to EDI, attitudes toward EDI, motivations for EDI, characterizations of EDI; attachment	two-way ANCOVA; two-way ANOVA	69% of undergraduates and 46% of community participants reported at least one EDI (ranging from falling in love to sexual intercourse) / undergraduate-sample: main effects of gender and attachment style as well as interaction: men reported more EDI-partners than women and participants with a dismissive style reported more partners than all other groups, women with a preoccupied style had more extradyadic partners than securely attached women; community sample: only main effect of gender (men>women)	(+) two samples; (+) broad measure of infidelity BUT (-) no differentiation between several types; (-) relationship agreement not measured; (-) cross-sectional
Plack et al. (2010)	[empirical]	→ see also Tables 4 (p. 98) and 6 (p. 119)		Results: not significant predictor [among others] of binary coded infidelity: attachment style (secure, preoccupied, dismissive, fearful)			
DeWall et al. (2011)	[empirical, partially longitudinal]	→ see also Table 4 (p. 98)		Results: only four of the eight studies used infidelity as the criterion variable, therefore only these results will be reported here: Study 3: In a 6-week longitudinal study (two times of measurement) T1-composite-infidelity ($\beta = .52$) and avoidant attachment ($\beta = .10$) predicted composite-infidelity at T2 (while controlled for gender and anxious attachment – <i>ns</i>) – Study 7 used the same design and replicated the findings; in addition, the association between avoidant attachment and composite infidelity was mediated through commitment, but not through relationship satisfaction and closeness / Study 4: In a 2-month longitudinal study (two times of measurement) T1-sexual infidelity ($\beta = .40$) and avoidant attachment ($\beta = .11$) predicted sexual infidelity at T2 (while controlled for gender and anxious attachment – <i>ns</i>) – Study 8 used the same design and replicated the findings and again, illustrated the mediating role of commitment (but not satisfaction and closeness)			

Table 5: Dispositional (Individual, Personality-Related) Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Fish et al. (2012) [empirical]	infidelity scale (Drigotas et al., 1999); 11-item scale that measures physical and emotional infidelity (can be merged to composite infidelity)	What role does attachment and differentiation play in the prediction of infidelity?	353 participants (90 male) between 18 and 75 ($M = 24$ years), mostly Caucasian (60.3%), 35.4% without partner, 2.8% in open or other than monogamous relationship, mostly heterosexual (92.4%)	online questionnaire that measured attachment: anxiety and avoidance, differentiation (= "one's ability to balance emotional and intellectual functioning and autonomy and intimacy within relationships", p. 218)	one-way ANOVA; bivariate correlation; multiple linear regression	in univariate analyses anxiety, avoidance and differentiation had effect on infidelity; in multiple linear regression significant effects of race (African Americans were more likely to have been unfaithful, $\beta = -1.18$), divorced parents ($\beta = .12$), education ($\beta = .12$), anxiety ($\beta = .14$), differentiation; fusion with others ($\beta = -.27$) / no significant effects of avoidance, other differentiation-facets, parents had affair(s) - $R^2 = .147$	(+) relationship agreement measured BUT (-) not considered in analyses; (+) fairly large, heterogeneous sample in terms of age, education, relationship type, and sexual orientation BUT (-) no consideration of relationship type and sexual orientation in analyses; (-) cross-sectional
Russell et al. (2013) [empirical, longitudinal, dyadic data]	see above and Table 4						
Foster et al. (2014) [empirical, longitudinal]	see above and Table 4						
Graça Pereira et al. (2013) [empirical]	→ see also Table 4 (p. 98)						
Results: univariate associations between composite infidelity and anxious ($r = .13$) as well as avoidant attachment ($r = .26$) [among other significant and insignificant associations]							
Love styles							
Wiederman and Hurd (1999) [empirical]: see above							
Helms and Bierhoff (2001) [empirical]: see above							
Attitudinal and normative constructs							
Buunk (1995)	Extradyadic sexual involvement (self and partner): "Did you engage in extradyadic sex during the past year?" 1 = never, 2 = once or twice, ..., 7 = more than 10 times / same question asked for behavior of their partner	Are self-esteem and sexual infidelity associated?	sampled 1977: 250 paired Dutch individuals (125 men), mostly married (79%, remaining 21% were cohabiting), relationship length between one and 45 year/s ($M = 10$ years) aged from 18 to 70 ($M = 35$) → same sample as Buunk and Bakker (1995) (see Table 7, p. 140)	mailed questionnaire measuring sociodemographics, self-esteem, extradyadic sexual involvement	correlations	26% of men and 18% of women reported extradyadic sex within the past year; 19% of men and 22% of women indicated their partner had engaged in EDI; self-esteem did not correlate with own or partner's infidelity during past year (.06-.16, <i>ns</i>)	(+) heterogeneous sample; (-) small sample; (-) relationship agreement not measured; (-) cross-sectional; (-) age of data (Study 1)
Shackelford (2001) [empirical, dyadic data]	Unfaithful: one of 15 dimensions within the 147 spousal sources of upset (developed by Buss, 1989): "Please mark every act that your husband [wife] has performed within the past year that have irritated, annoyed, angered, or upset you." - unfaithful-items (factor loadings): He/she saw someone else intimately (.74). He/she had sex with another woman/man (.70). He/she was unfaithful to me (.65). He/she went out with another woman/man (.65). He/she lied to me (.46).	Does the sexual infidelity of your spouse affect your own self-esteem?	214 individuals (107 couples), married less than one year; wives aged between 18 and 36 ($M = 25.5$ years), husbands aged between 17 and 41 ($M = 26.8$ years), mean relationship duration was 44 months (ranging from one month to eight years), first marriage for 96%, 96% were childless	questionnaires (completed at home), questionnaires (for sensitive questions, completed in the lab separate from spouse), interview: sociodemographics, self-esteem (global, social, physical, intellectual), spousal sources of upset: list of 147 spousal behaviors that might annoy, anger or upset (15 factors, sexually unfaithful being one of them)	correlations	husbands complaints about unfaithful wives consistently predicted different types of husbands' self-esteem: $r = -.31, -.25, -.25$, and $-.26$ with global, physical, social and intellectual self-esteem; no such an effect in wives / no significant associations between partners' complaints about infidelity and own self-esteem	(+) dyadic data; (-) observer rating of infidelity might not be very accurate; (-) cross-sectional
Lammers et al. (2011) [empirical] [empirical]: see below and Table 6							
Sociosexuality							
Seal et al. (1994)	no actual infidelity measured; Study 1: willingness to exhibit certain behaviors that might be inappropriate when in an exclusive dating relationship / Study 2: enter a drawing for a virtual date although in an exclusive dating relationship	How do sociosexuality, gender, and questionable extradyadic behavior relate?	Study 1: 76 undergraduates (32 males), aged 18 to 25, in an exclusive dating relationship, heterosexual, mixed ethnic sample (mostly Caucasian and Hispanic) / Study 2: 88 undergraduates (42 males), aged 18 to 21 + see Study 1	Study 1: Subjects were presented with a 3-segment scenario (1 noticing an attractive stranger / 2 talking to him/her for two hours / 3 stranger excused him-/herself where a friend informed participant about the strangers romantic involvement (manipulated) and were asked in each segment how willing they would be to exhibit a certain behavior (active, e.g., say "Hi." to the stranger, ask stranger out) or respond to an intimate behavior (passive, e.g., agree on a date) + questionnaire: sociodemographics, SOI / Study 2: participants were told to evaluate material from a dating company - viewed a 30-second video of attractive opposite-sex-members introducing themselves; as reward they could be entered in a drawing for a computer date with that person + questionnaire (sociosexuality, commitment, dating length)	Study 1: 2x2-MANOVA; 2x2x3 MANOVA / Study 2: hierarchical binary regression	Study 1: main effects of gender (m>w; segments 1 and 2) and sociosexuality (high>low; only in segment 2) on willingness for social interaction, no significant interaction; for segment three similar main effects of gender and sociosexuality and a priori contrast regarding strangers involvement was significant: greater willingness, when stranger was currently romantically uninvolved; women showed greater willingness to engage in extradyadic questionably behavior when pursued than when actively pursuing a stranger, no such an effect was found in men / Study 2: only sociosexuality ($\beta = .42$) and sociosexuality*dating length-interaction ($\beta = .38$, longer dating relationships only inhibited the willingness of sociosexual restricted participants) predicted participation in the drawing, no effects of gender, dating length, commitment, and other interactions	(+) experimental design; (+) relationship agreement considered; (-) small, homogeneous samples; (-) no actual infidelity investigated

Table 5: *Dispositional (Individual, Personality-Related) Factors*

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
<p>Feldman and Cauffman (1999) [empirical]: see above Helms and Bierhoff (2001) [empirical]: see above Barta and Kiene (2005) [empirical]: see above Rhodes et al. (2005) [empirical] → see also Table 3 (p. 84)</p>							
<p>Results: significant association between number of extrapair sexual partners and SOI-attitude ($r_{\phi} = .27$, $r_{\eta} = .13$) [among other significant and insignificant effects]</p>							
Bourdage et al. (2007) [empirical]: see above Penke and Asendorpf (2008) [empirical]	all participants: number of extrapair copulation partners / only paired participants: "Have you ever had a sexual affair with someone else while in the relationship with your current partner?"	What is the association between sociosexuality and infidelity?	2,708 German-speaking, heterosexual participants (1,026 men) between 18 and 50 ($M = 24.2$)	online questionnaire: demographic items, SOI, SOI-R, and broad range of questionnaires to validate the SOI-R	zero-order and semi-partial correlations	highly significant associations between infidelity and all facets of sociosexuality / men: $r_{SOI-B} = .35$, $r_{SOI-A} = .18$, $r_{SOI-D} = .23$ - similar with uniqueness-correlations except no association between SOI-A and infidelity / women: $r_{SOI-B} = .30$, $r_{SOI-A} = .24$, $r_{SOI-D} = .37$ - similar with uniqueness-correlations except no association between SOI-A and infidelity	(+) large study; (+) report of uniqueness correlations, where influence of other facets is controlled; (-) relationship agreement not measured; (-) SOI-B and SOI-A may be confounded with actual infidelity, depending on the intradyadic infidelity-norms
<p>Havlicek et al. (2011) [empirical, partially longitudinal?, dyadic data] → see also Tables 3 (p. 84) and 4 (p. 98)</p>							
<p>Results: significant association between EDS and sociosexuality; no significant association between falling in love with someone else than the current romantic partner and sociosexuality [among other significant and insignificant effects]</p>							
<p>Foster et al. (2014) [empirical, longitudinal]: see above and Table 4 McIntyre et al. (2015) [empirical]: see above</p>							
<p>Other attitudes</p>							
Helms and Bierhoff (2001) [empirical]: see above Hackathorn, Mattingly, Clark, and Mattingly (2011) [empirical]	seemingly the 12 behaviors within the PDIS (see meaningfully, although this might vary depending on the relationship agreement)	Do attitudes toward infidelity predict infidelity? Caution: The term attitudes is misused by the authors: What they actually measure is individual infidelity-norms.	93 paired (mostly exclusively) undergraduates (62 female) aged between 18 and 31 ($M = 19.5$) with a relationship duration ranging from one month to nine years ($M = 19.7$ months), mostly Caucasian	Time 1: online questionnaire: sociodemographics and the Perceptions of Dating Infidelity Scale (PDIS, K. Wilson, Mattingly, Clark, Weidner, & Bequette, 2011) that measures to which extent individuals perceive various behaviors as infidelity [three subscales: ambiguous (six items, e.g., dancing), deceptive (two items, e.g., lying to the primary partner), explicit (four items, e.g., oral sex)] on a 7-point scale from 0 = <i>never cheating</i> to 6 = <i>always cheating</i> / Time 2 (one month later): modified version of PDIS that measured how often participants engaged in the 12 behaviors with another person during the past month	multiple linear regression	relationship length ($\beta = -.39$) and individual "attitudes", individual infidelity-norms respectively ($\beta = -.45$) toward ambiguous behaviors predicted actual ambiguous behavior at Time 2, no effect of sex; deceptive infidelity could not be predicted from the PDIS factors or relationship length or sex; only sex significantly predicted explicit infidelity ($\beta = -.33$, women were less likely to have engaged in explicit infidelity)	(-) small, homogeneous sample; (-) very questionable operationalization of attitudes towards infidelity and therefore questionable hypotheses, analyses, and interpretation; (-) cross-sectional
<p>Motives</p>							
Lammers et al. (2011) [empirical] → see above and Table 6	sexual infidelity: "How often have you been unfaithful to your partner (i.e. secretly had sex with another person)?" 1 = <i>never</i> to 5 = <i>very often</i>	Is power associated with infidelity and what variables may mediate this association?	1,250 participants recruited through e-mailing them, 46% women, $M_{age} = 39.1$ years	online questionnaire: sociodemographics (controls: gender, age, education), workplace power, infidelity, assumed mediators: confidence in ability to attract a romantic partner (ATARP), work-related subjective sense of distance form partner, subjective risk of infidelity	multiple mediation analyses (syntax provided by Preacher & Hayes, 2004)	26.3% of respondents had engaged in infidelity at least once; association between power and infidelity was mediated by ATARP; no mediation by distance (link only from power to distance) or perceived risk (link only from risk to infidelity)	(+) large sample; (-) cross-sectional; (-) relationship agreement not measured BUT wording implies norm-breach

Note.

The Table contains only information relevant to infidelity – hence, other research questions, measures, and results of the reviewed studies are not reported.

6.6 The Situational Approach

The term “situational” is very broad but has been chosen deliberately. The main idea in this approach is to consider factors that are independent or outside from the primary relationship and partly independent from the partners as well (Allen et al., 2005). They are called external contextual factors, opportunity contextual factors (Allen et al., 2005), or simply opportunities (e.g., Blow & Hartnett, 2005b).

The Opportunity-Construct in Criminological Contexts. The idea that situational components could play an important role in the genesis of objectionable behavior is not new. In their differential opportunity theory, Cloward and Ohlin (1960) propose that the (non-)existence of opportunities for deviant, criminal conduct determines whether a person becomes an offender or not. It is of additional importance whether and how a person has access to necessary means, like weapons (Schwind, 2011). The well-known expression “Opportunity makes the thief.” might be rephrased in the context of infidelity-research into “Opportunity makes love.”?

Situationism as Theoretical Background. Proponents of this approach may best be sorted within the context of *situationism*, a theoretical direction that developed as a result of Mischels widely perceived and hotly discussed critique of the overarching trait-paradigm and its misfits (1968). The basic assumption of situationism is that individual dispositions or traits are not helpful in predicting behavior – instead, situations are much better suited. Therefore, behavior is best conceptualized as a function of the situation:

$$B = f(S) \tag{5}$$

Different Types of Opportunities. Blow and Hartnett (2005b) were the first to distinguish between *perceived* and *actual opportunity* but did not elaborate this distinction further. It seems crucial though, to distinguish between those two types. Another distinction that seems important is to isolate *subjective opportunities* from *objective opportunities*. Subjective opportunities only need one perspective: Person X needs to be convinced, he or she could have sex with person Y if X wants to. To be an actual opportunity however, Y must agree (not necessarily overtly). Therefore, subjective opportunities, which equal perceived opportunities, can but do not have to be actual opportunities. Objective opportunities on the other hand encompass all situations that increase the probability of meeting potential sexual partners, like a club or business meetings. Again, objective opportunities can but do not have to be actual or perceived opportunities. See Figure 1 for a simplified graphical representation of these distinctions – to clarify this distinction, the Figure contains examples for every intersection in the venn-diagram as well. Research on situational aspects that facilitate or impede sexual infidelity would greatly benefit from the incorporation of these distinctions into actual research. If interpreted in the narrowest sense, perceived actual opportunities (the intersection of the three types of opportunity, labeled 2 and 4 in Figure 1) are necessary but not sufficient requirements for the occurrence of sexual infidelity.

Empirical Support. The effect of the opportunity-construct on the occurrence of infidelity is difficult to estimate because of its various operationalizations. It is very common among researchers to locate opportunities in *work-related* contexts: The construct has been measured as employment status and income (e.g., Atkins et al., 2001); (irregular) work hours, business meetings, and travel (e.g., DeMaris, 2009; Plack et al., 2010); frequency and type of contact to colleagues (e.g., Liu, 2000; Treas & Giesen, 2000). Although the empirical results on specific effects are mixed, the general trend seems to point in the direction that work-related opportunity-indicators are positively associated with the occurrence of sexual infidelity. Further empirical evidence is provided by one clinical sample investigated by Wiggins and Lederer (1984) where 47% of the sample were involved with a coworker. Shirley P. Glass, a well-known couple therapist, reports anecdotal evidence that among 350 couples she has treated over her professional career, approximately 62% of the unfaithful men have met their affair in the workplace. In addition, she observed the rate of unfaithful women involved with someone from work rising from 38% between 1982 and 1990 to 50% from 1991 to 2000 (Glass, 2004). In a non-clinical, large Norwegian sample, 40% met their extradyadic sexual partner either at work or in college (Træen et al., 2007). The *mere exposure*-effect (Zajonc, 1968) serves as one explanatory mechanism for this positive association: Full-time em-

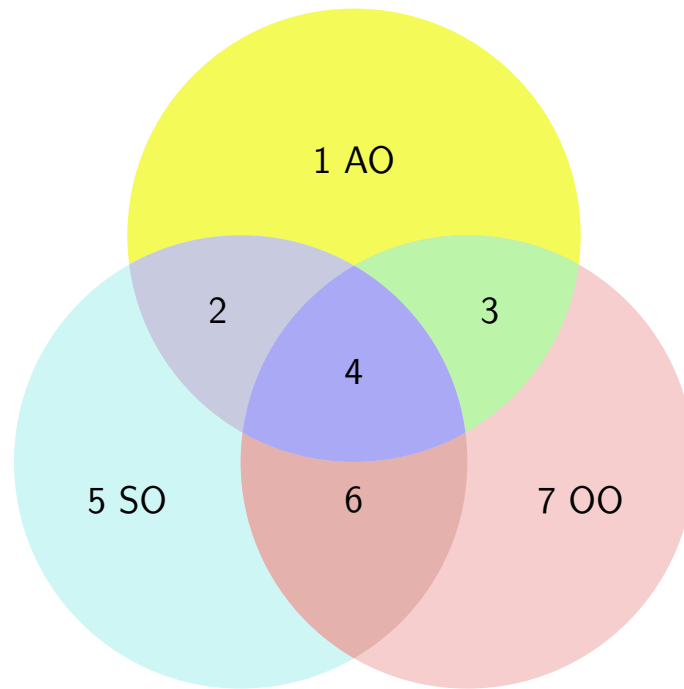


Figure 1: Distinctions Between Different Types of Opportunities

Note.

Abbreviations. 1 actual/ “true” opportunity. 5 subjective/ perceived opportunity. 7 objective opportunity.

Examples (from the perspective of X that is in a primary relationship with Z).

1 Y is watching a movie with X at Y’s home and thinks about how awesome it would be to have sex with X.

2 While X and Y are watching a movie together at home, Y is wrapping the arm around X and slowly starts caressing X’s neck.

3 At a business lunch, Y thinks about how hot X is and how great it would be to have sex with X.

4 Y asks X “My place or yours?” in a club.

5 X and Y lock eyes deeply for multiple times in a supermarket.

6 Y flirts with X in a bar, but Y only wants to flirt, not have sex.

7 X goes out clubbing.

ployed paired persons may very likely spend more time with their colleagues than with their primary romantic partners. The mere exposure effect posits that solely being exposed to an object can affect the attitude towards the object positively – it is applicable to persons as well: Being exposed to a person for several times makes the person appear more likeable, presumed the first impression is not negative (in that case the disliking would increase). Admittedly, this effect is strongest for unknown stimuli and wears off after a certain amount of presentations (see meta-analysis of Bornstein, 1989). However, it might be enough to form certain bonds with colleagues that may lead to infidelity in the workplace in the long run.

Other operationalizations of the opportunity-construct are *relationship-related*, like living separately (e.g., Blumstein & Schwartz, 1983), being apart from the partner for a certain amount of time (e.g., Drigotas et al., 1999; Le et al., 2010) and not sharing too much of individual social networks like friends and family (Treas & Giesen, 2000) – all three seemingly having a positive effect on sexual and emotional infidelity (in Drigotas et al., 1999). However, please note that Blumstein and Schwartz (1983) do not mean the term living separately literally but more in a way of living separate lives as they constructed a composite measure of companionship that consisted of items regarding how much time and activities couples share (like having dinners and evenings at home together; going out together [movies, theater, concerts]); socializing with friends together).

In addition, opportunities are sometimes conceptualized as other *socio-demographic* factors, besides income and employment status, like living in an urban setting (e.g., Treas & Giesen, 2000; Wiederman, 1997). The empirical results on this variable seem to indicate no association of number of inhabitants of the participants’ hometown (Wiederman, 1997) or if there was found one, it was mainly mediated through permissive attitudes toward casual sex (Treas & Giesen, 2000).

The narrative literature review of Allen et al. (2005) additionally named geographical region, number of children, and societal and/or peer group norms as contextual factors. Treas and Giesen (2000) even operationalized annual religious attendance (among others) as fidelity-supporting networks in the context of opportunities. In my opinion, these factors are way too distal from actual, perceived or objective opportunities and fit better into the socio-cultural approach. They will be therefore presented later in the according section 6.7 (p. 120). Admittedly, the fit-argument holds true for employment status, income and living in an urban setting as well – empirical results on the effect of these three variables are therefore covered only shortly here (see Table 6) and will be portrayed later in depth.

What all operationalizations mentioned so far have in common is that they should be best categorized into objective opportunities: All these contextual factors may increase the probability to meet potential alternative partners but do not necessarily have to. If an alternative partner signals willingness to engage in a sexual encounter (which would be an actual opportunity then) or the paired person induces an opportunity where the third party finally signals willingness (representing an actual opportunity as well), sexual infidelity may take place. These considerations lead to another way of measuring opportunity, namely the presence and perceived quality of alternatives. This should ring a bell: This construct represents one major variable in the investment model and it has been proven to be associated positively with the occurrence of sexual and emotional infidelity (Drigotas et al., 1999; Buunk & Bakker, 1997 did not find an effect but they used another criterion than actual infidelity, namely willingness to engage in extradyadic sex). Thus, the investment model holds intersections to the situational approach when it comes to explaining infidelity.

Finally, the easiest way to measure opportunities would be to ask participants, if they had or have the opportunity to engage in sexual behavior outside their romantic dyad. A respective conceptualization would represent the babyblue circle in Figure 1: subjective or perceived opportunity. This approach has been taken already (e.g., R. E. Johnson, 1970; Peterman, 2008; Plack et al., 2010) and generally yielded a positive association to sexual infidelity. For example, R. E. Johnson (1970) asked his participants: “Have you ever been in a position where you could easily have had sexual relations with someone other than your spouse?” This approach represents probably the one way that captures situational aspects best. In contrast, the other operationalizations mentioned above rather affect the odds of such a situation happening.

As other narrative literature reviews (especially Allen et al., 2005; Blow & Hartnett, 2005b; Thompson, 1983) did cover the empirical results on various opportunity-operationalizations exhaustively, I abstain from presenting the empirical results tabularly like I did in the sections before. Alternatively, Table 6 presents the effects in a fashion that provides a short overview of operationalizations, studies and effects of situational factors on infidelity. Please note that the exemplary studies listed with the variables employment, income, and number/presence of children are solely based on representative samples, except Adamopoulou (2013).

6.6.1 Summary and Critique

In a nutshell, a wide array of variables has been proposed and adopted to measure situational, contextual effects on infidelity. Predominantly, these variables do have predictive validity for infidelity.

Some points of critique have been addressed in the previous section already, like using very (too?) distal variables like employment, geographical region etc. to operationalize the opportunity-construct.

Another major point of critique regards the direct measures of subjective, perceived opportunity (e.g., R. E. Johnson, 1970). As Thompson (1983) put it, these measures are bound to produce positive relationships with infidelity: People who committed sexual infidelity will have to indicate at least one subjective opportunity. He proposed that the only true test of the causal association would be to start with a faithful sample and accompany them longitudinally to assess whether participants with more opportunities were more likely to report infidelity. Although this is a legitimate proposal, maybe the issue does not have to be seen as pessimistic: As noted above, opportunities for infidelity in the narrowest sense are necessary (although not sufficient) for infidelity and therefore simply have to exhibit a positive association with infidelity. This consequently found positive association could therefore be seen as a sign of its validity. However, one limiting aspect of the direct measurement of subjective opportunities is that they only make sense to employ with regard to sexual infidelity.

Table 6: *Overview of Operationalizations, Studies and Effects of Opportunities on (Mainly Sexual) Infidelity*

Operationalization of Opportunity-Construct	Effect	Exemplary Studies
OBJECTIVE		
<u>work-related</u> employment (yes/no)	mixed (+, 0)	Amato and Rogers (1997) (wife employed: 0); Atkins et al. (2001) (+); Burdette et al. (2007) (+); Pulerwitz et al. (2001) (0 for status: blue vs. white collar) → see also section 6.7 (p. 120)
income	mixed (+, 0, u-shaped)	Amato and Rogers (1997) (men: 0 / women: +); Atkins et al. (2001) (+); Atkins and Kessel (2008) (u-shaped); Choi et al. (1994) (0); Cochran et al. (2004) (0) → see also section 6.7 (p. 120)
irregular hours, business meetings, and travel frequency and type of contact with colleagues	mixed (+, 0)	DeMaris (2009) (0); Plack et al. (2010) (+); Træen and Stigum (1998) (+)
sex ratio at work	mixed (+, 0)	Liu (2000) (men: + / women: 0); Treas and Giesen (2000) (0)
<u>relationship-related</u> living separately	not investigated yet	proposed by DeMaris (2009)
being separated for a certain amount of time	+	Blumstein and Schwartz (1983) (composite measure of companionship); Treas and Giesen (2000)
shared network (friends & family)	+	Drigotas et al. (1999); Le et al. (2010)
<u>sociodemographic</u> urban setting	-	Treas and Giesen (2000)
geographical region	mixed (+, 0)	Burdette et al. (2007) (0); Cochran et al. (2004) (0); Elmslie and Tebaldi (2008) (+); Greeley (1994) (0); Træen and Stigum (1998) (+); Treas and Giesen (2000) (0); Wiederman (1997) (0)
number or presence of children	mixed	Bell et al. (1975) (higher rates in other states than Prairie and Mountain States of the USA); Cameron (2002) (Wales>rest of the UK); Cochran et al. (2004) (0 [USA]); Janus and Janus (1993) (higher rates in Northeastern and Western USA); A. M. Johnson et al. (2001) (0 [UK])
<u>socio-cultural</u> presence and perceived quality of alternatives	mixed (+, 0)	Adamopoulou (2013) (- [sample not representative]); Burdette et al. (2007) (+); DeMaris (2009) (0); Liu (2000) (0); Whisman et al. (2007) (men: + [wife pregnant]) → see also section 6.7 (p. 120)
societal and peer group norms	+	Drigotas et al. (1999); Gwinn et al. (2013) → see also section 6.4 (p. 85)
SUBJECTIVE perceived opportunity	+	Buunk and Bakker (1995); T. D. Fisher and Brunell (2014); Fosse (2010) → see also section 6.7 (p. 120)
		R. E. Johnson (1970); Lammers et al. (2011); Maykovich (1976); Peterman (2008); Plack et al. (2010); Whitehurst (1969)

Emotional infidelity as a construct is too imprecise and vague to date to express comprehensibly in one item. In addition, one could argue that a subjective opportunity as reported by a participant might not have been a real opportunity at all – it could just have been a misperception and the third party would deny its existence. This might indeed pose a problem and therefore the wording of instructions respective the measures of such subjective opportunities should be developed very carefully. One further approach to empirically assure the predictive validity of situational factors would be to compare two types of specific situations: situations that resulted in or “lead to” (that is at least the assumption) infidelity and situations that were not concluded with infidelity. If situational aspects do have predictive validity in explaining infidelity, the descriptions of these situations should significantly differ from one another.

An important final point is to note that strong opportunities (in the Mischelian sense of a strong situation, see Mischel, 1977) may as well lead to sexual infidelity in happy and content relationships. There is no definite empirical evidence for this assumption yet, but in the sample of Wiggins and Lederer (1984) for example, the couples where one partner was involved with a coworker reported more satisfying relationships than did couples where the third party was a stranger or neighbor. In addition, these participants were more distressed about the situation and cared for both, their partner and the extradyadic partner. These results seem to imply that opportunity (the workplace) was the major factor in the development of the affair. However, their sample exclusively consisted of couples which were in marital counseling due to relationship problems so the results might not be generalizable. In a study of Hunt (1969), 50% of unfaithful men and 33% of unfaithful women reported being in a happy relationship. With 56% vs. 34% Glass and Wright (1985) reported similar numbers. The more recent work of Atkins and Kessel (2008) found for participants reporting “pretty happy” marriages significantly higher odds for infidelity than for participants with “very happy” marriages. Allen et al. (2008) even report a positive association between sexual relationship satisfaction of women and infidelity. The results of Schmidt et al. (2006) from a German sample consisting of three birth cohorts (1942, 1957, 1972) point in a similar direction: The main motivation the unfaithful participants named were not unhappy relationships but emotional and sexual attraction to another person paired with curiosity. *Human mate poaching*-tactics of an interested alternative partner – meaning efforts to pinch someone others’ partner or to attract someone who already is in a romantic relationship (e.g., Schmitt & Buss, 2001; Schmitt & Shackelford, 2003) – further could be responsible for generating strong opportunities.

It seems clear from the empirical results presented above that the prediction of sexual infidelity further improves if situational aspects are considered.

6.7 The Socio-Cultural Approach

The last section regarding explanatory variables is labeled socio-cultural approach even though it consists of a wide variety of variables that should be and have been employed rather as control variables than as causal variables. The existing narrative literature reviews have already devoted lots of space to appraise the effects of sociodemographic and cultural factors (see especially Allen et al., 2005; Blow & Hartnett, 2005b; Kröger, 2010). Still, in order to allow the reader to get a full picture of variables and empirical work within this explanatory approach, Table 7 (p. 140) contains all published studies that analyzed data of representative samples. Furthermore, it contains a few, more recent, original studies with convenience samples that have been overlooked by previous reviews.

Other original research introduced in the sections above have considered some demographic factors as well. However, they are not presented again in detail here. Instead, as a global overview, all effects that have been reviewed so far and will be reviewed in the following sections can be found in Table *effect_table!.xlsx* on the data CD enclosed. Please note that this Table includes additional studies and effects that are not specifically introduced within the running text but help getting a full picture of general directions of effects and variables investigated. This is either due to their exhaustive coverage within the existing narrative literature reviews on infidelity or due to space constraints, which is especially true for variables that have been investigated only once or twice. Please note as well that I will mainly concentrate on studies that were based on large, representative samples here.

6.7.1 Demographic Factors

Biological Sex. In studies reviewed here, where both sexes participated, either men were more likely to have engaged in extradyadic sex (e.g., Adamopoulou, 2013; Atkins & Kessel, 2008; Gangestad & Thornhill, 1997) or there was no sex difference found (e.g., Previti & Amato, 2004; Mark et al., 2011). Notably, all recent studies (Atkins et al., 2001; Atkins & Kessel, 2008; Burdette et al., 2007; Elmslie & Tebaldi, 2008; Haavio-Mannila & Kontula, 2003; Liu, 2000; Træen et al., 2007) I reviewed that analyzed their data for sex differences and worked with nationally (mostly U.S. – exceptions are Haavio-Mannila & Kontula, 2003; Træen et al., 2007) – representative samples found the sex difference in the direction that men reported more infidelity than women. In addition, a meta-analysis about gender differences in sexuality based on 834 independent samples (from 1993 to 2007) and in sum over one million participants revealed a small, but significant sex difference in the occurrence of extramarital sex ($d = .33$) with men reporting more extramarital sex than women (Petersen & Hyde, 2010)⁷.

One final note on gender as explanatory variable: The reader might agree that the treatment of biological sex as an explicit *cause* of infidelity is absurd. Instead, one should look for the [biological, evolutionary, psychological] mechanisms that operate beyond that respective are masked or transported by the variable of gender. The prevailing and seemingly robust sex difference in prevalence rates of infidelity might be interpreted as an empirical result in favor of evolutionary psychological considerations that propose a stronger orientation towards short-term mating (than long-term mating) in men because of their role as the less-investing sex in potential offspring (e.g., Buss & Schmitt, 1993; Schmitt, Shackelford, & Buss, 2001). They should, according to parental investment theory (Trivers, 1972) and sexual strategies theory (Buss & Schmitt, 1993), be more interested in a promiscuous behavior with a larger number of changing sexual partners to maximize their chance of reproductive success. In theory, their contribution ends after inseminating and fertilizing a woman, although in reality, the male parental investment is higher. However, as Schmitt et al. (2001) already noted, the obligatory parental investment is considerably higher for women which makes the theory a viable option for interpreting this sex difference.

An alternative interpretation apart from evolutionary theory (interestingly not necessarily contradicting)

⁷Some say that sex differences in the prevalence of sexual infidelity do not make much sense because simple mathematical logic would suggest that approximately the same amount of men and women engage in extradyadic sex together (e.g., H. E. Fisher, 1994; Symons, 1979). I do not concur – instead, I believe that the most reasonable explanation for this difference is that some of the extradyadic sex that men have occurs with women who are not in a relationship at that time and maybe have more than one casual sex partner at the time or with prostitutes (see also Ehrmann, 1963).

might be provided by the structural powerlessness hypothesis that has its roots in social learning theories and was proposed by several scholars (e.g., Buss & Barnes, 1986; Eagly & Wood, 1999; Hatfield & Sprecher, 1995; Wiederman & Allgeier, 1992). In patriarchic societies, the hypothesis states, women are and have traditionally been the less powerful, sometimes even suppressed sex that was and/or is less educated, lower paid, and generally seen as nothing more than the child-bearer, to put it bluntly. These statements are viewed as socially learned attitudes and beliefs that shape behavior and mate preferences. Therefore, this hypothesis can explain robust sex differences in mate selection, like women placing more emphasis on the mate selection criterion of resources (e.g., income, earning prospects). If the hypothesis holds true, women must also fear losing these resources accordingly, if they betray their partners trust by having sex with someone else. Therefore, women might stay faithful more often than men to not risk losing the partners who provide for them. The increase in gender equality over the last few decades should, if the structural powerlessness model holds, lead to a decreasing difference in the occurrence of extradyadic sex. Interestingly, some authors of narrative literature reviews (e.g., Blow & Hartnett, 2005b) arrived at the same conclusion namely that there is a noticeable decline in the sex difference over the last few decades. On the other hand, Petersen and Hyde (2010) found no significant negative effect of publication year on the sex difference in sexual infidelity rates – in fact, there was literally no effect ($\beta_{year} = -.01$). However, the meta-analysis only regarded studies from 1993 to 2007. The effects of major social upheavals that lead to a rise in gender equality happened before 1993, so it is possible that this gender difference in extramarital sex was larger before. Nevertheless, the results suggest that a meaningful sex difference in the occurrence of sexual infidelity still exists.

One final interpretation of the robust sex difference in infidelity-prevalence rates is that the truth lies somewhere in between. It is known that men tend to exaggerate the number of their sexual partners and other sexuality related-behavior like pornography consumption or masturbation while women tend to do the opposite, especially in face-to-face interviews (Oliver & Hyde, 1993; Petersen & Hyde, 2010). The same bias might take effect even when participants are asked whether they have been unfaithful. This in turn could produce the illusion of a sex difference although in reality there is none.

Age. The data on effects of age is also mixed and some results point into the direction that age interacts with sex. Whereas some studies report a more or less pronounced negative link between age and infidelity in the current relationship or past year, the timeframes tend to vary (e.g., A. M. Johnson et al., 2001), others report a positive association (e.g., T. W. Smith, 1991; Dew et al., 2006) and yet others find no association at all (e.g., Atkins & Kessel, 2008; Burdette et al., 2007; Dijkstra & Barelds, 2011; Previti & Amato, 2004; Pulerwitz et al., 2001; Whisman & Snyder, 2007).

A small number of studies with representative data investigated potential nonlinear effects of age: They mostly report some kind of an inversely u-shaped association, except Adamopoulou (2013) who found no effect of age at all, neither a linear nor a nonlinear one in their sample with non-representative data, though. Conversely, Wiederman (1997) found some indications for nonlinear effects, at least in women. They employed two criteria of infidelity: extramarital sex ever and extramarital sex within the past 12 months. For men, their data indicated a positive linear relationship between age and extramarital sex ever, with a slight nonlinear decrease for men over 70 years. In contrast, the lifetime-prevalence rates for women indicated an inversely u-shaped association with a peak in women between 40 and 49 years of age. An additional result was that men and women – although in absolute terms men were more likely to report extramarital sex – the sexes younger than 40 did not differ in their occurrence rates. For extramarital sex within the past year neither a nonlinear nor a linear association to age was evident in men whereas the relation in women was negative but small in magnitude. Liu (2000) included a quadratic term only for control purposes but revealed significant negative quadratic effects of age on extramarital sex within the past 12 months for both sexes, indicating some kind of a concave association. Unfortunately, the author did not report the according graph to help visualize the effects. In partial support of the results of Wiederman (1997) and Liu (2000), another study revealed concave associations between age and extramarital sex (ever), although with differential shapes depending on gender (Atkins et al., 2001): Women around their 40s were the most likely to admit having had extramarital sex. In contrast, men generally reported

more extramarital sex, but this sex difference was highly dependent on the age of the participants: Men and women younger than 45 did not differ in the probability of extramarital sex. Instead, men around their 60s exhibited the highest probability of ever having engaged in extramarital sex. In slight contrast, Atkins and Kessel (2008) report a nonlinear effect of age on the lifetime-prevalence of extramarital sex with a peak at the transition from 40s to 50s, regardless of the sex. Elmslie and Tebaldi (2008) too report a concave association between age and extramarital sex (ever), with females peaking around the age of 45 and males around the age of 55. Similarly, Spencer (1996) and Haavio-Mannila and Kontula (2003) found a concave association between age and infidelity in current relationship for the French and Eastern Europeans, peaking in the middle-age (between 35 and 54). The only detectable cohort study is from Germany and sampled from three different birth cohorts: 1942 (60 years old when data was collected), 1957 (45 years old), and 1972 (30 years old). Birth cohort had no effect on infidelity rates in the past year in men (Schmidt et al., 2006). In women however, being from a later birth cohort was associated with higher self-reported infidelity-rates in the past year.

Please note that especially with age as the predictor it is of special importance to consider the nature of the criterion: The criterion of infidelity during a certain period of time (as used by e.g., Wiederman, 1997, Liu, 2000, and Plack et al., 2010) might inform us about certain life periods where infidelity is more or less probable. The criterion of lifetime-infidelity on the other hand should logically produce at least a small positive association as a negative link does not even make sense. Therefore, the analysis of the link between age and lifetime-infidelity does not seem to hold anything interesting at first glance – however, the curvilinear associations that were observed by two studies (Atkins et al., 2001; Wiederman, 1997) could indicate some kind of a cohort effect (Atkins et al., 2001) that deserves further attention. However, this potential cohort effect is confounded with age and relationship duration, which makes the interpretation even harder. The only cohort-study to date found a small effect of the birth cohort (1942, 1957, 1972) only in women, namely higher rates in the two younger generations. No such an effect occurred in men.

Despite the mixed results, the majority of the reviewed studies report no linear effect of age – it would be interesting to test the data again for nonlinear effects because they might appear as insignificant linear effects, for example if the curve is perfectly (inversely) u-shaped.

Interestingly, all kinds of observed effects are interpretable in a comprehensible way: A negative association between age and infidelity within the current relationship could indicate that younger individuals are in some kind of a sexual trial-and-error phase than older individuals who try themselves and their sexuality out in relationships that might in addition be not as committed and serious as relationships of older individuals. A positive relationship would make sense as well as it could imply that the sex drive and the need for sexuality with changing partners sets in/is acted out not before children are conceived, born, and raised – in other words: after the process of reproduction has been successfully completed. Both interpretations would be compatible with low rates of infidelity during the late 20s and the 30s. This in turn would result in a u-shaped pattern. However, if nonlinear effects are found, they rather point into the opposite, concave direction with higher rates during (admittedly late) phases of fertility, especially in women. This result is in line with theoretical directions proposed by evolutionary psychologists and behavioral ecologists: the process of human sperm competition (see section 6.3.2, p. 78). According to these considerations, women strive to maximize the probability of healthy and strong offspring which they try to accomplish in having sex with a variety of men in phases of particularly high fertility.

Education and Socioeconomic Status (SES). Regarding education and SES – both variables are not independent from one another (e.g., Krieger, Williams, & Moss, 1997) and are therefore presented together – the latter mostly operationalized as income or employment status, the empirical results are also mixed.

Nevertheless, null-results (e.g., Greeley, 1994; Leigh, Temple, & Trocki, 1993; Plack et al., 2010; Dew et al., 2006; Fish et al., 2012) prevail, with a few exceptions: Two studies report a negative association between education and extramarital sex (Liu, 2000; T. W. Smith, 1991). Atkins and Kessel (2008) were the only ones to investigate nonlinear effects of both variables and interestingly found seemingly conflicting effects: In men, the association between years of education and extramarital sex was inversely u-shaped (peaking with college

education, no association was found in women), whereas for income it was u-shaped in both sexes: The groups with the lowest and highest income reported similarly high rates of infidelity, individuals with medium income reported the lowest rates. In women, education did not have any association with extramarital sex at all – this results in the effect that the highest educated women reported more extramarital sex than the highest educated men. As the previous sections already suggested on other control variables, associations between social class and infidelity cannot be conclusively ascertained.

The meaning behind positive associations between education or income and infidelity might most reasonably be interpreted from a situational perspective as both variables can be conceptualized as indicators of opportunities for infidelity: The higher the education the more probable it is that a person finds a well-paid position with maybe even managerial responsibilities. The higher the responsibilities and the paycheck in a job the more likely it is that individuals spend more time working apart from their partners and with co-workers, clients or patients. In addition, business travels and business lunches are more likely. All these factors might heighten the odds of meeting an attractive alternative which in turn might open the doors for actual infidelity. A meaningful interpretation behind nonlinear associations seems less obvious. Maybe the infidelity-rate in the group of medium-level-earners is the lowest because these individuals represent the hard-working middle class that is busy with work, family and home. On the two extremes of the curve on the left lie low-income individuals that may have no or only part-time jobs leaving them with enough time to cheat on their partners. The second extreme represents high-income individuals where the stated opportunity-interpretation may kick in again.

6.7.2 Relationship- and Sexuality-Related Factors

Relationship Duration. The results on effects of relationship duration are quite similar in magnitude and direction to the effects of age: mixed. Positive (e.g., Treas & Giesen, 2000), negative (e.g., DeMaris, 2009), no (e.g., Lewandowski Jr. & Ackerman, 2006), and nonlinear (Liu, 2000) effects have been reported. Liu (2000) proposed a convex or u-shaped association for men and a negative association for women and was indeed able to confirm these hypotheses: She concluded from her U.S. representative data that the association between marital duration and extramarital sex is u-shaped in men (with the highest odds of extramarital sex for five years of marriage and 30 or more years of marriage and the lowest risk around 18 years of marriage) while it is negative in women meaning a decreasing risk of extramarital sex with increasing marital duration.

Notably, relationship duration and age are not independent from one another and if both aspects have been measured, their individual effects should be considered only if the effect of the other is controlled for. Luckily, this is mostly but not always the case in the reviewed publications. In addition, the cautionary notes on the criterion (lifetime-infidelity vs. infidelity in a certain period of time) as pointed out in the paragraph regarding age, hold true for relationship duration as well as it equally constitutes a time-related construct.

Yet again, it should be noted that it makes not much sense to assume that relationship duration itself drives individuals towards infidelity. In fact, psychological processes that may be transported by this variable are much more likely to be the actual cause of such effects, for example: boredom, sexual and/or emotional dissatisfaction or the Coolidge effect in the case of a positive association (see Liu, 2000 for a more sophisticated elaboration of these ideas with an economical twist; see also section 6.7.4, p. 130 for an introduction to her theoretical ideas). In the case of a negative associations the same interpretation as for a negative age-infidelity link might be more appropriate: In new relationships a lack of established commitment or insecurity about relationship norms may play a crucial role. However, considerations like this should depend on whether such other influences have actually been measured, have been measured with inappropriate measures or have not been measured at all.

To connect the variables age and relationship duration with evolutionary factors: If there is an evolutionary facet to the explanation of infidelity, at least in women it seems reasonable to propose a negative association between age (and relationship duration, respectively – because both are confounded). If it is true that the main motivation behind female sexual infidelity is to assure the best genetic material for their potential offspring, women should stop this behavior when they become infertile after menopause. Empirical results like those of Liu (2000) are in favor of this interpretation.

Relationship Status. In addition to relationship duration, some researchers also investigated whether the status (e.g., dating vs. living together vs. married) of a romantic relationship can explain differences in the occurrence of sexual infidelity: For example, some have looked at differences between cohabiting vs. not cohabiting couples (A. D. Fisher et al., 2009) whereas others used a more fine-grained scale from uncommitted, casual dating, committed dating, cohabiting towards marriage (Buunk & Bakker, 1995). The results are mixed: either no effect emerged (e.g., A. D. Fisher et al., 2009) or an effect in the direction that the less committed a relationship seems to be the higher the prevalence rates of infidelity (e.g., Buunk & Bakker, 1995; Forste & Tanfer, 1996; Pulerwitz et al., 2001). Again, it probably is not the relationship status of a romantic relationship but what lies psychologically behind that predicts infidelity. The studies cited here did not measure relationship commitment as proposed by Rusbult (1980) – possibly the predictive validity of the status-construct will disappear when actual commitment is considered as well.

Presence of Children. Empirical results point in several directions: Studies that have considered presence and number of children report either a negative effect (Adamopoulou, 2013), no effect (e.g., DeMaris, 2009; Liu, 2000) or a positive effect on the occurrence of sexual infidelity (Burdette et al., 2007; Klapilová et al., 2014). Therefore, the evidence is inconclusive and it remains unclear, whether children do have an impact on the occurrence of infidelity and if so, in what direction.

A negative effect of children on the occurrence of infidelity Adamopoulou (2013) could imply that mutual children can be interpreted as a sign of commitment and expression of love and deep emotional bonds and therefore serve as a buffer against sexual and emotional infidelity (Liu, 2000). If the existence of children in the primary relationship does have a positive influence on the occurrence of sexual infidelity (Burdette et al., 2007) it could be interpreted as an empirical result in favor of evolutionary psychology and behavioral ecology: When children are born and raised, it can be seen as a fulfillment of both partners task to successfully procreate. The long-term commitment both partners have established during conceiving, carrying, and bringing up the child(ren) additionally would have served its purpose and therefore might not be necessary anymore. The occurrence of sexual infidelity might be read as an indication that one or both partners acknowledge this circumstance and look out for new partners that may fulfill their needs in a better way or fulfill new needs that did not exist before reproduction. In addition, a positive effect of children on infidelity could be as well interpreted in the context of the deficit model of infidelity: It is known that children have a paradoxical effect on romantic relationships. They stabilize them but reduce their quality (Bradbury, Fincham, & Beach, 2000). The reduced quality manifests itself in reduced sexual and emotional relationship satisfaction and a shift in the relationship focus away from the partner towards the child and its care. These effects are particularly pronounced in first and young children. Additionally, a shift towards stereotypic roles is often observed: While the mothers tend to care for the child at home, the fathers provide for them by going to work and earning the necessary resources. For detailed reviews on this topic see Gottman and Notarius (2000) and Bradbury et al. (2000). In addition, the last trimester of pregnancy and the first months after childbirth are especially strong associated with a reduced sexual interest of the mothers (von Sydow, 1999). One study actually reports a higher risk of extramarital sex for men in dissatisfied relationships with pregnant wives (Whisman et al., 2007). All these empirical results could imply that the zero-effects obtained by some studies (e.g., DeMaris, 2009; Liu, 2000) may be due to a full mediation of the effect of children on infidelity through relationship satisfaction. In fact, while Liu (2000) and DeMaris (2009) included satisfaction in their regression analysis, Burdette et al. (2007) did not. Furthermore, effects of other control variables that are considered more often than the number/presence of children such as age and relationship duration (see above) could also be interpreted in that light: Are (mutual) children present or absent?

Biographical Events. This paragraph includes several variables that have sporadically been linked to infidelity.

Two studies report a positive association between emotional and physical infidelity (Fish et al., 2012) or extramarital sex (DeMaris, 2009) and *divorced parents* of their participants. Conversely, Hunyady et al. (2008) and Havlicek et al. (2011) find no connection of that kind but a small positive association with the knowledge that

the parents of the participants have been unfaithful (for men only in the study of Havlicek et al., 2011). Likewise, Platt, Nalbone, Casanova, and Wetchler (2008) found a positive association between the knowledge of their father's infidelity and self-reported infidelity in adult men. However, neither did such an effect occur in women nor for the knowledge of mother's infidelity. Conversely, Fish et al. (2012) failed to find an association between infidelity and the information whether one or both of the *parents have had an affair*. However, the validity of this variable is questionable: Probably not every parent is willing to share this kind of information with his or her child. A potentially substantial dark number and therefore distorted estimates seem plausible. Presumably, behind these variables lies the assumption that problematic parental relationships affect the attachment and romantic behavior of their children in adult life. Platt et al. (2008) found no empirical evidence in that direction with a cross-sectional study, though. Finally, effects of this kind might be attributable to genetic effects.

Whisman and Snyder (2007) were the only ones who investigated the role of *childhood sexual abuse* in an exploratory way and in fact found a positive association with extramarital sex reported by married women within the past year. The authors reasoned that this effect of traumatizing sexual events in childhood (before the age of 16 in that study) on extramarital sex might be the culminating point of several aspects such as trust issues in romantic relationships, oversexualization of every type of relationship in adulthood and a generally lower sexual satisfaction. As DeMaris (2009) already pointed out, it would be interesting to test whether the effect of childhood sexual abuse on infidelity is mediated by other relationship-related and individual constructs like sexual satisfaction and attachment style. But first, further studies that show this association are needed to support these findings.

The effect of past relationship- and/ or sexuality related aspects and events have also been occasionally found to be positively associated with infidelity, especially *previous sexual and romantic experience* (e.g., Adamopoulou, 2013; Atkins & Kessel, 2008; Feldman & Cauffman, 1999; Treas & Giesen, 2000; Whisman & Snyder, 2007) and *past infidelity* (DeWall et al., 2011; Hall & Fincham, 2009). Only one of the reviewed studies (DeMaris, 2009) failed to find a significant association between nonmarital sexual experience and extramarital sex. A recent review of population-based studies confirms that early sexual debut, first intercourse to be more specific, is associated with a higher probability of reporting concurrent sexual partners (Heywood, Patrick, Smith, & Pitts, 2015). Please note however that having concurrent sexual partners is not the same as extradyadic sex or infidelity, even. Several theoretical ideas might explain these associations: First and foremost, a high number of previous sexual partners might affect prevalence rates of infidelity through promiscuous attitudes. However, several studies measured both, sociosexuality and previous sexual experience, and both variables consistently had independent predictive effects on infidelity (e.g., Barta & Kiene, 2005; Feldman & Cauffman, 1999). This indicates processes that go beyond attitudinal aspects. Another potential mechanism might lie within the old saying (others called it truism, like Ouellette & Wood, 1998) that "past behavior is the best predictor of future behavior" – rephrased for the topic here it could read: "Once a cheater, always a cheater". However, as some scholars (most prominently Ajzen, 1987, 1991, 2002 within the context of the theories of reasoned action and planned behavior) put it, past behavior should not be viewed as a causal variable that explains later behavior because it just reflects temporal stability. Instead, if it adds incremental validity to the prediction of the behavior (which it usually does), no matter the topic of interest over other theoretically derived variables, it should best be conceptualized as aspects or unmeasured variables that the applied theoretical model did not yet capture. Others (e.g., Ouellette & Wood, 1998) argue for the appropriateness of past behavior as a causal variable, because it brings the habitual character of certain behaviors into the equation. Despite the state of this debate, it seems reasonable to advise every infidelity-researcher to incorporate past infidelity in previous romantic relationships into their explanatory models for future infidelity, at least until a model with perfect prediction apart from measurement error, has been found.

A few more recent investigations report a positive effect of *pornography consumption* on sexual infidelity (Træen & Martinussen, 2008) that is mediated by indicators of relationship quality, like commitment (Lambert, Negash, Stillman, Olmstead, & Fincham, 2012) and perceived quality of relationship alternatives (Gwinn et al., 2013). When evaluating these analyses it should be noted that pornography consumption itself could constitute

a violation of infidelity norms in some relationships – however, this potential limitation has not been discussed in all three publications.

6.7.3 Socio-Cultural Factors

Ethnicity. Although ethnicity was explicitly not named as a focal variable of this literature review it has been recorded by several of the reviewed studies and their results shall therefore shortly be summarized here as well. Although the results are somewhat mixed, one trend is evident within the group of studies that worked with U.S. representative data: It seems that being African American is associated with higher rates of sexual infidelity (e.g., Burdette et al., 2007; T. W. Smith, 1991; Treas & Giesen, 2000). However, whether the reason behind this effect lies in differential cultural roots, norms, and traditions, is associated with other interactions (e.g., with education, income, and/or gender) or can be ascribed to unequal gender ratios (Allen et al., 2005; Wiederman, 1997) is to date unclear.

Social Norms and Attitudes Towards Extradyadic Sex. To my knowledge only one study investigated the explicit role of social norms, namely injunctive and descriptive norms, together with attitudes towards extradyadic sex in the context of infidelity (see section 6.5.2, p. 105 for the conceptual differentiation between social norms vs. attitudes towards extramarital sex). While descriptive norms were defined as “what others do or are willing to do”, injunctive norms are “what others think one should do” (Buunk & Bakker, 1995, both p. 313). The authors conducted two cross-sectional studies in which they predicted the individually expressed willingness to engage in extradyadic sex: In the first study, attitudes, both types of social norms and infidelity during the past year as well as sex and relationship status (cohabiting vs. married) predicted the criterion. In the second study, only attitude, descriptive norm, extradyadic sex during the past five years and relationship status (ranging from uncommitted towards married) significantly predicted the willingness to engage in extradyadic sex should the opportunity present itself. Apart from analyzing very old data, the studies still are problematic: For example, it is unclear why the authors used the behavioral intention of becoming unfaithful as a criterion instead of using the actual behavior of interest which they measured in both studies (and employed it as a predictor instead). This approach is especially irritating because we already know from research related to the theory of planned behavior that behavioral intentions do not necessarily lead to actual behavior (e.g., Ajzen, 1991) although that is exactly what most of the researchers want to explain. However, two more recent studies concur with certain aspects of the studies conducted by Buunk and Bakker (1995) as they revealed the predictive validity of descriptive infidelity-norms: In the only qualitative study I was able to find, Fosse (2010) interviewed 38 low-income, African American men of whom 18 reported infidelity in their current romantic relationship. When asked why they engaged in such a behavior they referred to three different cultural logics : doubt, duty, and destiny. The men described doubt as obligation towards their peers. This component might represent some sort of a descriptive norm. Finally, with their experimental design T. D. Fisher and Brunell (2014) provided further evidence for the effect of descriptive norms – in that case the percentage of friends who have been unfaithful – on infidelity, at least in two of three experimental conditions (T. D. Fisher & Brunell, 2014).

If attitudes towards extradyadic sex, extramarital sex or just sexual infidelity have been the focus of a study, they predominantly did have predictive validity for sexual infidelity (e.g., Haavio-Mannila & Kontula, 2003; Liu, 2000; Prins et al., 1993; Wiederman, 1997). Moreover, Haavio-Mannila and Kontula (2003) report a positive association between double standards of infidelity: Being more permissive of infidelity of one’s own sex was associated with higher self-reported rates of extramarital sex during the current cohabitation or marriage in six samples from Finland, Estonia, and Russia. However, one major flaw of bringing attitudes towards infidelity in as a predictor of infidelity is their proximity to the behavior itself and more importantly their instability taken together with the fact that all existing studies that investigated the predictive role of such attitudes worked with cross-sectional designs. It is not unlikely that individuals originally disapproving of extradyadic sex change their evaluation towards a more positive view after having engaged in extradyadic sex in order to reduce cognitive dissonance (Zajonc, 1968). Furthermore, this potential change represents a dynamic a cross-sectional design can never capture. Therefore, I would recommend to never include this variable as a predictor in a cross-sectional

design, because the possibility of such a process happening can never be securely eliminated.

Living in an Urban Setting/ in a Certain Geographical Region. As pointed out earlier in section 6.6 (p. 116) living in an urban setting seemingly has no effect on infidelity: Potential small effects are mediated through more liberal attitudes towards casual sex (Treas & Giesen, 2000).

The results on potential effects of the geographical region people live in is mixed (see also Table 6, p. 119 for details): While Bell et al. (1975) report lower rates of extramarital sex in the Mountain (Mountain and Interior West of the USA) and Prairie States (Midwest) of the USA, Janus and Janus (1993) found higher rates of extramarital affairs in the Northeastern and Western USA. Another study with U.S. representative data reports no effect at all (Cochran et al., 2004).

Two more studies investigated potential effects of residential regions in the UK: One study found no differences in prevalence rates of extradyadic sex between Greater London and the rest of Great Britain (A. M. Johnson et al., 2001) while Cameron (2002) found higher rates of extradyadic sex in Wales.

Living in the city or in certain geographical regions should be interpreted as proxies for other variables at the most. Living in the city could result in a heightened number of opportunities for sexual infidelity (when compared with living in rural areas; see also section 6.6) and geographical regions could differ in their attitudes and norms regarding extradyadic sex (see paragraph above). However, the mixed results could imply that their application as proxies is too far-fetched.

Religious Affiliation and Religiosity. In contrast to most of the demographic control variables, associations between religiosity and infidelity, especially extramarital sex as it represents the most frequently investigated criterion, are pretty straightforward and consistent: Religiosity seems to be negatively associated with sexual infidelity when investigated with U.S. representative samples (e.g., Atkins et al., 2001; Atkins & Kessel, 2008; Burdette et al., 2007; Cochran et al., 2004; DeMaris, 2009). Although some other studies report no associations at all (e.g., Allen et al., 2008; Choi et al., 1994; Mark et al., 2011; Wiederman & Hurd, 1999), only the study of Choi et al. (1994) analyzed representative data, too.

In contrast, the specific religious affiliation does not seem to be of major importance (e.g., Burdette et al., 2007; DeMaris, 2009; Plack et al., 2010).

Side Note: Infidelity regulations within the world religions. What all world religions – Buddhism, Christianity, Hinduism, Islam, and Judaism – have in common (apart from being specific belief systems, partially with the belief in (one or more) god(s) itself) are aspects like respect for others, charity, and a certain sense of righteous, moral, and ethical behavior. Accordingly, infidelity is – more specifically as adultery – explicitly named and regulated in all of the world religions.

As an example for Christianity, in Catholicism the violation against one of the 10 commandments constitutes a deadly sin. Those kinds of sins are regarded as particularly grave kinds of sins in contrast to the less severe venial sins. The seventh commandment reads: “Thou shalt not commit adultery.” (Exodus 20:14, 21st Century King James Version)⁸.

Likewise, adultery is viewed as a sin in Islam. The 4th chapter of Quran provides the following order for women: “Those who commit unlawful sexual intercourse of your women – bring against them four [witnesses] from among you. And if they testify, confine the guilty women to houses until death takes them or Allah ordains for them [another] way.” (An-Nisā’ 4:15, Sahih International). Chapter 24 includes the following sura that addresses men and women: “The [unmarried] woman or [unmarried] man found guilty of sexual intercourse – lash each one of them with a hundred lashes, and do not be taken by pity for them in the religion of Allah, if you should believe in Allah and the Last Day. And let a group of the believers witness their punishment.” (An-Nūr 24:2, Sahih International). Depending on translation and interpretation both suras are applied to judge and convict adulterers. Some countries that operate with Islamic law – the shari’ah – even stone adulterers to death. For example, §83 of the Iranian penal code allots death by stoning for adultery. However, this penalty is very rarely executed and there are massive movements that fight for a reformation of Iranian law (Avaaz, 2010).

⁸At least this is what you would expect to read in the seventh commandment. However, in 1631 the typesetters accidentally omitted the word *not* – the resulting bible went down in history as the *Wicked Bible* (British Library, 2009).

The traditional Judaism also regards adultery, both sexes can be adulterers although it depends upon the marital status of the woman, as condemnable: “And the man that committeth adultery with another man’s wife, even he that committeth adultery with his neighbor’s wife, the adulterer and the adulteress shall surely be put to death.” (Leviticus 20:10, 21st Century King James Version). However, the death penalty is not executed although the Jewish law (halakha, which is still seen as normative and binding law by orthodox Jews) still does prohibit adultery.

Buddhism also holds no surprises as this religion disapproves of adultery as well: Buddha (Siddhārtha Gautama) proposed the noble eightfold path (Sanskrit: āryāṣṭāṅgamārga) that represents one of the most basic teachings in Buddhism – the one who follows this path will be freed from suffering and therefore in the end reach self-awakening (Sanskrit: nirvāṇa). One of its eight parts is called right action (Sanskrit: sammā kammanta) wherein the following is specified: “And what is right action? Abstaining from taking life, from stealing, and from illicit sex. This is called right action.” (DN22). The last phrase, illicit sex, can be and has been interpreted as infidelity.

As Hinduism represents no strict set of beliefs but rather a synthesis of different belief systems it is difficult to find one specific text passage that acts as the reference for the case of adultery. Instead, several historic hindu scriptures (like Vishnu Purana, a traditional religious text; and Manusmriti, a traditional law book) take a stand against adultery of both men and women and its punishment, e.g., “A man should not think incontinently of another’s wife, much less address her to that end; for such a man will be reborn in a future life as a creeping insect. He who commits adultery is punished both here and hereafter, for his days in this world are cut short, and when dead he falls into hell.” (Vishnu Purana, 3.11). Interestingly, in hindu history, the idea seemed to be that women must be especially guarded by their men to prevent them from being approached in an impure manner by other men.

In conclusion, all well-established religions seem to clearly disapprove of infidelity, especially when it takes the shape of adultery. Therefore, it seems coherent that being deeply religious acts as an aid that helps people abstaining from sexual temptations.

Political Orientation. Political orientation as a potential predictor has, to my knowledge, been investigated only rarely in the past and recently not at all. While two studies reported a positive effect of a liberal political orientation on the prediction of extramarital sex (in contrast to conservative political views, Bell et al., 1975; Cochran et al., 2004), Janus and Janus (1993) report a higher infidelity rate among respondents with more extreme political views, regardless of the direction. The latter being unfortunately only descriptive results, though.

A reason, why political orientation is so underresearched, although there seems to be a small effect, possibly lies in the implicit assumption of some researchers that liberal sexual attitudes might capture some of the variance otherwise expressed in a liberal political orientation. Indeed, sexual permissiveness as implicitly measured with sociosexual orientation is positively associated with sexual infidelity (e.g., Penke & Asendorpf, 2008).

Usage of Online Social Networks (OSN). Two very recent studies investigated the concrete role of OSN-usage on infidelity: Clayton, Nagurney, and Smith (2013; 2014) found that the amount of facebook- and Twitter-usage predicted infidelity in two cross-sectional studies. When OSN-related conflict was considered as well, it completely mediated this association. Therefore, the results suggest that it might be problematic for romantic relationships when people are externalizing their social interactions mainly into the internet. However, there are several methodological problems with both studies (e.g., a flawed operationalization of infidelity, strange exclusion criteria) so that replications of this effect are clearly needed before drawing final conclusions.

Method of Data-Collection. As noted above, several scholars previously hypothesized that the method of data collection influences the reported prevalence and/or incidence rates of infidelity. According to Whisman and Snyder (2007) and their results from a U.S. representative sample of married women, when asked directly in a face-to-face interview, 1.1% of women admitted extramarital sex while 6.1% revealed it when asked in an anonymous computer-assisted self-interviewing mode. In their experimental approach, T. D. Fisher and Brunell

(2014) compared effects of three the data-collection-conditions (anonymous, exposure threat, bogus pipeline) on infidelity-rates and predictors. Interestingly, only in the anonymous condition a sex difference in infidelity-rates was apparent. Furthermore, adherence to more traditional gender roles and descriptive norms of infidelity significantly predicted infidelity (or the admittance thereof) only in the exposure threat and anonymous data collection condition, not in the bogus pipeline approach; yet the direction of effects were at least in the same direction. This result is not that surprising for the authors as they interpret their criterion as “willingness to report one’s own cheating behavior” and assume both predictors serve as indicators of social pressure that should not be relevant in the bogus pipeline condition. In my opinion, this interpretation is not necessarily appropriate. Instead, the criterion should be interpreted as what was actually measured: Past cheating behavior (but admittedly) plus measurement error due to (different levels of – depending on experimental condition) social desirability. In the latter case of interpretation, it is more complicated to make sense of the results, though: Probably, the respondents believed, the truthfulness of their answers can be assessed only when it comes to actual behavior (infidelity) not attitudes (gender role orientation) or beliefs (how many friends were unfaithful) and therefore tuned down their answers only on the last two variables, as the adherence to traditional gender roles as well as having a lot of unfaithful friends do not cast a positive light on the respondents.

6.7.4 The Economic Point of View

In sum, I found six papers that use a more or less strictly economical angle on sexual infidelity (Baumeister & Vohs, 2004; Cameron, 2002; Elmslie & Tebaldi, 2008; Fair, 1978; Liu, 2000; Shropshire, 2003). The main ideas and models of all of them are presented within this section because their core variables are mainly socio-economical constructs. The empirical results of economically inspired studies are thus presented within Table 7 (p. 140) instead of in Table 4 (p. 98). Please note however, that all economy-inspired explanatory approaches imply some kind of a deficit within the primary relationship as they mostly recognize and consider the role of relationship satisfaction or at least other relationship-related characteristics – therefore, they would fit within the deficit model of infidelity as well. Baumeister and Vohs (2004) push the main idea of social exchange theory (see also section 6.4.2, p. 87) a little further along the economical direction in stating that sex must be seen as a female resource. They base their ideas on the prominent agent of rational choice theory Gary S. Becker, who was awarded with the Nobel Prize in 1992 for his expansion of microeconomical theories on human behavior (see Becker, 1976 for the first publication of his economic approach to human behavior). Within this approach standard economical rules of supply, demand, price, and markets are applied to human behavior, which is especially helpful when it comes to explaining human behavior that at first glance might seem irrational.

The argumentation of Baumeister and Vohs (2004), why sex should be seen as a female resource, is similar to the argumentation of evolutionary psychologists (see also section 6.3, 77): The potential costs of sexual intercourse are considerably higher for women. Thus, women should be the choosier sex that holds back longer than men before deciding on having heterosexual sex. With longer decision making periods, women reduce the “supply of female sexuality”, which in turn makes it more valuable. Another potential explanatory mechanism that the authors propose might be provided by the known global gender differences in sexual desire (with men generally expressing more sexual desire than women, see for example Penke & Asendorpf, 2008). Within the social exchange framework, sex between two heterosexuals must then be viewed as unequal according to Baumeister and Vohs (2004), because women give something valuable while men do not. Hence, men should provide women with something else they desire in return, like time, attention, monetary resources, or emotional attachment. The authors go on reviewing a wide range of literature on human sexual behavior, including sexual infidelity, in the light of their theory. The theoretical perspective implies that female sexual infidelity and male sexual infidelity differ in impact, because again, women would give something of value away while men do not. The authors claim, this theoretical view explains results like

- sexual double standards in judging infidelity: Unfaithful women are judged more harshly than men (although there are conflicting results, see Feldman, Cauffman, & Jensen, 2000 and Mongeau, Hale, & Alles, 1994 for results in favor of this argument and Sprecher, 1998 for diverging results).
- female infidelity is and has been punished and condemned more severely cross-culturally (if only one

gender's infidelity sufficed for divorcing the spouse it was with overwhelming majority female infidelity [54 vs. two societies] in a cross-cultural analysis of Betzig, 1989) and throughout history (Tannahill, 1992; Thomas, 1959; Turner, 2002)

- men reacting more strongly on female sexual infidelity while women object more to male emotional infidelity (again, the empirical results are not clear – two meta-analyses reach different conclusions: while Carpenter, 2012 report that there is virtually no difference and effects are mainly methodological artifacts [which a narrative review of Harris, 2003 concurs by the way] Sagarin et al., 2012 found sex differences in the expected direction both for reactions on hypothetical and actual infidelity).
- sex differences in successful mate poaching strategies (Schmitt & Buss, 2001): While women should try to emphasize their beauty, body, and youth (in other words offer sex), men should display their resources and form an emotional bond with the women of interest that is currently in a relationship with another man.

A similar approach is taken by Shropshire (2003) who elaborates in his theoretical paper on the evolution of human male-female-pair bonding: He assumes that monogamous relationships evolved because females traded their own sexual fidelity (implying that it is something of worth) for male resources which was, according to the author, associated with higher reproductive success on both sides. As the male is needing a certain amount of time, providing for the female and the offspring, his time for mating with other females diminishes preventing him from straying. Please note however that this economical view might explain why people stay faithful in romantic relationships, not why they do not.

Similarly, Liu (2000) bases her theory of marital sex life on the main principles of rational choice theory. At first, she theoretically derives why frequency of marital sex declines with increasing marital duration: She assumes that the marginal utility (satisfaction) of sexual intercourse declines with time because of its heightened supply within a marriage which in turn leads to a decline in frequency – an association that is also known as the law of diminishing marginal utility (Gossen, 1854). Conversely, with time, investment of human capital in the marriage and the sex life is assumed to make marital sex more and more rewarding. However, the first principle is claimed to be stronger than the second: Thereby, Liu (2000) uses these seemingly contradictory arguments, that are both based on rational choice theory, to explain the nonlinear decrease in marital sex.

Building on this premise and two other premises she not really proves (men invest more in their careers while women invest more in their relationships plus men value physical pleasure while women value emotional attachment more in a sexual relationship), she hypothesizes an u-shaped association between extramarital sex and marital duration in men, because at first the male investment in the marriage and thus, the rewards are high. However, with time, the marginal return for men will diminish which ultimately leads to the point, where the potential costs of infidelity are lower than their expected rewards. Contrastingly, Liu (2000) expects a decreasing likelihood of extramarital sex with increasing marital duration in women. The reasoning is that women invest so much more in a marriage than men that their potential cost of extramarital sex increases together with it, making infidelity less and less inviting for wives. It must be noted that the part of her theory that explains the nonlinear decline in frequency of marital sex is much more convincing than the arguments she offers for explaining the different effects depending on gender for the association between marital duration (and age for that matter) and extramarital sex.

Yet again, similar to the two approaches introduced above, Elmslie and Tebaldi (2008) propose an economical model of infidelity that draws from biological and evolutionary psychological assumptions and is mainly concerned with explaining sex differences in the occurrence of extramarital sex. Based on their analyses of evolutionary theory and biology they arrive at the conclusion that men mainly cheat because of their own characteristics (those with good genes more than those with bad genetic materials) whereas women do so because of the partners characteristics (when their primary partners offer only bad genetic material). In addition, the authors admit that free will or choice may override biological pressures and propose a model that assumes that both biological urges and economical considerations guide sexual behavior, especially infidelity. They hypothesize that men and women will only cheat on their spouses when the expected benefits of an extramarital affair

exceed its expected costs – furthermore, they expect sex differences in both benefits and costs of extramarital affairs and therefore differing equations of the expected utility functions of extramarital affair. Please consult the original publication for a formalized form of their theory and the specific predictions. Based on the aforementioned theoretical considerations the authors analyze data from the General Social Survey with variables they assume to be related with either benefits or costs of extramarital affairs as well as the probability of getting caught. These variables are mostly sociodemographic in type: An example of a benefit-related variable for women is the husbands education as a proxy for his genetic quality; an example of a cost-related variable is religion (for both sexes) as adultery is considered as an illicit behavior in most religious affiliations; an example of an operationalization for probability of getting caught is size of hometown. Some significant effects emerged with very small portions of explained variance, though (see Table 7, p. 140 for details).

In a similar fashion to Elmslie and Tebaldi (2008), Cameron (2002), and Fair (1978) introduce highly formalized economic models to explain infidelity – the basis in both cases being utility functions of extramarital or extradyadic sexual relations. However, the operationalizations (mainly sociodemographic variables again) and analyses (regressions with logit- and tobit links) with admittedly very large samples are pretty far away from the intended model variables. The theoretical models and their corresponding empirical analyses just do not fit. In addition, the analyses of Cameron (2002) are suspect to other methodological points of critique as well. Again, some significant effects are reported. See Table 7, p. 140 for details on the last two points.

Regardless of the appropriateness of the theoretical ideas and their operationalizations, Cameron (2002), Elmslie and Tebaldi (2008), Fair (1978), and Liu (2000) were partially able to confirm their hypotheses while the idea of sex as a female resource (Baumeister & Vohs, 2004) and the evolution of pair bonding out of economical principles (Shropshire, 2003) have to date only been proposed in their theoretical forms.

6.7.5 Summary and Critique

The label of this group of variables as socio-cultural approach seems a bit excessive – most of the variables, especially sociodemographics, should not be considered as causal variables. Instead, they should be viewed as control variables (admittedly they are considered as such in most cases) or as correlates of infidelity whose influence should be controlled in order to determine the extent of causal associations in line with theoretical considerations. At the most, they should be regarded as proxies to collect empirical evidence in favor of certain theoretical views (for example gender differences and evolutionary psychology).

In the case of injunctive and descriptive norms, their predictive influence should at first be proven longitudinally before further conclusions on their role in predicting infidelity are made.

Finally, if researchers report the determination coefficients (which happens rarely, see Table 7) the amount of variance accounted for is often rather low (e.g., Cochran et al., 2004; Elmslie & Tebaldi, 2008). That in turn suggests effects that have been overlooked, probably belonging to one or more of the groups of variables introduced already in the sections above.

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Representative Samples							
T. W. Smith (1991) [empirical, representative sample (US)]	extramarital sex: sex partners outside of marriage (yes/no)? derived from the following two questions and marital status: "How many sex partners have you had in the last 12 months?" and "Was one of the partners your husband or wife or regular sexual partner?"	What are demographic correlates of extramarital sex?	1989 GSS: results reported here are based on analyses with $N = 761$ married participants from the US	GSS-interview for sociodemographics and sealed questionnaire for sensitive sexuality-related questions	chi-square test (categorical data); ANOVA (continuous data)	1.5% of married people (2.1% of men and 0.8% of women) had sex partner/s outside their marriage; no sex difference; positive association with age, race=African American, lower education; no effect of geographical region	(+) large, representative sample; (-) relationship agreement not measured; (-) unclear, whether participants were only included when married at least one year; (-) cross-sectional
Janus and Janus (1993) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital affairs: "I've had extramarital affairs." 1 = never, 2 = only once, 3 = rarely, 4 = often, 5 = ongoing	How many people have/had extramarital affairs and what are sociodemographic correlates?	Nationwide survey of 1,347 men and 1,418 women (conducted between 1983 and 1992) between 18 and 65+, mostly married and highest degree being high school or college	interview: sociodemographics, extramarital affair	descriptive	35% of married men and 26% of married women had an extramarital affair at least once; $m > w$, descriptively no effects of education, religiosity; income (maybe - for men); current status (married/divorced); slightly higher rates of northeast and west as compared to south and midwest; the extreme politically oriented (ultraconservative and ultraliberal) reported higher rates of extramarital affairs than the indifferent	(+) large, representative sample; (-) relationship agreement not measured; (-) only descriptive; (-) cross-sectional
Leigh et al. (1993) [empirical, representative sample (US)]	extramarital sex: number of sexual partners within the last five years, 12 months, and 30 days - if married persons indicated a number > 1, they were categorized as unfaithful	What are demographic correlates of extramarital sex?	$N = 2,058$ participants from a household probability sample of adults in the US - 900 of whom married	interview and questionnaire measuring sociodemographics plus sexuality-related questions	chi-square test	among married participants 1.1% reported extramarital sex within the past 30 days, 3.5% within the past year; no significant effect of age, sex, and education; extramarital sex was more common among Black respondents	(+) large, representative sample; (-) relationship agreement not measured; (-) unclear, whether participants were only included when married at least one year; (-) cross-sectional
Choi et al. (1994) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Over the past 12 months, how many different people have you had either vaginal or anal intercourse with?"	What are correlates of extramarital sex?	three representative samples of married U.S. citizens between 18 and 75 from the National AIDS Behavioral Survey: National, Urban and Special Hispanic sample	interview measuring sociodemographics, sexual behavior, religiosity, monogamy beliefs (attitudes towards extramarital sex)	logistic regression	2.5% in the national and 2.2% in the urban sample had extramarital sex within the past year / effects of demographics tested within the whole samples (national and urban) of 18 to 75-year olds: race, education (-, only σ); no (consistent) effect of age and income, education in women / only monogamy beliefs (attitudes towards extramarital sex) was a significant predictor of extramarital sex consistently across all ethnic groups (18 to 49 years / White, African American, Hispanic); no (consistent) effects of church attendance, sexual problems, sexual communication, education, gender or age [in the White sample the only other predictor was age (-)]	(+) large, representative sample; (-) relationship agreement not measured; (-) only descriptive; (-) cross-sectional
Greeley (1994) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Have you ever had sex with someone other than your husband or wife while you were married?" (yes/no)	What are correlates of extramarital sex?	1991 GSS: results reported here are based on analyses with $N = 1,212$ (previously) married participants from the USA	GSS-interview for sociodemographics and sealed questionnaire for sensitive sexuality-related questions	multiple linear regression	$m > w$: 21% of men and 11% of women admitted extramarital sex (ever); no effects of education, religious affiliation, geographic region; in men significant effects of liberal attitudes toward EMS (+), satisfaction with family life (-), poor health (+), recent psychological counseling (+), admitting smoking and drinking problems (+) [$R^2 = .28$]; in women significant effects of job status (employed: +), satisfaction with family life (-), recent psychological counseling (+) [$R^2 = .20$]; unclear: age → only Figure in paper, no inference testing reported; probably concave in men (peak in 40s) and negative in women	(+) large, representative sample; (-) relationship agreement not measured; (-) no details on statistical analyses at all; (-) cross-sectional
Laumann et al. (1994) [empirical, representative sample (US)]	extramarital sex: "Have you ever had sex with someone other than your husband or wife while you were married?" (yes/no); authors also report several percentages of numbers of extramarital and extracohabitational partners for different birth cohorts (pp. 212-216; Tables 5.9, 5.14, 5.15)	What is the prevalence and what are demographic correlates of extramarital sex?	national survey: 1,673 married participants between 18 and 59 years; 43% male, 71% Caucasian	interview and self-administered questionnaire	descriptive	24.5% of ever-married men and 15% of ever-married women reported extramarital sex (ever); small effect of relationship status (cohabiting > married); no inference statistics included; negative effect of birth cohort in men, not in women; higher rates of infidelity reported by participants whose relationship has ended	(+) large, representative sample; (-) 21% of respondents were interviewed with someone else (e.g., child, spouse) present; (-) only descriptive; (-) relationship agreement not measured; (-) cross-sectional

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Bozon (1996) [empirical, representative sample (FRA)]	extradyadic sex: multiple sexual partners within the past 12 months while being in a romantic relationship	What is the prevalence of extradyadic sex and is it related to age and onset of sexual behavior (age at first intercourse)?	1,060 men and 849 women between 25 and 69 years from the 1992-ACSF-survey (Analyse des comportements sexuels en France) – all participants regarded within these analyses were living in a couple for at least one year	interview	descriptive	incidence of extradyadic sex during past year in different age groups: 25-34: 6.4% vs. 2.7% / 35-49: 7.5% vs. 4.1% / 50-69: 5% vs. 0.2% → 6.6% vs. 3.1% over all age groups within past year; 20 vs. 11% within past five years / possibly a small effect of onset of sexual activity (latecomers [first intercourse with 19 th vs. 20 th years or older] were not as often unfaithful as early starters and neither early nor late starters); possibly small nonlinear effect of age: peak between 35 and 54	(+) large, representative sample; (-) cross-sectional; (-) relationship agreement not measured; (-) only descriptive
Forste and Tanfer (1996) [empirical, representative sample (US, ♀)]	extradyadic sex: “Since you got married [vs. Since your relationship with him began], have you engaged in any sexual activity with other men?” (yes/no)	What are effects of several socio-cultural variables on sexual infidelity in women?	1,235 heterosexual paired women aged between 20 and 37 from the 1991 National Survey of Women	interview measuring a multitude of socio-cultural variables: relationship duration (in months), type of relationship (dating, cohabiting, married), age, education, religion, ethnicity, number of previous partners, partner-variables (age, education, religion, ethnicity), homogamy measures (age, religion, education)	logistic regression	10% have had extradyadic sex (4% married, 20% cohabiting, 18% dating); significant effects on EDS of: relationship type (married<cohabiting, dating), relationship length (+); quadratic effect tested but <i>n.s.</i> , religious affiliation (-), number of previous partners (+), age heterogamy (man older than woman), educational heterogamy (woman more educated than men); no significant effect of women's and partners age and education, ethnicity, partners religion, and religious homogamy	(+) large, representative sample BUT (-) only women; (-) EDS-measure considers only heterosexual EDS; (-) relationship-agreement not measured; (-) cross-sectional; (-) no report of an R^2 -equivalent; (-) cross-sectional
Wiederman (1997) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extradyadic sex: “How many sex partners have you had in the last twelve months?” + “Was one of the partners your husband or wife or regular sex partner?” / extramarital sex: “Have you ever had sex with someone other than your husband or wife while you were married?” → only currently married participants considered	What is the incidence and prevalence and what are correlates of extramarital sex?	U.S. representative sample of ever married men ($n = 884$) and women ($n = 1,288$) from the 1994 General Social Survey	face-to-face interviews and questionnaire for sensitive questions measuring sociodemographics, infidelity, attitude towards extramarital sex	chi-square test	more men than women ever had extramarital sex (22.7% of men vs. 11.6% of women – however, no significant difference in the age group below 40), no effect of race but of previous divorce on EMS ever / no sex difference in prevalence during past year (4.1% vs. 1.7%), effects of race (African American>other ethnicity) but no effect of previous divorce on EMS during past year / regarding age, data implied a positive linear and curvilinear relationship of age on lifetime incidence in men ($r = .17$) with a significant decrease after 70 and a curvilinear relationship (peaking between 40 and 49 and decreasing equally below and above this interval) in women; no association between age and EMS in the past year for men, in women a negative association ($r = -.08$); men and women who have been unfaithful in the past had more positive attitudes towards EMS	(+) large, nationally representative sample; (-) only univariate comparisons; (-) relationship agreement not measured; (-) cross-sectional
Traeen and Stigum (1998) [empirical, representative sample (NOR)] → see also Table 6 (p. 119)	parallel sexual relationships: sexual intercourse with one or more persons other than romantic partner during current relationship? (yes/no); if yes: number of parallel sexual contacts	What is the prevalence of parallel sexual relationships in Norway and what are contributing factors?	respondents from 1987 and 1992 Survey on sexual behavior from the Norwegian National Institute of Public Health (every time 10,000 randomly chosen Norwegians between 18 and 60 were mailed questionnaires); 10,915 individuals participated – data from 7,398 subjects was analyzed	mailed questionnaire that measured sociodemographics, sexual behavior including parallel sexual relationships (past and present), relationship characteristics	logistic regression	15.9% reported one or more parallel sexual relationships (21.0% men vs. 11.9% women); significant effects on occurrence of extradyadic sex: year of survey (1987>1992, $OR = 0.7$), sex=female (-), $OR = 0.7$, year of birth (-), level of education (+), marital status=married (instead of cohabiting; -, $OR = 0.7$), relationship duration (+, $OR = 2.6$), population density (+, $OR = 1.2$), traveling days per year due to work (+, $OR = 1.3$), age at first intercourse (-, $OR = 0.8$), number of previous partners (+, $OR = 1.6$), not satisfied with coital frequency (+, $OR = 1.8$); additional analyses revealed that the frequencies of extradyadic sex got more similar the younger the participants (sex difference in occurrence = cohort effect?)	(+) impressive sample size; (+) nearly representative; (-) cross-sectional; (-) relationship agreement not measured; (-) deficient definition of extradyadic sex ever; why only cohabiting relationships and marriages regarded?; (-) no information about Pseudo- R^2
Liu (2000) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extradyadic sex: number of sexual partners during the past year and past five years (if >1 extradyadic sex occurred)	How is extramarital sex related to marital duration and are there differential effects for the sexes?	3,432 heterosexual married and separated or divorced participants between 18 and 59 (from the National Health and Social Life Survey, representative); marital duration was at least five years; in case of the separated individuals the interview focused on the most recent marriage → same sample as Treas and Giesen (2000)	interview: marital duration, gender, race age, education, marital sex, children and health, sexual interest, attitudes about extramarital sex, employment characteristics (as opportunity-measures)	logistic regression	3.6% have engaged in extradyadic sex during the past year; significant predictors were: marital duration (-), marital duration ² (+, U-shaped, only ♂), gender (m>w), age ² (-), ethnicity: African American (+, only ♂), education (-), church attendance (-, only ♂), physical pleasure of marital sex (-), frequency of thoughts about sex (+), positive attitudes about extramarital sex (+), work-related opportunity-variable: does job require to be alone with clients (+, only ♂) / no effects: age, ethnicity: Caucasian, number of children, health, frequency of feeling guilty about sex-related thoughts, living in a central city, two of three work-related opportunity variables: does job require to touch clients? does job require to discuss personal concerns of clients?	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional; (-) no report of an R^2 -equivalent

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Treas and Giesen (2000) [empirical, representative sample (US)] → see also Table 6 (p. 119)	three measures of infidelity: 1) self-reported cumulative incidence: ever had sex with another person while married to husband/ wife (yes/no) / 2) interview cumulative incidence: extradyadic sex = "mutually voluntary activity with another person (than the primary partner) that involves genital contact and sexual excitement or arousal, that is, feeling really turned on, even if intercourse or orgasm did not occur", focus was on most recent cohabitation or marriage / 3) interview 12-month prevalence	What are effects of several individual, opportunity-related, relationship-related and demographic variables on extramarital sex?	same original data as Liu (2000), but slightly different subsets – analyses based on 2,870 participants for whom infidelity has been a possibility	interview and self-administered questionnaire (see Liu, 2000 for details)	logistic regression	15.5% of participants married only once ($n = 1,717$) reported extramarital sex in a self-administered questionnaire vs. 11.2% of ever-cohabited or ever-married participants ($n = 2,598$) reported sexual infidelity in the interview; 4.7% of cohabiting or married respondents ($n = 2,010$) reported infidelity within the past year in the interview / significant predictors (criterion: infidelity in past 12 months): sexual interest (+), positive attitudes towards extramarital sex (+), sexual experience (+), workplace opportunity (+), shared networks (-), religious attendance (-), cohabitation (+), relationship satisfaction (-), ethnicity: African American (+), interviewer's assessment of participants' frankness (+), marital duration (+); no effects: central city (significant without sexual interest and attitudes); couples' difference in age, religiosity, and education; participants' education, gender, and age	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional; (+) large number of potential models based on different criteria (timeframe: ever unfaithful vs. unfaithful within past 12 months) and subsets and with different predictors (e.g., only causal) BUT (-) no model comparison or suggestions on what might be the most appropriate; (-) no report of an R^2 -equivalent
Atkins et al. (2001) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Did you ever have sex with someone other than your husband or wife while you were married?" (yes/no)	What are effects of sociodemographic and opportunity-related variables on infidelity?	data from the General Social Survey (waves 1991 to 1996): cross-sectional sample of U.S. residents of 18 years or older every other year – analyses based on 4,118 married respondents	interview: sociodemographics, marital satisfaction, opportunity, religious behavior	logistic regression	13.3% admitted extramarital sex; significant main effects: gender (m>w), age (-), education (+), religious behavior (-), previous divorce (+), income (+), marital satisfaction (-), opportunity (work status of participants and spouse, +), age at marriage (-); significant IA: sex*age (men between 55 and 65 and women around 40 and 45 were most likely to report EMS); satisfaction*religious behavior (- association between religious behavior and EMS most pronounced in pretty happy relationships), education*divorce (+ association of education and EMS only in previously divorced participants)	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional
A. M. Johnson et al. (2001) [empirical, representative sample (UK)] → see also Table 6 (p. 119)	concurrent sexual relationships in the past year (among married, cohabiting, non-cohabiting people); if the month and year of first sex with the more recent partner is prior to the month and year of last sex with the former partner	How many people have concurrent relationships and what are correlates?	11,161 participants (6,399 women) from the 1999 to 2001-National Survey of Sexual Attitudes and Lifestyles between 16 and 44	computer-assisted self-interviews	descriptive; logistic regression	14.6% of men and 9.0% of women report parallel sexual relationships in past year; negative effect of age (frequencies in different age groups: 16-24: 20.8% vs. 15.2% / 35-49: 15.3% vs. 7.6% / 50-69: 9.8% vs. 6.7%); effect of survey year on rate of concurrent relationships in women (1990<2000); no effect of geographical region	(+) large, representative sample; (-) cross-sectional; (-) relationship agreement not measured; (-) only descriptive; (-) contradiction between running text and Tables (reported here is information from the Tables)
Fulerwitz et al. (2001) [empirical, representative sample (MEX, σ)] → see also Table 6 (p. 119)	extrarelational sex: sexual intercourse with more than one female partner during one year before data collection	What are demographic correlates of extrarelational sex?	multistage, stratified probability household sample from Mexico of $N = 8,068$ – analyzed were only men aged between 17 and 60 in a married or cohabiting relationship with a woman who were sexually active with their partner during the year before the survey (another important research question dealt with extrarelational sex and the partners' risk of infection with a STD); final $n = 3,990$	face-to-face interviews measuring sociodemographics and sexuality-related questions	logistic regression	15% reported extrarelational sex during the past year; number of extrarelational partners ranged from one to 30; significant effects of education (+) and relationship status (cohabiting>married, $OR = 1.81$); no effect of age and occupation (blue vs. white collar vs. other)	(+) large, representative sample BUT (-) only men; (-) relationship agreement not measured; (-) cross-sectional
Waite and Joyner (2001) [empirical, representative sample (US)]	sexual exclusivity: coded as not exclusive where respondents reported sexual relations with another partner while with their primary partner	How does sexual exclusivity affect emotional relationship satisfaction and physical pleasure?	3,432 participants of the 1992 National Health and Social Life Survey between 18 and 59	interviews measuring sociodemographics, sexual attitudes, sexual behavior, relationship satisfaction	descriptive; correlation	12% of men and 5% of women reported extradyadic sexual relations during past year; significant associations between extradyadic sex of respondents and their emotional and sexual relationship satisfaction (both -) and with the partner having had extradyadic sex (+)	(+) large, representative sample; (-) cross-sectional; (-) relationship agreement not measured; (0) causal and argumentative direction changed: How does infidelity affect satisfaction?

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Haavio-Mannila and Kontula (2003) [empirical, representative samples (FIN, EST, St. Petersburg)]	infidelity: "Have you had parallel sexual relationships (intercourse) during your present marriage or cohabitation?" (yes/no)	What are correlates of extra-marital sex?	six random probability samples from Finland (1971: $n = 1,432$, 1992: $n = 1,522$, 1999: $n = 964$), Estonia (drawn 2000, one sample of native Estonians: $n = 459$, one sample of native Russians: $n = 246$), St. Petersburg residents (drawn 1996: $n = 1,253$)	interviews measuring sociodemographics, sexual attitudes and sexual behavior	ANOVA	percentages of infidelity among married and/or cohabiting men vs. women: Finland 1971: 22% vs. 9% ($d = .37$) / Finland 1992: 37% vs. 14% ($d = .52$) / Finland 1999: 31% vs. 17% ($d = .34$) / Estonians: 35% vs. 24% ($d = .25$) / Russians in Estonia: 36% vs. 21% ($d = .31$) / St. Petersburg: 52% vs. 23% ($d = .58$); ANOVA-results: main effects of sex (m>w), age group (middle-aged participants were the most likely to report infidelity) and nationality (Finland < Estonia, Russia) on infidelity + significant interaction between sex and nationality (gender differences stronger in Russia and the 1992-Finland sample) as well as age and nationality ($R^2 = .09$); significant effect of double standard on infidelity (being more permissive about infidelity of own sex was associated with higher rates of infidelity in both sexes)	(+) culturally diverse, large, representative samples; (-) relationship agreement not measured; (-) cross-sectional
Cochran et al. (2004) [empirical, representative samples (US)] → see also Table 6 (p. 119)	extramarital sex: "Did you ever have sex with someone other than your husband or wife while you were married?" (yes/no)	Do different religious affiliations have differential impacts on extramarital sex?	data from the General Social Survey (waves 1988 to 1996): cross-sectional sample of 12,400 U.S. residents of 18 years or older every other year – analyses based on 5,707 respondents of different religious affiliations (analyses conducted separately for each affiliation: non, Jewish, Catholic, Liberal Protestant, Moderate Protestant, Conservative Protestant)	interview measuring sociodemographics, various indicators of religious involvement, and extramarital sex	logistic regression	13.1% reported extramarital sex (ever); religious involvement (four indicators) had effects in the predicted direction (consistently across religions), but they rarely reached statistical significance; consistent effects of sex: m>w (partially <i>ns</i>), race (direction: Black>Caucasian, partially <i>ns</i>), political orientation (liberal>conservative, partially <i>ns</i>); inconsistent or no effects for age, income, education, occupational prestige, living in an urban setting, geographical region, year of survey; Pseudo- R^2 rather low, depending on religious affiliation considered (highest Pseudo- R^2 for Jews): .04-.11 with 14 predictors	(+) large, representative sample; (-) relationship agreement not measured; (-) despite large numbers of predictors very small Pseudo- R^2 ; (-) cross-sectional
Burdette et al. (2007) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Have you ever had sex with someone other than your husband or wife while you were married?" (yes/no)	What are effects of various religiosity-related variables on marital infidelity?	pooled data from the General Social Survey (1991-2004, cumulated, split-ballot-design): $N=7,791$; mean age 49 years; 59% female; 42% divorced, 14% living in an urban setting, 86% had child(ren)	interview measuring various indicators of religious involvement, sociodemographics, and extramarital sex	logistic regression	17% reported extramarital sex; significant predictors of extramarital sex were: race=African American ($OR = 1.57$), female ($-$, $OR = .53$), full-time employment ($OR = 1.16$), children ($OR = 1.25$), divorced ($OR = 2.87$), church attendance ($-$, $OR = .93$), belief that biblical word has to be taken literally or as inspired word of god ($-$, $OR = .62 - .93$) / not significant: year of survey, race= other minority, age, education, urban resident, religious affiliation (several dummy-coded religious denominations)	(+) large, representative sample; (-) no report of R^2 -equivalent; (-) relationship agreement not measured; (-) cross-sectional
Whisman et al. (2007) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "How many people (either men or women) have you had sexual intercourse with in the past 12 months?" (if answer>1, participant has been unfaithful)	What are effects of sociodemographic, marital, and personality-related variables on infidelity?	2,291 married (at least for 12 months, $M = 12.5$ years) participants from the National Comorbidity Survey (a nationally representative sample) between 15 and 54, 1,250 women, $Age = 37.1$ years, mostly Caucasian	questionnaire measuring sexual infidelity, neuroticism, religiosity, marital functioning, parenting variables	logistic regression	annual prevalence of EMS: 2.3%; researchers controlled for age, gender, ethnicity, and education (no further details on effects); effects of neuroticism (+), marital satisfaction ($-$), suspicion of the partner having an affair (+, disappeared when marital satisfaction included), self-esteem ($-$, disappeared when marital satisfaction was included), religiosity ($-$); husbands were more likely to have been unfaithful when wife was pregnant; significant IA: satisfaction*religiosity (higher risk for infidelity only for participants low in satisfaction and religiosity; satisfaction*wife's pregnancy (effects of pregnancy on infidelity more pronounced in dissatisfied relationships)	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional
Whisman and Snyder (2007) [empirical, representative sample (US, ♀)]	extramarital sexual intercourse: "During the last 12 months, that is, since (MONTH/YEAR), how many men, if any, have you had sexual intercourse with? Please count every male sexual partner, even those you had sex with only once."	Do prevalence and predictors of infidelity vary as a function of assessment method (face-to-face interview vs. computer-assisted self-interview)?	4,884 married women between 15 and 44 years old (married at least 13 months, $M = 10.6$ years) from the 1995 National Survey of Family Growth; mostly Caucasian	interview and self-administered questionnaire: demographics, religiosity, sexual experience, childhood sexual abuse, sexual infidelity	correlations; logistic regression	infidelity rate in interview was 1.1% vs. 6.1% in self-administered questionnaire in the past 12 months; consistent predictors across assessment methods were: ethnicity (African American, +); religiosity ($-$), lifetime sexual partners (+) childhood sexual abuse (+), premarital cohabitation (+); inconsistent or not significant: age, education, ethnicity (Hispanic), remarried	(+) large, representative sample BUT (-) only women; (-) EDS-measure considers only heterosexual EDS; (-) relationship-agreement not measured; (-) cross-sectional; (-) no report of an R^2 -equivalent; (-) results are based on simple logistic regressions not its multiple equivalent

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Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Atkins and Kessel (2008) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Have you ever had sex with someone other than your spouse while you were married?" (yes/no)	What specific sort of religiosity-related variable predicts marital infidelity?	2,169 participants from the 1998 General Social Survey that have been married at some point	interview: sociodemographics, infidelity, marital happiness, religiousness	logistic regression	17.9% reported sexual infidelity at some point while married (14.7% of women vs. 22.5% of men); significant predictors of EMS were: gender (m>w), age ² (inversely u-shaped, peak around transition from 40s to 50s), years of education ² (inverted u-shaped, only σ), income ² (u-shape); previously divorced (+), marital happiness (-), only one (church attendance) of nine religion-related variables predicted infidelity; no (consistent) effects of age, ethnicity	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional; (-) no report of an R^2 -equivalent
Elmslie and Tebaldi (2008) [empirical, representative sample (US)] → see also Table 6 (p. 119)	extramarital sex: "Have you ever had sex with someone other than your husband or wife while you were married?" (yes/no)	Can an economic view on infidelity explain gender differences?	pooled data from the General Social Survey (1991-2004): N=3,253 first-married women (mean age: 43.8 years), N=2,762 first-married men (mean age: 46.3 years)	interview: socio-demographics, marital satisfaction, religiosity	regression (probit link), run separately for men and women	7.1% of women and 14.2% of men reported extramarital sex; of the younger individuals (35 or younger) 9% of men and 7% of women reported extramarital sex; men: small significant effects of age (+), age ² (-, inverted u-shape, peak at 55 years), unemployment (+), race=white (-), marital happiness (-), size of hometown (+); only in some models significant: education (+), living in rural areas (-); ns: social class, number of children, religious affiliation; portion of explained variance: from 1 to 4.5% with models from six to 16 predictors; women: small significant effects of age (+), age ² (-, inverted u-shape, peak at 45 years), social class: upper class (+), religious affiliation=protestant, catholic or other (-), marital happiness (-); only in some models significant: education of spouse (-), size of hometown (+); ns: education, homemaker, race=white, number of children, living in a rural area; portion of explained variance: from 2 to 5.5% with models from six to 17 predictors	(+) large, representative sample; (-) relationship agreement not measured; (-) cross-sectional; (-) despite large numbers of predictors very small Pseudo- R^2
Convenience Samples							
Bell et al. (1975) [empirical] → see also Table 6 (p. 119)	extramarital coital experience (yes/no and number of times)	What factors are associated with female extramarital sex?	2,262 married women; $M = 34.5$ years old; marriage length: $M = 13.2$ years	questionnaire measuring sociodemographics and extramarital sex	Automatic Interaction Detection	26% reported EMI; predictors (in descending order of importance): marital satisfaction (-, accounted for 9.5% of variance), sexual preferences and behavior (e.g., liking or being neutral to fellatio, cunnilingus, anal intercourse: +), political orientation, length of marriage (+), geographical region (+, if not from prairie and mountain region); no effects of: age, education, religious background and attendance, housewife (yes/no)	(+) large sample, BUT (-) only women; (+) illustrative analysis strategy; (-) relationship agreement not measured; (-) cross-sectional
Fair (1978) [empirical]	PT-questionnaire: How often engaged in extramarital sexual intercourse during the past year (0=none to 12=daily) / RB-questionnaire: Time spent in extramarital affairs only indirectly measured through: [EMS with how many men? *How many times EMS with each man?]/[number of years married]	Can economic principles be applied to the explanation of extramarital affairs?	convenience sample from two magazine surveys: Psychology Today (PT, from 1969): 20,000 replies, 2,000 coded & Redbook (RB, from 1974): 100,000 replies, 18,000 coded: only data from employed married people who were married the first time analyzed → usable PT-sample: 601 ($M = 32.5$ years old, $M = 8.2$ years married); usable RB-sample: 6,366	questionnaires; PT: 102 questions; RB: 81 questions; measuring sociodemographics, extramarital affairs	regression (tobit link)	consistently across samples and questionnaires significant effects of: marital happiness (-), age (-), number of years married (+), degree of religiosity (-); no (consistent) effects of: sex (only in PT-data men were included), occupation (+, significant in RB-data), husbands occupation, education (-, significant in RB-data), children	(+) large sample (RB-data); (-) old data; (-) cross-sectional; (-) relationship agreement not measured; (-) no information about portion of explained variance; (-) empirical analyses and operationalization very far from original model (see Table 2, p. 56 in original publication)

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Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Blumstein and Schwartz (1983) [empirical, dyadic data, (longitudinal in terms of consequences)] → see also Table 6 (p. 119)	extradyadic (extracohabitation) sex [authors call it non-monogamy as they were aiming for a morally neutral term]: "Have you had sexual relations with anyone other than your current partner since you have been living together?" (yes/no); if yes: details (How often? With whom? ...) + relationship agreement: "Which one of the following statements best describes your and your partner's current understanding concerning sex outside of your relationship?" 1 = <i>We have discussed it and decided that under some circumstances it is all right.</i> , 2 = <i>... no ...</i> , 3 = <i>... do not agree.</i> , 4 = <i>We have not discussed it but I feel we would agree that under some circumstances it is all right.</i> , 5 = <i>... no ...</i> , 6 = <i>... would not agree.</i>	What are correlates of extradyadic or extracohabitation sex?	usable questionnaires were returned by 4,314 heterosexual couples, 969 gay male couples, 788 lesbian couples / interviews were conducted with 129 heterosexual, 98 gay male, and 93 lesbian couples	questionnaire and interviews measuring sociodemographics and a variety of sexuality-related constructs including dyadic infidelity norms / 18 months after initial data collection questionnaires were sent out to half of the interviewed couples regarding whether they are still together, if something has changed and if they had separated, why	multivariate statistical analyses (correlations, multiple linear regression) - rarely concrete information about specific analysis strategy	occurrence: 13-42% of heterosexual women and 15-47% of heterosexual men admit EDS during current relationship; numbers are slightly lower, when criterion is EDS within past year: 7-22% [♀] vs. 9-25% [♂] (the actual numbers depend on relationship status and duration; similar numbers for lesbians; gay men report EDS way more often) / men>women (disparity is greater in homosexuals and when number of partners is the key variable) / significant effects on non-monogamy in current relationship: relationship duration (+), status (heterosexuals): married<cohabiting, age in women (-, when duration was controlled: interpretation as cohort effect), "opportunity" (+, companionship in relationship), commitment (-, loving less), emotional (-) and sexual (-) relationship satisfaction / no effects of frequency of church attendance, frequency of sex / intradyadic norms: minority in open relationship (except gay men: almost two thirds): 15% of married couples, 28% of cohabitators → not all participants with EDS are "cheaters" then because some had the permission to have extradyadic sex / consequences: smaller chance of survival for all kinds of couples (married, cohabiting, gay, lesbian) when they reported extradyadic sex at the initial data collection; in addition: higher mortality of open relationships compared to relationships with permission of extradyadic sex	(+) relationship agreement measured BUT (-) not considered in the comparisons; (-) dyadic nature of data seemingly not considered (however, not relevant as they only compared frequencies); (-) not always clear, whether a result has been confirmed with inferential statistics [probably due to the nature of the book being accessible for lay persons]; (+) large, heterogeneous sample; (-) cross-sectional
Buunk and Bakker (1995) [empirical] → see also Table 6 (p. 119)	Studies 1 and 2: willingness to engage in extradyadic sex (WEDS): subjective probability of engaging in EDS, should the opportunity present itself; extradyadic sex (EDS, measured as predictor): "Did you have extradyadic sex during the past year?" 1 = <i>never</i> to 7 = <i>more than 10 times</i> / Study 2: extradyadic sex: "How often did you have a sexual relationship with someone else than your steady partner during the preceding five years?" 1 = <i>never</i> to 5 = <i>more than 10 times</i>	What is the role of injunctive and descriptive norms in predicting willingness to engage in extradyadic sex?	Study 1 [1977]: 250 paired Dutch citizens (125 men), mostly married (79%) or cohabiting (21%), aged between 18 and 70 (<i>Age</i> = 35 years), relationship length between one and 45 years/ <i>s</i> (<i>M</i> = 10) / Study 2 [1992]: same number of participants and gender balance; aged between 17 and 65 (<i>M</i> = 35); married (43%), cohabiting (23%) or steady relationship (34%); relationship length between one and 40 year/ <i>s</i> (<i>M</i> = 9) → same sample as Buunk (1995) (see Table 5, p. 115)	questionnaire (administered in 1977 for Study 1 and in 1992 for Study 2): attitude toward extradyadic sex (positive/negative evaluation), injunctive norm (what would their best friend think if they would engage in EDS), descriptive norm (relative proportion of friends having engaged in EDS), EDS, WEDS / modifications in Study 2: descriptive norm assessed as perceived extradyadic sexual willingness, actual EDS was measured for past five years	correlations stepwise linear regression	Study 1: 26% of men and 18% of women have had EDS within the past year at least once; attitude ($\beta = .43$, unique variance: 7.7%), injunctive norm ($\beta = .25$, unique variance: 2.2%), descriptive norm ($\beta = .13$, unique variance: 1.0%), past EDS ($\beta = .15$, unique variance: 1.5%), gender ($\beta = .11$, unique variance: 1.2%) and relationship status (cohabiting>married, $\beta = -.10$) predicted WEDS, no effect of age, $R^2 = .68$ / Study 2: 53% of men and 41% of women have engaged in EDS at least one within the past five years; attitude ($\beta = .67$, unique variance: 31.7%), descriptive norm ($\beta = .12$, unique variance: 1.1%), past EDS ($\beta = .19$, unique variance: 2.3%), and relationship status (ordinal from more or less steady partner to married, $\beta = -.10$) predicted WEDS, no effects of injunctive norm, gender or age, $R^2 = .72$	(-) at least moderate but mostly high intercorrelations between the predictors (especially attitudes and norms) in Study 1; (-) actual infidelity as predictor; (-) no actual infidelity as criterion; (-) cross-sectional; (-) relationship agreement not measured (could have been captured in attitude-variable); (-) age of data (Study 1)

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Cameron (2002) [empirical] → see also Table 6 (p. 119)	extradyadic sex: more than one sexual partner in the last five years (only participants in relationships longer than five years in final sample)	Do economic factors contribute to the explanation of sexual infidelity?	subsample of the National Survey of Sexual Attitudes and Lifestyles (NSSAL, conducted in the UK in 1990/1991): data from 4,044 men and 4,490 women who were in a relationship for at least five years was analyzed	interview and questionnaires assessing a variety of sociodemographics, sexual attitudes and behavioral responses to HIV/AIDS-threats	OLS- and logistic regression	8.9% of men and 3.9% of women reported extradyadic sexual partners during the past five years; men: significant effects of 2/6 of opportunity-related variables (away often & away occasionally, +), age at first sexual experience (-), education=high (+), living in affluent region (+), anxiety of contracting HIV through multiple partners (-), age (-); church attendance (-), being catholic (-), race=black (+), ever homosexual experience (+), relationship duration shorter than 10 or 15 years (-), cohabitation (+), previous relationships (+), living in wales (+); NO effects of 4/6 of opportunity-related variables (e.g., working long hours, partner working long hours), other risk proxies apart from HIV-related anxiety (e.g., smoking, drinking), age of partner, other religions apart from Catholicism, bias controls (2), being from another race apart from black, children (existing, present), living in other geographical locations apart from wales / women: significant effects of 2/6 of opportunity-related variables (being away occasionally and just moved recently, +), age at first sexual experience (-), age (-), another person present during interview (-), ever homosexual experience (+), previous relationships (+); NO effects of 4/6 opportunity-related variables, education-variables (4), wealth proxies (5), age of partner, religion-variables (6), ethnicity-variables (3), children-variables (2), 4/5 relationship characteristics, living location (10)	(+) large sample; (-) cross-sectional; (-) relationship agreement not measured; (-) ridiculously large number of predictors (>50) in regression equations and yet small portion of explained variance; (-) variables were categorized/dichotomized where there was no need (e.g., duration of primary relationship, age at first sexual intercourse); (-) empirical analyses and operationalization very far from original model
Traeen et al. (2007) [empirical]	lifetime extradyadic sex: "Have you ever, while married or cohabiting, had sex with someone other than your permanent partner?" (yes/no) / extradyadic sex during present relationship: "Have you had other sex partners since having established your present cohabiting/married relationship?" (yes/no)	What variables predict occurrence of extradyadic sexual relationships among Norwegians?	sexual behavior survey conducted by the Norwegian National Institute of Public Health in 2002: random sample of 10,000 Norwegians between 18 and 49: total of 3,387 persons responded (response rate of 34%); final sample consisted of 2,807 ever married or cohabited persons, 59% women, slightly overeducated, more younger than older participants	mailed questionnaire that measured sociodemographics, self-esteem, attitudes toward sexuality, locus of control, several types of sexual behavior including lifetime extradyadic sexual relationships and during current marital/cohabiting relationship	chi-square test; logistic regression	29% of men and 23% of women reported extradyadic sexual relationships during their lifetime; in current relationship 16% of men and 11% of women reported extradyadic sex; significant predictors of extradyadic sex (ever): sex=male (+, $OR = 1.22$), number of previous romantic partners (+, $OR = 1.03$), marital status=divorced/separated (+, $OR = 1.57$) or =married/cohabiting (-, $OR = 0.52$) [compared to unmarried participants], sexual orientation=homo- or bisexual (+, $OR = 2.75$); no effects of education and self-esteem / significant predictors of extradyadic sex (current relationship): sex=male (+, $OR = 1.53$), number of sex partners (+, $OR = 1.05$), relationship duration (+, $OR = 1.09$), self-esteem (-, $OR = 0.93$), sexual orientation= homo- or bisexual (+, $OR = 4.37$); no effects of age and level of education / additional descriptive results regarding the most recent extradyadic activity: mostly a friend (40%) or casual partner (25%), 9% reported having a permanent extradyadic partner; initial contact with extradyadic partner was made mostly at work or studies (42%) or in public drinking places (30%), only 37% have not consumed alcohol before the sexual encounter	(+) large sample; (+) nearly representative; (-) deficient definition of extradyadic sex ever; why only cohabiting relationships and marriages regarded?; (-) relationship agreement not measured; (-) cross-sectional; (-) no information about Pseudo- R^2
Platt et al. (2008) [empirical]	infidelity: no details in the paper on how they measured it	Is knowledge of parents infidelity associated with engaging in infidelity in adulthood?	150 undergraduates (102 female) aged between 18 and 29 ($M = 20.8$), primarily Caucasian (68%)	questionnaire: sociodemographics, parental infidelity, own infidelity	chi-square test	individuals who had knowledge of father's infidelity were more likely than those without that knowledge of having engaged in infidelity (52% vs. 27%); no effect of having knowledge of mothers infidelity; post-hoc analyses revealed that the effect of having knowledge of father's infidelity on own reported infidelity was only true for men ($n_{\sigma} = 48$)	(-) small, homogeneous sample; (-) cross-sectional; (-) no information about how infidelity was measured exactly
Fosse (2010) [empirical, qualitative] → see also Table 6 (p. 119)	no specifics (unclear whether the author explicitly asked or whether the participants admitted to it in the process of the interviews)	How do low-income American men make sense of being (un)faithful to their women?	convenience sample of 38 paired African American low-income men aged between 18 and 32 ($M = 24$ years) from two Boston neighborhoods primarily inhabited by minorities: Roxbury and Dorchester	qualitative semi-structured interviews between one and two hours ($M = 90$ minutes)	grounded theory	18 participants reported infidelity either through "cheating" or "sleeping around" while 20 reported being "faithful"; men described their infidelity on the basis of three distinct cultural logics (content of unfaithful participants vs. faithful ones): cultural logic of doubt [women are untrustworthy vs. ditto, but current girlfriend/wife is an exception]; identified by 36/38], duty [towards peers vs. towards the primary partner; 17/38] and destiny ["life is short", no thoughts about distant future vs. long-term oriented; 24/38]	(+) special sample; (+) the only (?) qualitative analysis of infidelity

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Luo et al. (2010) [empirical]	newly developed inventory for extradyadic behavior (EDB); 23 items measuring face-to-face interactions and 13 items measuring online interactions (see original publication for details) – participants reported how often they engaged in each of the listed behaviors while in their current relationship on a 5-point rating scale from 1 = <i>did not participate because I didn't want to</i> , 2 = <i>did not ... there was no opportunity</i> , 3 = <i>have participated once</i> , 4 = <i>have participated more than once</i> , 5 = <i>have participated more than once with different people</i>	3fold: Develop a measure for extradyadic behavior (EDB); What is the prevalence of EDB?; Are there gender differences?	333 paired heterosexual participants (171 women), mean age was 19, mean relationship length was 18.5 months, predominantly White	questionnaire with sociodemographics, relationship characteristics, personality characteristics, new EDB-measure	PCA; t-tests	for face-to-face EDB: one-factorial solution (accounts for 54.5% of total variance), removal of three items / for online EDB: two factors (together accounting for 52.9% of total variance) – online emotional and online sexual EDB, removal of two items / men showed higher prevalences of each of the EDB: face-to-face ($d = .58$), online emotional ($d = .48$), online sexual ($d = .44$)	(-) small, homogeneous sample; (-) questionable rating scale of EDB-inventory; (-) partially questionable items that may not be subsumable under infidelity (e.g., sharing intimate details with someone else); (-) relationship agreement not measured; (-) cross-sectional
Petersen and Hyde (2010) [meta-analysis]	extramarital sex	Are there gender differences in the occurrence of extramarital sex?	730 studies with 834 independent samples from 87 countries and six continents; published between 1993 and 2007; $N_{total} = 1,419,807$ participants, 48.1% female; mean age between four (?) and 83 years	<u>Analysis strategy:</u> d as mean score males minus mean score females divided through pooled within-gender SD; macros for mixed-effects models provided by Lipsey and Wilson (2001); funnel plots		<u>Results:</u> men were more likely to report extramarital sex: $d = .33$; $k=30$; a small trend emerged indicating a decrease in this difference over the years but no significant effect of publication year	(+) incredibly huge sample
Lambert et al. (2012) [empirical]	Study 4: no actual infidelity measured but only extent of flirtatious behavior during an online chat with a confederate / Study 5: Sexual infidelity with several different questions: After defining hook ups asking “How many different people did you hook up with in the past 12 months?” + “Thinking of your current romantic relationship, during the past two months: Have you done anything that you consider to be physically unfaithful?” and “Have you done anything that you partner would consider to be physically unfaithful?”	How is pornography consumption related to infidelity?	Study 4: 67 undergraduates (29 men) aged between 17 and 25 ($Md = 19$) in an exclusive, romantic relationship, mostly Caucasian / Study 5: 240 heterosexual undergraduates (191 female), aged between 18 and 28 ($Md = 19$) in an exclusive romantic relationship that lasted at least one year, mostly Caucasian	Study 4: How often viewed pornographic material in past 30 days?; three weeks later invited for testing new social networking service for students – chatting texts were kept and rated (see Ciarocco et al. (2012) for details) – flirtatious content was rated by independent coders / Study 5: questionnaire that measured sociodemographics, pornography consumption, infidelity	multiple linear regression	Studies 1 to 3 use cross-sectional, observational and experimental data to show that pornography consumption is associated with weakened commitment to the current romantic partner and relationship / Study 4: pornography consumption ($\beta = .38$) significantly predicted amount of flirting behavior in the online interaction (= attention toward alternatives) while controlling for gender ($\beta = .28$) / Study 5: gender and pornography consumption significantly predicted number of hook-up partners ($\beta = .22$) and having been physically unfaithful to the partner ($\beta = .19$) – both associations were mediated by commitment; however, when testing for alternative explanations: hooking-up and infidelity also significantly mediated relationship between pornography consumption and commitment	(+) large number of well-designed studies; (-) in all studies small and homogeneous samples; (+) relationship exclusivity was condition for participation; (-) very scarce information on analytical details (e.g., full or partial mediation in Study 5?; magnitude of R^2 ?); (-) no discussion on how pornography consumption itself might breach some intradyadic norm of infidelity
Clayton et al. (2013) [empirical]	emotional and physical facebook-related infidelity: “Have you emotionally cheated on your significant other with someone you have connected or reconnected with on facebook?” (yes/no) and “Have you physically cheated on ...?” (yes/no); answers were averaged together with answer to “Has facebook led to breakup/divorce?” to negative relationship outcomes (which served as the dependent variable)	Does the use of online social networks, i.e. facebook, negatively affect romantic relationships?	205 facebook users (62% female) between 18 and 82 years old ($M = 33$), 79% in romantic relationship (duration: $M = 103$ months), mostly Caucasian (89%)	16-item online questionnaire measuring relationship length (if single of former relationship), facebook use (two items), facebook-related conflict (six items), negative relationship outcomes	multiple linear regression with moderation and mediation analyses	effect of facebook usage ($\beta = .02$, <i>ns</i>) on negative relationship outcomes was completely mediated by facebook-related conflict but only in longer relationships (>36 months); direct effect of conflict on negative outcomes: $\beta = .24$	(-) small, but (+) heterogeneous sample in terms of age; (-) singles analyzed together with paired people – for paired participants the third question of the dependent variable does not make any sense; (-) dichotomization of relationship length; (-) cross-sectional; (-) relationship agreement not measured (although wording implies norm breach); (-) no report of R^2 ; (-) study measured only infidelity <i>via</i> facebook

Table 7: Socio-Cultural Factors

Study & Type of Study	Definition and Measurement of Infidelity	Main Research Question	Sample	Measures	Analysis Strategy	Results	Strengths & Weaknesses
Gwinn et al. (2013) [empirical, longitudinal] → see also Table 6 (p. 119)	Study 1: no actual infidelity measured but only perceived quality of alternatives / Study 2: "Did you engage in the following behavior with someone other than the relationship partner within the past two months?": kissing, sexual intimacy without intercourse, sexual intercourse (yes/no) → answers summed	How is pornography consumption related to infidelity?	Study 1: 74 undergraduates (27 male) aged between 18 and 25 ($Md = 19$) in an exclusive romantic relationship / Study 2: 291 undergraduates (53 male) aged between 18 and 28 ($Md = 20$) in an exclusive romantic relationship	Study 1: sociodemographic questionnaire and priming experiment (sexually explicit vs. control) – afterwards questionnaire measuring perceived quality of relationship alternatives, relationship length, and relationship satisfaction / Study 2: T1-measures were pornography consumption, intimate extradyadic behavior, sociosexuality, relationship length, relationship satisfaction, social desirability; T2-measure (six weeks later, used as mediator) were perceived quality of alternatives; T3-measures (12 weeks later)	ANCOVA; multiple linear regression	Study 1: participants in the sexually explicit priming condition reported higher quality of relationship alternatives ($d = .33$) while controlling for sex (no effect), race, relationship length and satisfaction (effect of similar size without covariates) / Study 2: pornography consumption ($\beta = .14$, partial $r_{Ty,w} = .01$) at T1 predicted infidelity at T2 while controlling for initial infidelity ($\beta = .17$), sex (ns), sociosexuality, relationship length, T1-relationship satisfaction, social desirability, and race, quality of alternatives mediated that association	(-) not enough information on results (for example did any of the other covariates in Studies 1 and 2 have an effect and if so, what was the magnitude?); (-) small, homogeneous samples; (+) relationship exclusivity was condition for participation; (-) no discussion on how pornography consumption itself might breach some intradyadic norm of infidelity; (-) really small (negligible?) incremental validity of pornography consumption beyond other well-known correlates
Clayton (2014) [empirical]	emotional and physical Twitter-related infidelity: see Clayton et al. (2013) for details	Does the use of on-line social networks, i.e. Twitter, negatively affect romantic relationships?	581 Twitter users (63% female) between 18 and 67 years old ($M = 29$), 75% in romantic relationship, mostly Caucasian (89%) – excluded from analyses: those whose (former) partner did not have Twitter account	20-item online questionnaire measuring relationship length (if single of former relationship), Twitter use (2 items), Twitter-related conflict (six items), negative relationship outcomes	multiple linear regression with moderation and mediation analyses	effect of Twitter usage ($\beta = .02$, ns) on negative relationship outcomes was completely mediated by age; (-) singles analyzed together with paired people – for paired participants the third question of the dependent variable does not make any sense; (-) exclusion of people whose partner does not use Twitter without any apparent reason; (-) dichotomization of relationship length; (-) cross-sectional; (-) relationship agreement not measured (although wording implies norm breach); (-) no report of R^2 ; (-) study measured only infidelity <i>via</i> Twitter	(+) fairly large and heterogeneous sample in terms of age; (-) singles analyzed together with paired people – for paired participants the third question of the dependent variable does not make any sense; (-) exclusion of people whose partner does not use Twitter without any apparent reason; (-) dichotomization of relationship length; (-) cross-sectional; (-) relationship agreement not measured (although wording implies norm breach); (-) no report of R^2 ; (-) study measured only infidelity <i>via</i> Twitter
T. D. Fisher and Brunell (2014) [empirical] → see also Table 6 (p. 119)	modified version of the Extradyadic Behavior Scale (measures mixture of emotional and physical infidelity) by Luo et al. (2010): 15 (of originally 23, see above) items measuring occurrence of several romantic and/or sexual behaviors with another person than the current partner ranging from 1=never participated in this behavior while in an exclusive dating relationship to 5=have participated ... more than once ...	Does method of data collection affect admittance of infidelity differentially in both sexes?	189 male and 285 female students between 18 and 25, heterosexual, never married	questionnaire measuring several manipulation check-indices, sociodemographics, extradyadic behavior, hypergender ideology (adherence to extreme gender roles), perception of same-sex peers having cheated – 3 conditions: anonymous, exposure threat, bogus pipeline	ANOVA; multiple linear regression	manipulation successful: e.g., scores in social desirability: anonymous = exposure threat > bogus pipeline; significant sex difference in occurrence rates of infidelity only in anonymous condition; in both exposure threat ($R^2 = .19$) and anonymous condition ($R^2 = .35$) hypergender-ideology and having knowledge of same-sex friends having cheated significantly predicted own admittance of cheating – no effects of both predictors in the bogus pipeline approach; no effect of gender as a predictor in all three conditions; when all conditions integrated in one regression equation: no effect of condition, gender, condition*gender, and age, but of sociosexuality (+) [personal communication, 11.07.14]	(+) experimental design that investigates the effect of several data collection methods on admitted infidelity-rates; (+) relationship agreement measured; (-) exposure threat manipulation did not work that well; (-) interpretation of bogus pipeline results not that convincing

Note.

The Table contains only information relevant to infidelity – hence, other research questions, measures, and results of the reviewed studies are not reported.

Partially similar data analyzed by: (1) Burdette et al. (2007), Atkins and Kessel (2008) and Elmslie and Tebaldi (2008): used one or more waves of the GSS from 1991 to 2004; (2) Wiederman (1997) and Atkins et al. (2001): used one or more waves of the GSS from 1991 to 1996; (3) Liu (2000) and Treas and Giesen (2000): used both data from the NHSL; (4) Buunk and Bakker (1995) and Buunk (1995) (see Table 5, p. 115) used identical sample.

7 Integration – The (Biological)-Opportunity-Disposition-Deficit Model of Sexual Infidelity: An Interactionist View

The previous sections have shown that virtually every explanatory approach does have its own merits because every approach provides some variables that display significant associations with infidelity.

Curiously, although situational and individual explanatory directions have been explored, the connection of both approaches and its applicability to infidelity-related research has not yet been undertaken. However, this is exactly what the synthesis of both approaches within the theoretical direction of *interactionism* proposes: Behavior can be predicted best with the consideration of both, person and situation, as well as its interaction:

$$B = f(P, S, PxS) \quad (6)$$

A tentative proposal of a holistic explanatory model – the (B)ODD-model of sexual infidelity – that takes the multifactorial genesis of such a behavior into account is printed in Figure 2. (B)ODD is an acronym that stands for (B)iological-Opportunity-Disposition-Deficit. The (B) is in brackets because first and foremost this is a model aiming to explain infidelity from a psychological perspective. However, as the model integrates (almost) all of the proposed explanatory approaches and biological effects are known, they are included as well. The lightgray circles in the Figure underline that the model comes from an interactionist perspective: The lightgray circle behind subjective and objective opportunity indicates that both constructs are belonging to the category “situation” and the lightgray circle that covers personality, norms and partially the primary relationship as well as partially socio-cultural variables indicates they are (at least in parts) belonging to the category of “personality”. A less detailed version of the model that includes only the global categories rather than all of the identified potential predictors, moderators and mediators can be found in Appendix A (p. 161).

As can be seen in the model, the situational aspect has a prominent role in this model. And while direct effects of established explanatory approaches are proposed, too (personality, relationship quality), I assume the situation to play a mediational as well as a moderational role in the associations between the construct groups personality as well as quality of the primary relationship and infidelity. Opportunities for infidelity must be seen as a necessary but not sufficient prerequisites for infidelity to occur. These assumptions are reflected in the complex associations proposed: Subjective opportunities are supposed to mediate the association between personality and infidelity and relationship quality and infidelity, respectively. The reasoning behind this stated effect is that people with certain personality characteristics (e.g., high on narcissism) or certain characteristics of the primary relationship (e.g., sexual dissatisfaction) are more likely to either construe a situation as an opportunity for infidelity or even induce those themselves. Objective opportunities are supposed to moderate the aforementioned associations in the way that personality variables and relationship quality indicators that are positively associated with infidelity only take effect when the magnitude of objective opportunity-indicators (e.g., a lot of business-related travel or meetings) is high.

8 Conclusion and Future Directions

The next step is to test the proposed model: See Hergert (2016a) for a first empirical investigation that puts the (B)ODD-model to the test with longitudinal data. Additionally, the field still lacks a meta-analysis quantifying effects of certain variables on infidelity and the effects of infidelity on certain outcome variables. A meta-analysis could clear up for example, effects of age and sex (time of study as moderator) on the occurrence of infidelity.

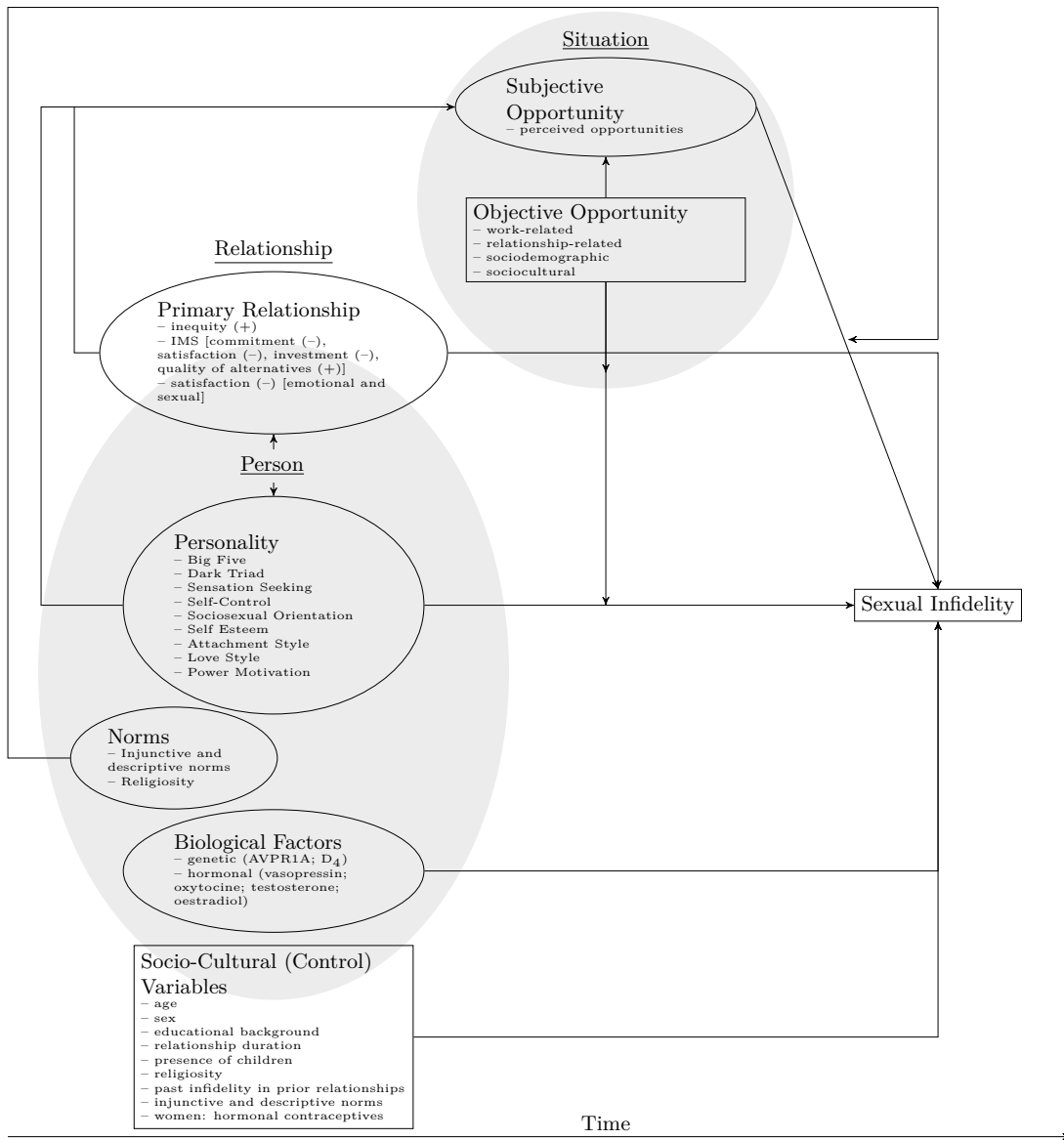


Figure 2: (B)ODD-Model of Sexual Infidelity in Detail

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Appendix A (Biological)-Opportunity-Disposition-Deficit-Model

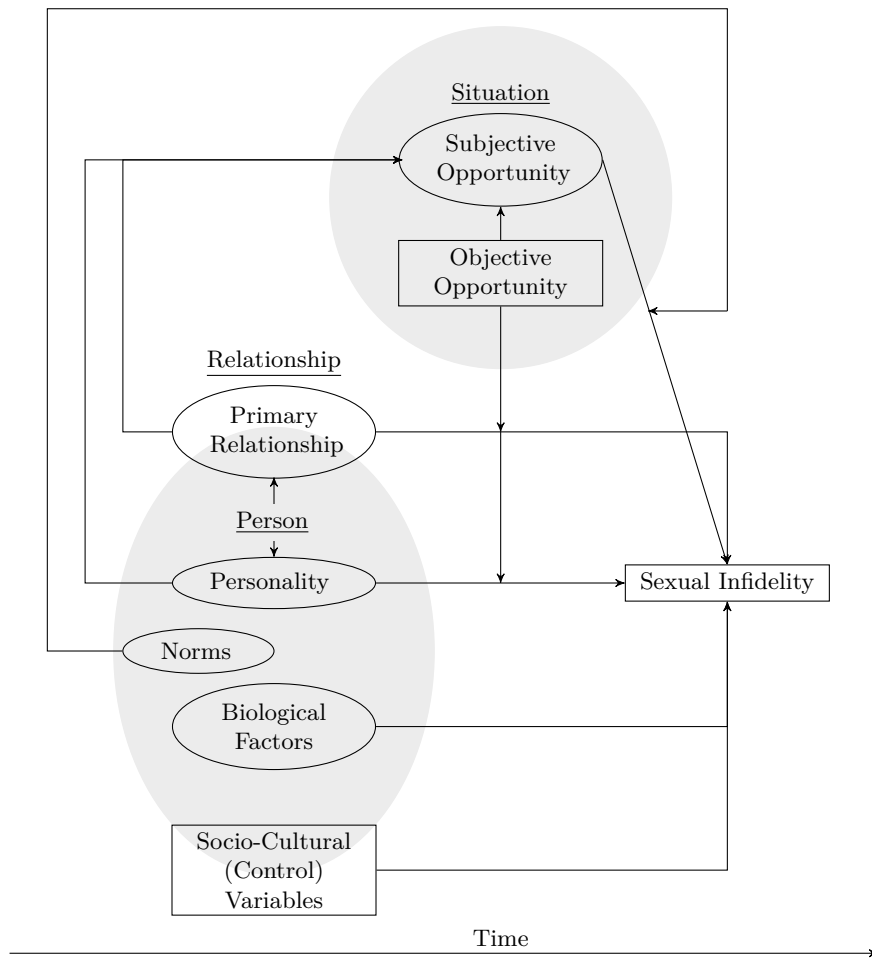


Figure A3: (B)ODD-Model of Sexual Infidelity

The (B)ODD-Model of Sexual Infidelity – A Model Test with Longitudinal Data.

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September 19, 2016

Abstract

The current study examines the interplay of several predictors of sexual infidelity within monogamous, heterosexual romantic relationships. Using a three-wave longitudinal design, participants completed on-line questionnaires measuring personality traits, relationship characteristics, situational factors, and actual sexual infidelity with each time of measurement six months apart. Cross-lagged panel mediation analyses (N=341) revealed a better fit of the (B)ODD-model of infidelity (Hergert, 2016) in comparison with the more parsimonious model with direct effects only. However, the more complex associations hypothesized failed to reach statistical significance. Results indicate that subjective situational aspects (opportunity for infidelity) as well as deficient primary relationships both promote sexual infidelity, while personality traits and objective situational aspects that might increase perceived opportunities do not. Post-hoc analyses point in the direction that the effect of objective opportunities for sexual infidelity is mediated by subjective opportunity perceptions. Limitations of the study and avenues for future research are discussed.

Keywords: personality; situation; subjective opportunity for infidelity; objective opportunity for infidelity; relationship quality; deficit model of infidelity; (B)ODD-model of infidelity; sexual infidelity; monogamy; nonmonogamy

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1 Introduction and Background

Probably everybody knows at least one family member, friend or acquaintance that “cheated” or has been unfaithful while in a committed romantic relationship. Academics use the bulkier term of extradyadic sex to describe such a behavior. Reactions when receiving knowledge of such a behavior within the circle of friends and under the premise of not being affected directly might range from a disgusted facial expression to open dismay, sometimes accompanied with an answer like “She/he should’ve known better. I knew all along that this would happen at some time.” Apparently, some laypersons seem to know pretty well, what leads to infidelity and what does not. Before I dwell on what academia has to say on that matter, it is important first, to clarify what exactly constitutes infidelity.

1.1 Clarification of Concepts – Two Dimensions of Infidelity?

Numerous (operational) definitions have been proposed throughout the decades of infidelity-research (for an overview, see Luo, Cartun, & Snider, 2010) that make evaluations and comparison of research results nearly impossible. However, these definitions seem to have one thing in common: The distinction between two dimensions of infidelity, namely emotional and sexual infidelity (e.g., Blow & Hartnett, 2005a; Drigotas & Barta, 2001; Glass & Wright, 1985; Shackelford & Buss, 1997). According to Shackelford and Buss (1997), “emotional infidelity occurs when one’s partner channels emotional resources such as romantic love, time, and attention to someone else” (pp. 1034–1035). Drigotas and Barta (2001) label the behavior of violating “norms regulating the level of emotional or physical intimacy with people outside the relationship” (p. 177) as infidelity. Except for the definitions proposed by Drigotas and Barta (who neglect to indicate where the norms stem from, though) and Blow and Hartnett (2005a), all others miss at least one important aspect, most often the norm-breaking character of such a behavior. Accordingly, infidelity is defined as follows in this study:

Infidelity is a sexual [and/or emotional] act engaged in by one person within a committed relationship, where such an act occurs outside of the primary relationship and constitutes a breach of trust and/or violation of agreed-upon norms (overt and covert) by one or both individuals in that relationship in relation to [romantic/emotional or] sexual exclusivity. (Blow & Hartnett, 2005a, pp. 191–192)

There are several aspects noteworthy in this definition: First, infidelity-norms may vary from relationship to relationship, which makes research on the topic enormously difficult. They may even differ interdyadically, as Hertlein, Wetchler, and Piercy (2005) already pointed out. This is an important aspect most researchers neglect. One exemplary and notable exception is the fifth study of Lambert, Negash, Stillman, Olmstead, and Fincham (2012) who asked their participants, that have been in romantic relationships longer than 12 months, the following questions to measure physical infidelity: (1) “How many different people did you hook up with in the past 12 months?” and (2.1) “Thinking of your current romantic relationship, during the past two months: Have you done anything that you consider to be physically unfaithful?” and (2.2) “Have you done anything that you partner would consider to be physically unfaithful?” They also noted that both measures are highly correlated ($r = .89$).

Second, aspects in squared brackets are part of the definition by Blow and Hartnett (2005a) but not here. This study focuses exclusively on sexual infidelity as most of the empirical body of literature focuses on sexual infidelity as well. Plus, as the definitions above already imply, there is much more uncertainty about what emotional infidelity actually is. Finally, I want to focus on actual, observable behavior which falling in love with someone else for example most certainly is not.

1.2 Well-established Correlates of Infidelity

A literature review revealed that research on infidelity usually yields five groups of correlates related to infidelity¹:

¹Strictly speaking, a sixth group of correlates should be added: *evolutionary factors*. Evolutionary psychologists ask the question “How did our ancestors adapt psychologically to evolutionary pressures that threatened their survival?” (Buss, 1995; Buss & Schmitt, 1993). Sexual infidelity is one such mechanism that has its merits both for men and women. While men maximize their reproductive success through sexual infidelity, women secure the best genetic material for their offspring. However, this branch of

First, *biological factors*: Sexual infidelity is 40-41% heritable in women (Cherkas, Oelsner, Mak, Valdes, & Spector, 2004; Zietsch, Westberg, Santtila, & Jern, 2015), and 62% heritable in men (Zietsch et al., 2015). Linkage-analyses yielded partially contrary results: While Cherkas et al. (2004) found no associations between the arginine vasopressin 1A receptor gene, Zietsch et al. (2015) found one but only in women. Another study reported that men with one specific polymorphism on the dopamine 4 receptor gene reported more extradyadic sexual partners than men without that polymorphism (Garcia et al., 2010). Garver-Apgar, Gangestad, Thornhill, Miller, and Olp (2006) investigated, how genetic similarity between two romantic partners affect sexual infidelity and they found higher numbers of extradyadic sex partners in normally ovulating women that had partners who were genetically very similar to them on the major histocompatibility complex – a genetic region that is important for the immune system.

Second, *relationship-related factors*, like emotional (sometimes called global) and sexual relationship satisfaction. These are the factors most consistently negatively related to sexual infidelity (e.g., Adamopoulou, 2013; Atkins & Kessel, 2008; A. D. Fisher et al., 2009). Equity theory (J. S. Adams, 1965) has been applied to romantic relationships as well (Hatfield, Traupmann, & Walster, 1978): It presumes that people who experience themselves as under- or overbenefited in a relationship experience stress and subsequently strive to restore actual or at least psychological equality. If both lines of action fail, the person would leave the situation. The only study with this theoretical approach reported a higher number of extradyadic sexual partners only in those feeling underbenefited (Hatfield et al., 1978). The investment model (Rusbult, 1980) states that the commitment to a relationship is a linear combination from relationship satisfaction, the attractiveness of alternatives (-), and investment into the relationship. A longitudinal study found that all four constructs independently predicted dating infidelity over spring break (Drigotas, Safstrom, & Gentilia, 1999). Factors from this category are sometimes subsumed under the umbrella of the *deficit model of infidelity*.

Third, *dispositional factors* have been linked to the occurrence of sexual infidelity. Factors that have been repeatedly, but not consistently, found to exhibit significant associations with sexual infidelity are: the Big Five consisting of neuroticism, extraversion, openness to experiences, agreeableness, and conscientiousness (especially agreeableness [-] and conscientiousness [-], e.g., Barta & Kiene, 2005; Foster et al., 2014; Orzeck & Lung, 2005), and honesty-humility (-, Bourdage, Lee, Ashton, & Perry, 2007) from the HEXACO-framework (Ashton & Lee, 2007; Lee & Ashton, 2004), the Dark Triad that consists of narcissism, machiavellianism, and psychopathy (all +; e.g., H. M. Adams, Luevano, & Jonason, 2014; Atkins, Yi, Baucom, & Christensen, 2005; Egan & Angus, 2004), sensation seeking (+; e.g., Ripa, Hansen, Mortensen, Sanders, & Reinisch, 2001; Wiederman & Hurd, 1999), insecure attachment patterns (e.g., DeWall et al., 2011; Fish, Pavkov, Wetchler, & Bercik, 2012; Foster et al., 2014), and finally, a permissive as opposed to a restrictive sociosexuality (e.g., Bourdage et al., 2007; Feldman & Cauffman, 1999; Havlicek, Husarova, Rezacova, & Klapilova, 2011; Penke & Asendorpf, 2008).

Fourth, *situational factors* or opportunities for infidelity: As early as 1960 Cloward and Ohlin stated in their differential opportunity theory that the availability of opportunities for deviant behavior alone decides if a person exhibits criminal conduct. Without the opportunity, like an open gun rack, the weapon cannot be stolen and subsequently not be fired. However, this is an especially tricky category, as it includes a broad range of factors that at first glance might not have that much to do with infidelity-opportunities. Yet, this chaos can be diminished by introducing two more subcategories. First, the subcategory of subjective opportunities that equal perceived opportunities for infidelity is depicting the opportunity-construct in the most narrow sense: With Cloward and Ohlin (1960) in mind, this subcategory should be seen as a necessary but not sufficient requirement for infidelity to happen – if the person in question is not aware that another person is sexually interested in him or her and willing to act accordingly, infidelity cannot take place. This construct has been proposed and investigated multiple times, yielding positive effects (Lammers, Stoker, Jordan, Pollmann, & Stapel, 2011; Peterman, 2008;

research exclusively focuses mainly on processes in favor of the hypothesis, like human sperm competition (e.g., Baker & Bellis, 1989, 1993a, 1993b; R. L. Smith, 1984) or sperm retention (Baker & Bellis, 1993a, 1993b) – those processes are not of interest in this study. In addition, the evolutionary approach more or less only predicts the motivations behind and timing of infidelity (for both women [when fertile] and men [e.g., when partner pregnant]) as well as sex differences in prevalence rates – differential predictions are not possible.

Plack, Kröger, Allen, Baucom, & Hahlweg, 2010). And second, objective opportunities (e.g., Blumstein & Schwartz, 1983; DeMaris, 2009; Drigotas et al., 1999; Le, Korn, Crockett, & Loving, 2010; Liu, 2000; Treas & Giesen, 2000; Whisman, Coop Gordon, & Chatav, 2007; Wiederman, 1997) that unify more distal indicators that can be work-related (e.g., employment situation, income, business travel, frequency of contact with colleagues), relationship-related (e.g., living separately, sharing the same social network, being separated for a certain amount of time), socio-cultural² (e.g., the presence and/ or perceived quality of alternatives, societal and peer group norms) and even sociodemographic³ (e.g., living in an urban setting or a certain geographical region, number or presence of children). All of those contextual factors may increase the probability of meeting another person that is sexually interested or vice versa – this in turn might lead to an actual subjective opportunity for infidelity.

Finally, *socio-cultural factors* have been employed as explanatory variables, especially in studies with large, representative samples. It makes sense to divide this category into a few subcategories as well. Starting with demographic factors, more precisely with the biological sex: Pretty consistently through the literature, men seem to be sexually unfaithful a little more often than women (e.g., Burdette, Ellison, Sherkat, & Gore, 2007; Haavio-Mannila & Kontula, 2003; Liu, 2000; Petersen & Hyde, 2010). Age effects are mixed. While some authors report a negative association between age and infidelity in the current relationship or another similar timeframe like past year (e.g., Johnson et al., 2001), others find a positive one (e.g., Dew, Brubaker, & Hays, 2006; T. W. Smith, 1991) or none at all (e.g., Dijkstra & Barelds, 2011; Previti & Amato, 2004; Pulerwitz, Izazola-Licea, & Gortmaker, 2001; Whisman & Snyder, 2007). Even quadratic effects have been reported (Atkins, Baucom, & Jacobson, 2001; Liu, 2000; Wiederman, 1997). With regard to effects of education and socioeconomic status, null-results (e.g., Greeley, 1994; Leigh, Temple, & Trocki, 1993) and positive associations prevail (e.g., Atkins et al., 2001; Dew et al., 2006; Fish et al., 2012). In terms of relationship- and sexuality-related factors, relationship duration, relationship status, and presence of children have been investigated. Relationship duration exhibits a similar, mixed result pattern as age with positive (e.g., Treas & Giesen, 2000), negative (e.g., DeMaris, 2009), nonlinear (e.g., Liu, 2000), and null-results (e.g., Lewandowski Jr. & Ackerman, 2006) which is no surprise, as both are confounded. Results on the role of the relationship status either has no association (e.g., A. D. Fisher et al., 2009) or a negative association in that sense that the higher the commitment level, the lower the prevalence rates of infidelity (e.g., Buunk & Bakker, 1995; Forste & Tanfer, 1996; Pulerwitz et al., 2001). Regarding effects of having children on sexual infidelity, results are mixed as well: Positive (Burdette et al., 2007; Klapilová et al., 2014), negative (Adamopoulou, 2013), and null-results (e.g., DeMaris, 2009; Liu, 2000) have been reported in the past. Previous sexual and romantic experience (e.g., Whisman & Snyder, 2007) and infidelity in past relationships (e.g., DeWall et al., 2011; Hall & Fincham, 2009) seem to be positively related with current sexual infidelity. The last subcategory includes religiosity, political orientation, social norms regarding extradyadic sex and the method of data collection: While religiosity is predominantly negatively related to sexual infidelity (e.g., Cochran, Chamlin, Beeghley, & Fenwick, 2004) the direction or existence of an effect of political orientation is less clear. Two Studies report a positive effect of a liberal political orientation (in contrast to a conservative orientation; Bell, Turner, & Rosen, 1975; Cochran et al., 2004) and another study reports a positive effect of the extremity of political views regardless of their direction (Janus & Janus, 1993). Buunk and Bakker (1995) were able to show that both descriptive norms (“what others do or are willing to do”, p. 313) and injunctive norms (“what others think, one should do”; p. 313) predict the willingness to engage in extradyadic sex. Please note that the authors did not investigate actual sexual infidelity.

A study that investigated the role of data collection with regard to admitted occurrence rates of infidelity concluded that infidelity research should be done in an anonymous setting rather than in face-to-face interviews as 6.1% of female respondents revealed extradyadic sex in the first setting whereas only 1.1% did so in the latter (Whisman & Snyder, 2007). This recommendation is in line with those proposed by Mustanski (2001). One concluding and important remark on socio-cultural factors as explanatory variables: Apart from descriptive and

²Please note the intersection with the deficit model of infidelity as well as with socio-cultural factors – the latter are introduced subsequently as the final group of infidelity correlates.

³Please note the intersection with socio-cultural factors that are introduced subsequently as the final group of infidelity correlates.

injunctive norms, the variables of this category should not be viewed as causal variables – instead, they serve as control variables which might serve as proxies for causal processes that are running in the background.

An extensive review of explanatory approaches of sexual infidelity and their accompanying literature can be found in Hergert (2016).

1.3 Problems in Infidelity-related Research and Strengths of the Present Research

Past research on infidelity has several methodological and conceptual problems, as outlined already by a number of narrative literature reviews (e.g. Allen et al., 2005; Blow & Hartnett, 2005a, 2005b; Drigotas & Barta, 2001; Kröger, 2010; Thompson, 1983; Tsapelas, Fisher, & Aron, 2010). Major issues are:

1. Inconsistent definitions of the concept of infidelity. Consequentially, there are heterogeneous operationalizations of the concept, too. Although the norm-breaching, deviant character of infidelity is widely recognized it is seldomly translated into the operationalization of the focal variable. For example, the infidelity-measure is often constituted by the answer to the question whether extradyadic sexual intercourse has occurred or not – but it is not measured, whether this behavior is regarded as infidelity within the current relationship of the participant. Likewise, a binary-coded infidelity-criterion which seems to be the norm rather than the exception seems shortsighted: Gradual effects are probably overlooked if a person with an ongoing, steady affair is statistically treated just as a person that had extradyadic sex once out of revenge after an argument with the partner or as a consequence of a drunken night out.
2. Focal variables: Most of the research focuses on one or two groups of variables that have shown to be associated with infidelity. Clearly, to focus on, say, sociodemographics and relationship-related factors can only paint a fragmentary picture, when we know that other groups of variables have predictive value, too.
3. Theoretical background: Most of the research lacks a convincing theoretical background. There are some theoretical arguments apart from common sense that are usually made – however, as Thompson (1983) observed, they are usually “sketchy backdrops” only, against which sexual infidelity is “tentatively rested” (p. 19).
4. Oversimplification: More complex associations (like interaction effects or mediation) are rarely incorporated. If interactions are regarded, they mainly focus on biological sex as a moderator.
5. Samples: The majority of correlational studies builds on non-representative samples. In addition, early research on infidelity only regarded extramarital sex although infidelity takes place in other types of relationships (e.g., dating or cohabitational relationships), too. Finally, infidelity research still focuses on heterosexual couples – research on infidelity in homosexual men and women is still in its infancy.
6. Design: Cross-sectional designs prevail – longitudinal research is underrepresented. Almost no experimental studies exist, although this is likely a result of the nature of the topic.

1.4 Prior Longitudinal Research

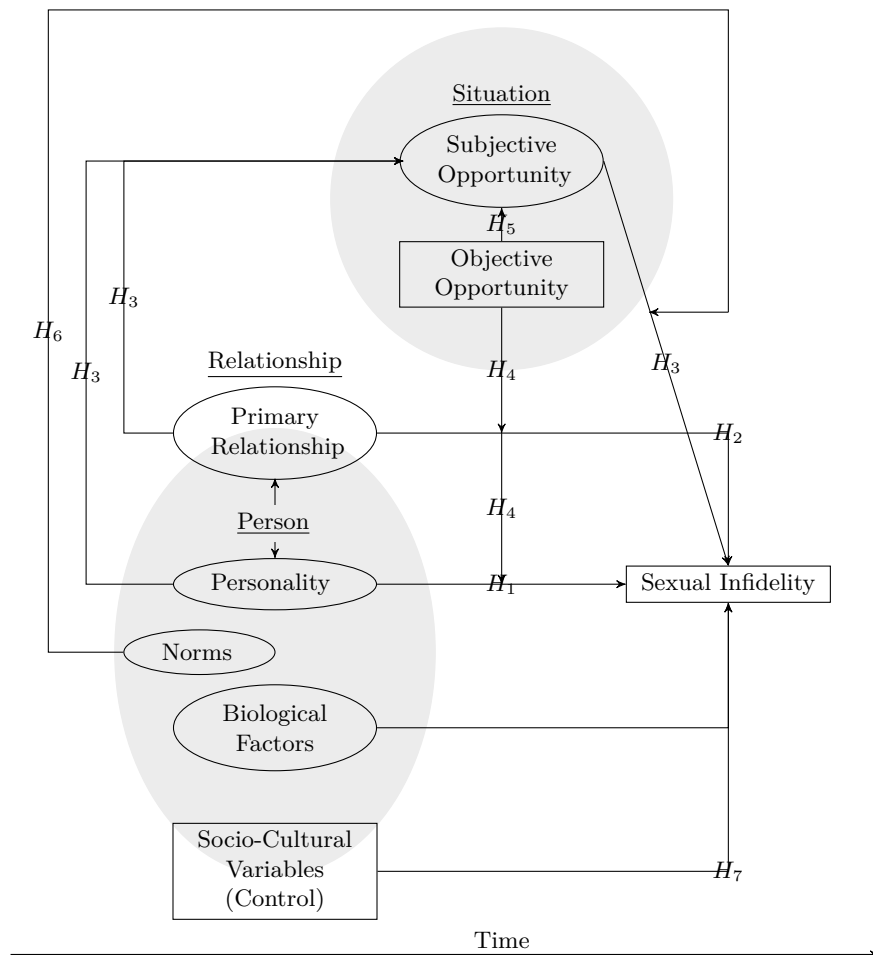
Although longitudinal research is clearly underrepresented when compared with cross-sectional research, a few longitudinal Studies with similar research questions as the present one have been published in the past. However, most of them suffer from the first point of critique made in the section above (Adamopoulou, 2013; Allen et al., 2008; Amato & Rogers, 1997; Amato & Previti, 2003; DeWall et al., 2011; Drigotas et al., 1999; Fincham, Lambert, & Beach, 2010; Foster et al., 2014; Hall & Fincham, 2009; Le et al., 2010; McNulty & Widman, 2014; Previti & Amato, 2004; Russell, Baker, & McNulty, 2013). Others concentrate on consequences of infidelity rather than antecedents (Amato & Rogers, 1997; Amato & Previti, 2003; Previti & Amato, 2004), still others work with the same or partially the same data⁴ (Amato & Rogers, 1997; Amato & Previti, 2003; DeMaris, 2009; McNulty & Widman, 2014; Previti & Amato, 2004; Russell et al., 2013), use outdated analysis strategies (Allen et al., 2008; Le et al., 2010) or do not even analyze their data longitudinally (Amato & Previti, 2003, although, admittedly, the research question did not call for that).

⁴Amato & Rogers, 1997; Amato & Previti, 2003; DeMaris, 2009, and Previti & Amato, 2004 are based on data from the Panel Study of Marital Instability over the Life Course (Booth, Johnson, Amato, & Rogerst, 2010). McNulty & Widman, 2014 and Russell et al., 2013 use identical samples, too.

Only one study included at least three (deficit model, situational factors, socio-cultural factors) of the five explanatory approaches introduced earlier and it is the only longitudinal one that dedicated attention to situational factors at all (DeMaris, 2009). However, a longitudinal study integrating all five approaches is still missing. The present research, although not closing the gap completely (biological factors have not been included) integrates all five approaches into one theoretical model that employs an interactionist view on the individual and their personality, relationship quality, and the situation.

1.5 Hypotheses and Theoretical Model

If the explanatory approaches introduced earlier are viewed separately, the assumption basically is that every approach uniquely predicts sexual infidelity. While I assume this being true for personality traits (H_1) and relationship quality (H_2), a fairly more complex model probably suits the explanation of this behavior better. This model – the (B)ODD-model of sexual infidelity (see below) formalized the hypothesized association (Hergert, 2016). As stated above, opportunities for infidelity, an approach that is mostly neglected or, if not, the operationalizations have many deficits, must be seen as necessary (although not sufficient) prerequisites for infidelity. Therefore, the effect of non-situational well-established correlates of sexual infidelity should have in some or another way have something to do with the opportunity-construct. To be more precise, the association must be a mediational (H_3) and/ or moderational (H_4) one. See Figure 1 for the complete model including the formulated hypotheses.



Note.

Abbreviations. (B)ODD-model of sexual infidelity is an acronym for (B)iological-Opportunity-Disposition-Deficit-model of sexual infidelity.

The gray circles are included in the Figure to underline that the model was derived from an interactionist perspective: The gray circle behind subjective and objective opportunity indicates that both constructs are belonging to the category *situation* and the gray circle that covers personality, norms and partially the primary relationship as well as partially socio-cultural variables indicates they are (at least in parts) belonging to the category of *personality*.

Figure 1: (B)ODD-Model of Sexual Infidelity with Hypotheses

Hypothesis 1: Personality traits uniquely predict sexual infidelity.

Hypothesis 2: Indicators of relationship quality uniquely predict sexual infidelity.

Hypothesis 3: Perceived, subjective opportunity for sexual infidelity mediates the relationship between personality traits as well as relationship quality and sexual infidelity as follows: High levels of certain personality variables (e.g., agreeableness (-), narcissism, sensation seeking, sociosexuality) as well as low relationship quality have a positive effect on the number/ magnitude of subjectively perceived opportunities which in turn positively affects the occurrence of sexual infidelity.

Hypothesis 4: Objective opportunity moderates the relationship between personality traits as well as relationship quality and sexual infidelity in such a way that personality variables and relationship quality indicators that are positively associated with infidelity only take effect when the magnitude of objective opportunity-indicators is high – this accounts for the fact that opportunities are necessary but not sufficient conditions for the occurrence of sexual infidelity.

Hypothesis 5: The higher the objective opportunity of a person the more subjective opportunities for sexual infidelity the person perceives.

Hypothesis 6: Injunctive and descriptive norms regarding extradyadic sex moderate the relationship between subjective opportunities and sexual infidelity in such a way that perceived subjective opportunities are only used to commit extradyadic sex when those norms are in favor of extradyadic sex.

Hypothesis 7: Socio-cultural factors (that are viewed as control variables in this context) will have significant effects on the prediction of infidelity.

2 Method

2.1 Procedure

The data were obtained through a three-wave questionnaire study while the waves were separated by intervals of six months length. As the model states two mediational effects, interval length was chosen in a way that would hopefully allow for the mediational process to unfold. In the first wave of the data collection (from April to May 2012) the participants filled out three separate questionnaires: The first questionnaire assessed the participants' personality, the second questionnaire consisted of items regarding their current working situation, and the third questionnaire assessed the participants' relationship and history of infidelity. The items were presented in three separate questionnaires to give the participants the opportunity to choose whether to complete all three in a row or over the course of several days. This meant more flexibility for the participants and I hoped this would result in a bigger sample. The participants needed 20 to 45 minutes to complete each questionnaire. In the second and third wave of data collection (from November to December 2012 and from June to July 2013, respectively) only one questionnaire was provided which took 60 to 75 minutes to complete. All questionnaires were administered online and anonymous. A code ensured the possibility to merge the different questionnaire forms together for each participant without comprising their anonymity. Undergraduate participants were acquired through the *Virtual Laboratory* of the Psychological Institute at the University of Hagen, a website where all the current studies are listed. External participants were acquired through announcements on several German websites and groups in online social media and vocational networks⁵. As incentives, undergraduates were offered partial course credit. External participants were offered a summary of results. In addition, both groups could take part in a lottery for one of 10 gift certificates worth 20 € for a major online retailer.

2.2 Participants

After cleaning the data for drop-outs and participants who completed the questionnaire(s) more than once a sample size of $N = 1,328$ ($n = 1,083$ female) remained. The second questionnaire was completed by $N = 735$ ($n = 627$ female) and the third by $N = 568$ ($n = 474$ female) participants.

An exhaustive panel description can be found in Appendix A (p. 194). The following sample description will focus exclusively on the sample that was used for the analyses, which consists only of the participants,

⁵For a full list of all recruitment channels please contact the author.

that reported being in a heterosexual monogamous relationship and who had identical infidelity-norms (see section 2.3, p. 172 for further elaboration): These were $N = 1,034$ participants ($n = 864$ female, 83.6%; $n = 167$ male, 16.2%) on t_1 . Mean age was 32.5 years ($SD = 9.33$) with a range from 18 to 68. The two largest portions of the sample were either in dating relationships ($n = 514$, 49.7%) or married ($n = 395$, 38.2%). The majority was living with their partner ($n = 757$, 73.2%). The reported relationship duration was on average 94.6 months ($SD = 93.79$). On average, the sample reported $M = .79$ children, with a range from 0 to 8. As most of the participants were undergraduates it is a particularly well educated sample with 80.9% ($n = 836$) reporting Abitur (a German high school exam with university entrance qualification). The highest vocational degree was more heterogeneously distributed with 25.7% ($n = 266$) reporting no finished degree at all, 30.9% ($n = 320$) an apprenticeship, and 27% an university degree. The remaining participants clustered more or less evenly around the remaining categories. The University of Hagen is a distance teaching university. Therefore, most of its students study part-time alongside their working career. Accordingly, 59.9% ($n = 619$) were currently employed and 16.3% ($n = 169$) self-employed or freelancing. The majority of the sample was of Christian belief (25.4% Roman Catholic; 29.9% Protestant) and 38.6% ($n = 399$) reported no particular confession.

2.3 Measures

The study has a prospective cross-lagged panel design – therefore, most of the constructs of interest have been measured on all three times of measurement. I did this for two reasons: First, this design allows examination of the data with cross-lagged panel analysis which is, when not working experimentally, a prerequisite when testing causal models (Reinders, 2006; cf. Selig & Preacher, 2009, who believe that more caution is appropriate). Second, and more pragmatically (due to the anticipated drop out), it allows to test the model cross-sectionally as well but with higher power due to larger N on earlier times of measurement. Measures of some constructs, however, have not been measured at all three timepoints: Either, they have been implemented later into the questionnaire (e.g., Investment Model Scale, injunctive and descriptive norms, lifetime infidelity) or there was a break in the measurement (e.g., Big Five) – this is indicated by incomplete reliability estimates.

Please note that, as this study is part of a larger research project, not every measured construct will be introduced here – instead, only the variables relevant for testing the above presented hypotheses are.

Subjective Opportunity. The construct of *subjective opportunity* for infidelity was measured with three indicators: First, the participants were asked how many opportunities for infidelity they have experienced during the past six months (both taken, if that was the case, and not taken). To ensure comprehension, these opportunities were explained in greater detail in the questionnaire⁶. In short, they were asked to exclusively report the number of situations where it only depended on them, whether they become unfaithful or not. A situation in a bar, where an attractive stranger you danced with and flirted with the whole evening eventually asks you “My place or yours?” would fall into that category.

Second, the 5-item Extradynamic Opportunity Scale (EOS) captures aspects regarding the availability and willingness of potential alternative partners as well as the possibility to keep those relationships secret (Peterman, 2008). For example, one item reads “I could be physically intimate with an attractive person without my partner knowing about it.” coded from 1 *not at all* to 5 *very much*. Reliability estimates were good with $\alpha_{t_1} = .85$, $\alpha_{t_2} = .86$, and $\alpha_{t_3} = .88$.

Finally, the 4-item Scale Ability to Attract a Romantic Partner (ATARP, Lammers et al., 2011) measures the self-confidence of being capable to attract another partner apart from the current one. An example-item is “I feel confident that I would be successful if I wanted to seduce someone.” The items were answered on a 7-point scale from 1 *fully disagree* to 7 *fully agree*. Internal consistency was excellent with $\alpha_{t_2} = .94$ and $\alpha_{t_3} = .95$

Objective Opportunity. A multitude of indicators for objective opportunities have been proposed throughout the decades of infidelity research. For the sake of convenience and clarity the measures used in this study, the inspiration they arose from and the exact wording of the items are noted in Table 1.

⁶Please contact the author for more information on all self-constructed measures and instructions.

Table 1: *Overview of Operationalizations, Studies and Effects of Opportunities on (Mainly Sexual) Infidelity*

Operationalization of Construct	Opportunity-	Exemplary Studies	Item
OBJECTIVE			
<u>Work-related</u>			
Employment (yes/no)		Atkins et al. (2001); Burdette et al. (2007); Pulerwitz et al. (2001)	What is your current employment situation? ^a
Income		Amato and Rogers (1997); Atkins and Kessel (2008); Choi et al. (1994); Cochran et al. (2004)	What is your personal monthly net income? ^a
Irregular hours, business meetings, and work-related travel		DeMaris (2009); Plack et al. (2010); Træen and Stigum (1998)	How many hours do you work during a regular work week? In how many business lunches have you participated in the past six months? How many business trips have you undertaken within the past six months? How many business parties have you visited within the past six months?
Frequency and type of contact with colleagues		Liu (2000)	How much time do you spend on a regular workday with your boss / colleagues / subordinates / clients or patients? (in hours)
Sex ratio at work		DeMaris (2009)	How many members does your team have? How many team members are male?
<u>Relationship-related</u>			
Living separately		Blumstein and Schwartz (1983)	What is your current living situation? ^a How often do you spend the night with your partner? 1 <i>never</i> 2 <i>varies (because of a long distance relationship)</i> 3 <i>once a week</i> 4 <i>a few times a week</i> 5 <i>almost every night</i> 6 <i>every night</i>
Being separated for a certain amount of time		Drigotas et al. (1999); Le et al. (2010)	How much time do you spend on an average week day with your partner? (in hours) How much time do you spend on an average weekend day with your partner?
shared network (friends & family)		Treas and Giesen (2000)	Which statement describes your and your partners circles of friends best? 1 <i>mostly the same friends</i> 2 <i>in equal parts shared friends and friends of our own</i> 3 <i>mostly not the same friends</i>
Going out with or without one another	–		How often do you go out (e.g., to a concert, an exhibition, a bar, a club, visiting friends) without your partner? 1 <i>never</i> 2 <i>rarely</i> 3 <i>maybe once every two or three months</i> 4 <i>once a month</i> 5 <i>once every other week</i> 6 <i>once a week</i> 7 <i>a few times a week</i>
<u>Sociodemographic</u>			
Urban setting		Elmslie and Tebaldi (2008); Greeley (1994); Wiederman (1997)	How many inhabitants does your place of resides have? ^a

Note.

^a Answering categories can be found in Table A10, p. 194.

Injunctive and Descriptive Norms. Injunctive and descriptive norms were measured with two items, each previously introduced and used by Baumgartner, Valkenburg, and Peter (2011) and Buunk and Bakker (1995). Items for injunctive norms were as follows: “What would your best friend think if you would engage in extradyadic sexual behavior?” (1 *very objectionable* to 7 *very good*) and “How would your friends and acquaintances respond to you engaging in extradyadic sexual intercourse?” (1 *strongly disapprove* to 7 *no problem at all*). Internal consistency was acceptable with $\alpha_{t_3} = .74$. Items for descriptive norms read: “What relative

proportion of your friends and acquaintances have had extradyadic sexual relations?” (1 *no one*, 3 *some*, 5 *most of them*, 7 *all of them*) and “Would your friends and acquaintances engage in sexual intercourse with someone else than their steady partner if an occasion were to present itself?” (1 *absolutely not* to 7 *absolutely*. Again, internal consistency was acceptable with $\alpha_{t_3} = .73$.

Personality. The Big Five were assessed with the Short 5 (S5, Konstabel, Lönnqvist, Walkowitz, Konstabel, & Verkasalo, 2012), a 60-item questionnaire that measures the Big Five domains on the dimensional (12 items) and the facet-level (two items) with comprehensible single items, that is, items that describe the traits of interest in a comprehensive way. See Table 2 for an item example of each domain. Answering format is ranging from -3 *not at all* to $+3$ *very much*. Internal consistencies were mostly acceptable or good with the lowest for agreeableness with $\alpha_{t_1} = .69$ and the highest observed for neuroticism with $\alpha_{t_3} = .88$. For the specific estimates, please consult Appendix B (p. 196).

Table 2: *Item Examples from the Short 5*

Dimension	Facet	Item
Neuroticism	Anxiety	I am often nervous, fearful, and anxious, and I worry that something might go wrong.
Extraversion	Warmth	I do not like to associate with people much; I am considered a rather cold and distant person. (r) ^a
Openness to Experiences	Openness to Fantasy	I have a vivid imagination. I like to fantasize and let my thoughts run free.
Agreeableness	Trust	I do not believe in the good intentions of other people; I think that most people are trying to take advantage of others whenever possible. (r) ^a
Conscientiousness	Competence	I am sensible and competent; I can find practical, quick, and effective solutions to problems.

Note.

^a reverse scored.

Honesty/humility was measured with the respective 10-item subscale from the HEXACO 60 (Ashton & Lee, 2009). The first item of the scale reads as follows: “I wouldn’t use flattery to get a raise or promotion at work, even if I thought it would succeed.” (1 *strongly disagree* to 5 *strongly agree*). Again, reliability estimates were acceptable with $\alpha_{t_2} = \alpha_{t_3} = .74$.

Self-control was assessed with a 13-item German short version of the Self Control Scale (Tangney, Baumeister, & Boone, 2004) by Bertrams and Dickhäuser (2009, SCS-K-D). The first item for example is “I am good at resisting temptation.” with the answering categories ranging from 1 *not at all* to 5 *very much*. Internal consistencies were good with $\alpha_{t_1} = .86$, $\alpha_{t_2} = .85$, and $\alpha_{t_3} = .87$.

The Narcissism Personality Inventory 15 (NPI15, Schütz, Marcus, & Sellin, 2004) was administered to measure subclinical narcissism. It comprises 15 items, each containing two statements of which the participant is asked to endorse one. An example is A: “I have a natural talent for influencing people.” vs. B: “I am not particularly good at influencing people.”. Reliability estimates were acceptable $\alpha_{t_1} = .77$, $\alpha_{t_2} = .78$, and $\alpha_{t_3} = .80$.

Sensation seeking was measured with a scale introduced by Roth and Hammelstein (2012) that grasps the construct a little differently than the 4-faceted classical Sensation Seeking Scales Form V (Zuckerman, 1994) do. Instead of the four facets thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility it measures only two, namely need for stimulation ($\alpha_{t_1} = .90$, $\alpha_{t_2} = .91$ and $\alpha_{t_3} = .93$) and avoidance of rest ($\alpha_{t_1} = .84$, $\alpha_{t_2} = .86$, and $\alpha_{t_3} = .88$). Internal consistencies for the global scale were good to excellent: $\alpha_{t_1} = .88$, $\alpha_{t_2} = .90$, and $\alpha_{t_3} = .90$. Participants are asked to indicate how often in the past six months they felt a certain way with the answering categories 1 *almost never*, 2 *seldom*, 3 *occasionally*, 4 *frequently*, and 5 *almost always*. A prototypical item for the first scale is “I like feeling totally charged.” and for the second scale “I like to just sit back and enjoy a peaceful moment.” (reverse scored).

The *Bielefelder Fragebogen der Partnerschaftserwartungen* (BFPE, Höger & Buschkämper, 2002, *Bielefeld questionnaire of relationship expectations*), a well-accepted 31-item (with the first item being the icebreaker) German questionnaire, was administered to measure attachment. It consists of three subscales: (1) Willingness to open (11 items, $\alpha_{t_1} = .90$, $\alpha_{t_2} = \alpha_{t_3} = .91$) – example item: “It is easy for me to talk with my partner about what is going on inside of me”. (2) Feeling not accepted by the partner (11 items, $\alpha_{t_1} = \alpha_{t_3} = .89$, $\alpha_{t_2} = .88$) –

example item: “Sometimes the thought crosses my mind that I could be too much for my partner to bear”. (3) And finally, need for affiliation (eight items, $\alpha_{t_1} = .82$, $\alpha_{t_2} = \alpha_{t_3} .83$) – example item: “It depresses me, when my partner is not there for me”. The items are answered on a scale ranging from 0 *not at all* to 4 *totally*.

Sociosexuality was assessed with the 9-item revised Sociosexuality Inventory (SOI-R, Penke & Asendorpf, 2008). It measures global sociosexuality as well as its three facets behavior with three items each ($\alpha_{t_1} = .76$, $\alpha_{t_2} = .74$, and $\alpha_{t_3} = .72$), attitude ($\alpha_{t_1} = \alpha_{t_2} = .86$, $\alpha_{t_3} = .88$), and desire ($\alpha_{t_1} = \alpha_{t_3} = .86$ and $\alpha_{t_2} = .86$). The obtained internal consistencies for the global measure were good with: $\alpha_{t_1} = \alpha_{t_2} = .86$ and $\alpha_{t_3} = .85$. The first item of the behavior-subscale is “With how many different partners have you had sex within the past 12 months?” (1 0, 2 1, 3 2, 4 3, 5 4, 6 5–6, 7 7–9, 8 10–19, 9 20 or more). From this item alone it becomes clear that the behavior-facet can be confounded with sexual infidelity. Therefore, global sociosexuality was regarded *without* the behavior-facet, consisting of attitude and desire only. The first item of the attitude-subscale reads “Sex without love is OK.” with answering options ranging from 1 *strongly disagree* to 9 *strongly agree*. Finally, the first item of the desire-subscale is “How often do you have fantasies about having sex with someone with whom you do *not* have a committed romantic relationship?” (1 *never*, 2 *very seldom*, 3 *once every two to three months*, 4 *once a month*, 5 *once every other week*, 6 *once a week*, 7 *several times per week*, 8 *nearly every day*, 9 *at least once a day*).

Relationship Quality. The questionnaire *Zufriedenheit in Paarbeziehungen* (ZIP, Hassebrauck, 1991, *satisfaction in romantic relationships*) was administered to measure emotional relationship satisfaction. It consists of seven items like “How much do you love your partner?” (1 *not at all* to 5 *very much*). Reliability estimates were excellent over all points of measurement: $\alpha_{t_1} = .92$ and $\alpha_{t_2} = \alpha_{t_3} = .93$.

Sexual relationship satisfaction was measured with the Global Measure of Sexual Satisfaction (GMSEX, Lawrance, Byers, & Cohen, 2011) of which the question “Overall, how would you describe your sexual relationship with you partner?” is answered on the following five categories: 1 *very bad* to 7 *very good*, 1 *very unpleasant* to 7 *very pleasant*, 1 *very negative* to 7 *very positive*, 1 *very unsatisfying* to 7 *very satisfying*, and 1 *unimportant* to 7 *very important*. Again, internal consistencies were excellent: $\alpha_{t_1} = \alpha_{t_3} = .93$ and $\alpha_{t_2} = .92$.

From the Investment Model Scale (IMS, Rusbult, Martz, & Agnew, 1998) the following subscales were administered: The two 5-item scales quality of alternatives and investment both yielded acceptable to good reliability estimates ($\alpha_{t_2} = .79$, $\alpha_{t_3} = .81$ vs. $\alpha_{t_2} = \alpha_{t_3} = .78$). For the 7-item commitment scale they were excellent: $\alpha_{t_2} = \alpha_{t_3} = .92$. An example from the quality of alternatives scale is “The people other than my partner with whom I might become involved are very appealing”. The first item from the investment scale reads “I have put a great deal into our relationship that I would lose if the relationship were to end”. And finally, an example of the commitment scale is as follows: “I want our relationship to last for a very long time”. All items of the IMS are answered on a 5-point scale ranging from 1 *do not agree at all* to 5 *agree completely*.

Socio-cultural (Control) Variables. Variables that were associated with infidelity in studies with large, representative samples, served as controls. These variables were: Sex, age, educational background (highest school degree and highest vocational degrees), relationship duration in months, relationship status (dating vs. cohabiting vs. married), presence and number of children, past infidelity, political orientation (two items), and religiosity (two items). See Appendix A (Tables A10 and A11, (pp. 194–195) for items and categories.

Past infidelity was measured with the question in how many of their past monogamous relationships the participants had been unfaithful.

In addition, participants were asked to indicate their sexual orientation on a 6-point scale ranging from 1 *exclusively heterosexual*, 2 *rather heterosexual*, 3 *bisexual*, 4 *rather homosexual*, 5 *exclusively homosexual* to 6 *asexual*. All labels were accompanied by a short description, e.g., “you mainly but not exclusively feel sexually attracted to people of opposite sex” for the category of rather heterosexual. Finally, participants were asked what type of relationship agreement they had: monogamous, open, or polyamorous. Again, all three types were introduced shortly to assure comprehension. Open relationships for example were explained as follows: “Your relationship is emotionally but not sexually exclusive. Sexual contacts outside your primary relationship are tolerated/ wanted”. Only participants, that indicated being in a monogamous relationship and rather or

exclusively heterosexual were included in the final sample.

Infidelity. With the help of a focus group ($N = 6$, $M_{age} = 27.17$ years ranging from 21 to 40) prior to the first point of measurement, a list of 17 behaviors, that may be viewed as sexual infidelity in committed, monogamous relationships was compiled. Accordingly, people were first asked, which behaviors out of this list constitute infidelity in their relationships. Only if they agreed to a behavior being infidelity, they were subsequently asked whether they have exhibited this specific behavior in the past six months – in short, whether they have cheated or not. These behaviors ranged from watching porn alone to having a steady affair. The list of these behaviors as well as the rate of agreement from people in monogamous relationships is printed in Table 3.

Table 3: *List of Potentially Sexual Unfaithful Behaviors*

Number	Behavior	Rate of Agreement (in %)	Prevalence		
			t_1	t_2	t_3
01	Watch porn without partner	10.0	15.2	6.7	9.4
02	Masturbate without partner	2.7	26.9	20.0	30.0
03	Visit strip club without partner	30.2	1.4	1.1	1.5
04	Sexting ^{a,b}	88.4	6.0	4.2	3.0
05	Telephone sex	90.9	2.8	1.0	1.1
06	Cyber sex	89.8	4.1	2.1	1.6
07	Kiss on the mouth	63.2	16.2	8.3	7.5
08	French kiss	94.9	14.3	7.2	5.1
09	Petting ^c	97.7	9.7	6.1	3.0
10	Heavy petting ^d	98.4	7.4	4.7	2.5
11	Oral sex	98.6	7.8	4.7	3.2
12	Intercourse	98.8	9.9	5.8	4.2
13	Anal sex	98.7	2.4	1.0	1.0
14	Visiting a swinger club alone	95.5	1.1	.6	.3
15	Visiting a prostitute	96.2	1.4	.8	.5
16	Living a fetish (Bondage, SM)	96.4	1.5	.6	.5
17	Steady affair	98.8	6.8	4.3	3.2

Note.

$N = 1,233$.

^a Exchange text messages with sexually explicit content with someone else than the partner.

^b From this item on, every behavior is meant to be exhibited with someone else than the current partner.

^c Was presented along with this short description: Clothing stays at least partially on and genitals are touched.

^d Was presented along with this short description: Both partners are completely naked and masturbating each other.

In an attempt to neither cut too many participants from the sample nor include disputable non-observable behavior, I included only those participants in the final sample that agreed from french kissing on to steady affair that all of these behaviors constitute infidelity in their respective relationships.

A Guttman-scale like infidelity-measure served as criterion: A 0 was assigned to all participants that did not commit any of the above listed behaviors. Number 1 was assigned to everyone reporting french kissing as the maximum intensity. A 2 was assigned to everyone reporting heavy petting as the highest intensity. The participants reporting all kinds of intercourse, visiting a swinger club, prostitutes and/or living their fetishes were assigned a 3. Finally, all participants reporting a steady affair were assigned the 4, as this constitutes probably the only behavior where sexual and emotional components are usually present. The idea behind this criterion is that infidelity can be conceptualized on a hierarchical ordered continuum ranging from sexual behavior with low (french kiss), medium (petting, heavy petting), and high (intercourse et al.) intensity to maximum intensity that even includes emotional aspects (affairs). Or to put it differently, a person that reports intercourse is expected to have had exchanged french kisses and did petting and heavy petting as well in order to “arrive at the intercourse level”. The rates of agreement in Table 3 support this notion at first glance. To check further, whether the criterion is appropriate and exhibits the assumed Guttman-like structure I analyzed the frequencies of all unfaithful behaviors listed with the expectation that they should decline in an ordered fashion from “none” to “affair”. Table 4 illustrates that the hierarchical structure is – although not perfectly – present.

2.4 Statistical Analyses

Software. Data preparation and basic analyses were conducted with the statistical software SPSS Version 22.0 (IBM Corporation, 2013). With regard to the specific hypotheses data were analyzed with Mplus Version 7.11 (Muthén & Muthén, 1998–2012). As a multitude of representative indicators was measured for every explanatory

Table 4: *Reported Frequency of Unfaithful Behaviors*

Behavior	t_1	t_2	t_3
None	870 (84.1)	478 (91.6)	393 (94.9)
French kiss	148 (14.3)	37 (7.1)	21 (5.1)
Petting and/or heavy petting	104 (10.1)	33 (6.3)	14 (3.4)
Intercourse et al.	108 ^a (10.4)	31 (5.9)	17 ^a (4.1)
Affair	70 (6.8)	23 (4.4)	13 (3.1)

Note.

$N_{t_1} = 1,034$, $N_{t_2} = 522$, $N_{t_3} = 414$.

^a In cases where people did not report infidelity in line with the hierarchical fashion (for example, they might have admitted french kisses and intercourse but not petting or heavy petting, they were assigned the higher-intensity Guttman-like scale point anyway, in this example the number 3).

approach of infidelity, manifest path modeling with composite measures was used to test the proposed (B)ODD-model of infidelity.

Composites. The multitude of measured constructs in each group of variables made it necessary to reduce the data in a way that would allow for testing the whole model at once. Another argument that justifies this somewhat uncommon approach is that the model is not framed to illustrate the predictive value of specific constructs, like sociosexuality or emotional relationship satisfaction for example. Rather it aims to quantify the predictive value of the overall categories, like individual personality or subjective relationship quality.

In order to reduce the data complexity in a first step, all independent variables were correlated with the infidelity-criterion – only when the associations were in the predicted direction (significance did not matter, see Tables C13–C16, pp. 197–200 in Appendix C) over all points of measurement, they were z-standardized and summed for a composite of that category. Thus, all composites represent fixed weights (a priori specified with every weight = 1) manifest composites, that will be subsequently be printed in hexagon shape, like Grace and Bollen (2007) proposed. Accordingly, they can be seen as formative-type constructs, although not explicitly modeled.

The subjective opportunity-composite is built from the sum of the z-scores of perceived number of opportunities for infidelity, extradyadic opportunity scale and ability to attract a romantic partner as all associations were in the predicted direction (+). The objective opportunity-composite consists of the summed z-scores of personal income, time spent together on a regular week- and weekend-day (reverse coded), frequency of going out without partner, shared network (reverse coded), weekly workload in hours, time spent with clients on an average workday, number of opposite-sex team-members, number of business trips in the past six months, and number of business lunches in the past six months. As only descriptive norms correlated consistently and in the predicted direction with infidelity, there was no need for a norm-composite. The personality-composite is the sum of z-scores from narcissism, need for stimulation (sensation seeking), all attachment-subcales: willingness to open, feeling not accepted by partner, and need for affiliation, and sociosexuality without the behavior-facet (because the behavior-facet can be confounded with sexual infidelity). And finally, the composite of relationship quality was built from emotional and sexual relationship satisfaction (reverse coded).

Path Analysis and Test of Indirect Effects. Path analyses, more specifically cross-lagged panel mediation analyses (as suggested by Selig & Preacher, 2009; CLPM) were conducted in order to test the whole model and the model-related hypotheses. None of the endogenous variables are even univariately normally-distributed – thus, the assumption of multivariate normality is violated. Alternative to the standard ML-estimator MLR- and Bayes-estimators both are robust to those violations (Muthén & Muthén, 1998–2012). I compared all three estimators in terms of effect estimates, standard errors and significance levels because bootstrapping is only available with the ML-estimation, which is recommended for testing indirect effects especially. ML and MLR only differ in significance levels (there are negligible differences in the standard errors, though; Bayes parameter estimates are slightly different from the ML- and MLR-estimates): In sum, ML-estimation tested slightly more conservative than the other two approaches. Accordingly, the most conservative ML-results are reported.

Several statisticians recommend to use bias-corrected bootstrap intervals for testing indirect effects when the goal is to detect an effect rather than interval estimation for significance, because the performance and power

is superior to other possibilities like the Sobel test (Geiser, 2011; Hayes & Scharkow, 2013). The postulated moderated mediation (norms as a moderator of the subjective opportunity-infidelity association) was tested in accordance with the framework suggested by Edwards and Lambert (2007), namely testing direct, indirect, and total effects at selected levels of the moderator.

Exogeneous variables were all variables measured at t_1 : personality, relationship quality, and the control variables (sex, relationship duration, and lifetime infidelity) plus the personality*objective opportunity interaction, the relationship quality* objective opportunity interaction, and descriptive norms. Personality, subjective opportunity, objective opportunity, relationship quality, and infidelity measured on t_2 and t_3 served as endogenous variables.

3 Results

Because of the high panel mortality, I tested for differences between survivors and dropouts first, a tactic recommended by Ployhart and Vandenberg (2010). For the specific statistical details and effect sizes, consult Table 5 below:

Table 5: *Comparison between survivors and drop outs on key variables measured on t_1*

Variable	$M_{survivors}$	$M_{dropouts}$	test statistic ^a	p	effect size ^b
Sex	86% [♀]	80% [♀]	9.839 χ^2	.002	.09 ^φ
Age	34.50	32.49	-3.422	.001	.10 ^c
Highest school degree	4.76	4.75	-.557	.896	.02
Highest work degree	3.45	3.20	-2.427	.015	.07
Income	3.26	3.31	-.593	.553	.02
Religiosity	2.83	2.70	-.718	.473	.02
Subjective opportunity composite	-.03	.02	-.256	.852	.01
Objective opportunity composite	-.06	.04	-.441 ^t	.659	.01
Personality composite	-.21	.13	-1.793 ^t	.073	.05
Relationship quality composite	-.01	.01	-.134	.893	.00
Infidelity	.35	.51	-2.611	.009	.08

Note.

Tests were chosen depending on scaling and/or distribution: χ^2 -test for sex; Mann-Whitney-U test for age, school degree, work degree, income, religiosity, subjective opportunity, and relationship quality; t-test for objective opportunity and personality.

Conventions for effect sizes (Cohen, 1988): small effect = r & $\varphi > .10$; medium effect = r & $\varphi > .30$; large effect = r & $\varphi > .50$.

^a If not stated otherwise, test statistic is U .

^b If not stated otherwise, effect size is r .

^c Gray font color indicates a non-significant difference.

Both groups did not differ significantly in their highest school degree, income, religiosity, and their composite scores of subjective and objective opportunity, personality, and relationship quality. However, the survivors were on average slightly older and had a slightly higher work degree. In addition, relatively more men than women dropped out and the drop outs reported slightly higher rates of infidelity. The effect sizes are very small, though – only age reached a small effect size. Therefore, with regard to the key constructs of the study, except infidelity, the data seem to be missing at random and should not introduce any bias in parameter estimates (Little & Rubin, 2002).

Tables 6 and 7 (p. 179) report descriptive statistics as well as intercorrelations of the variables that were hypothesized to predict sexual infidelity as well as infidelity itself and that were used for inferential statistics. As can be seen, apart from the control variables sex and relationship duration, the t_3 -composite of objective opportunity and the t_3 -descriptive norms score, all focal variables exhibit consistent and significant correlations in the expected direction with infidelity over all points of measurement. The magnitude of effects ranges from small to medium, with the lowest significant correlation being $r = .12$ and the highest $r = .32$. The majority of correlation lies between .20 and .30. Descriptives and intercorrelations of all study variables can be found in Appendix C, Tables C13–C16 (pp. 197–200).

Table 6: *Part 1 Descriptives and Intercorrelations of the Variables Used for Inferential Statistics*

Variable	M	SD	01	02	03	04	05	06	07	08	09	10	11	12	13
01 Infidelity t_1	.45	1.15	—												
02 Infidelity t_2	.25	.91	.56***	—											
03 Infidelity t_3	.15	.73	.56***	.52***	—										
04 Subjective opportunity composite t_1	-.07	1.64	.32***	.27***	.17**	—									
05 Subjective opportunity composite t_2	-.07	1.62	.31***	.32***	.23***	.70***	—								
06 Subjective opportunity composite t_3	-.07	1.64	.24***	.26***	.29***	.66***	.75***	—							
07 Objective opportunity composite t_1	-.11	3.98	.16***	.16***	.15**	.21***	.20***	.22***	—						
08 Objective opportunity composite t_2	-.21	4.09	.15***	.17***	.15**	.15***	.18***	.18***	.74***	—					
09 Objective opportunity composite t_3	-.24	4.05	.15***	.09	.17**	.14**	.13*	.21***	.69***	.75***	—				
10 Descriptive Norms t_3	-.07	.96	.12*	.08	.13*	.31***	.22***	.22***	.19***	.11*	.13*	—			
11 Personality composite t_1	-.30	2.94	.25***	.19***	.17**	.38***	.33***	.31***	.26***	.26***	.30***	.30***	—		
12 Personality composite t_2	-.26	2.92	.26***	.27***	.19***	.33***	.33***	.20***	.27***	.27***	.27***	.27***	.82***	—	
13 Personality composite t_3	-.23	2.93	.21***	.16**	.23***	.28***	.28***	.31***	.25***	.22***	.32***	.27***	.79***	.79***	—
14 Relationship quality composite t_1	-.05	1.74	.22***	.16**	.21***	.13***	.12**	.04***	.19***	.18***	.20***	.16**	.45***	.38***	.41***
15 Relationship quality composite t_2	-.06	1.76	.24***	.26***	.25***	.15***	.16***	.03	.16***	.24***	.18**	.15**	.43***	.48***	.41***
16 Relationship quality composite t_3	-.05	1.77	.17***	.14*	.26***	.06	.08	.09	.11*	.18**	.16**	.09	.31***	.36***	.44***
17 Sex ^a t_1	1.84	.369	-.03	-.05	-.08	.06	.03	.03	-.10**	-.13**	-.14**	-.13*	-.22***	-.18***	-.18***
18 Relationship duration t_1	94.64	93.79	.01	.02	.11*	-.19***	-.22***	-.19***	-.15**	-.09**	-.10	-.04	-.13***	-.16***	-.13*
19 Lifetime infidelity t_3	4.64	13.80	.13**	.04	.10*	.21***	.15**	.20***	.04	.05	.10	.24***	.25***	.23***	.20***

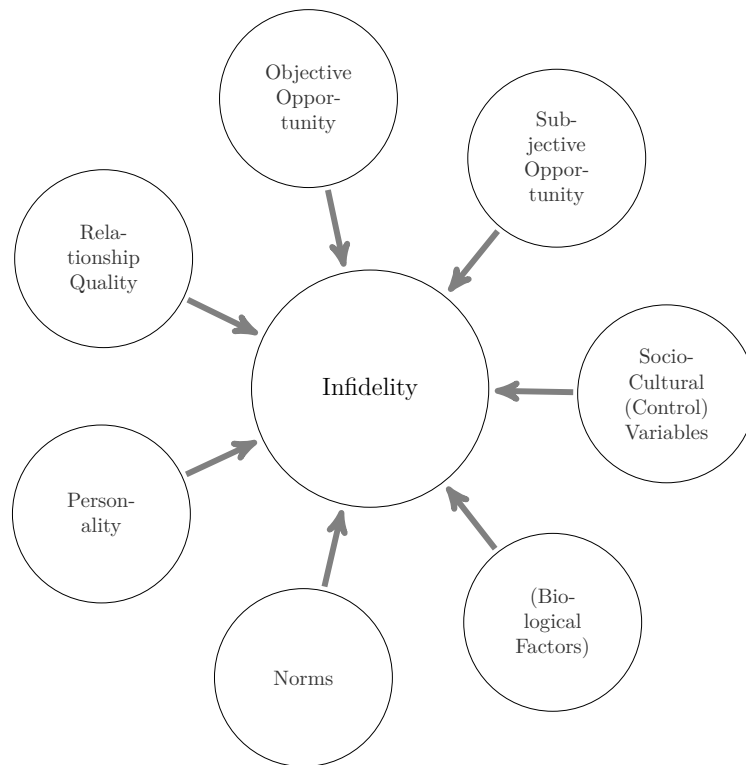
Note. Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 328 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$. ^a Item was categorical. 1 *male* and 2 *female*.

Table 7: *Part 2 Descriptives and Intercorrelations of the Variables Used for Inferential Statistics*

Variable	14	15	16	17	18	19
01 Infidelity t_1						
02 Infidelity t_2						
03 Infidelity t_3						
04 Subjective opportunity composite t_1						
05 Subjective opportunity composite t_2						
06 Subjective opportunity composite t_3						
07 Objective opportunity composite t_1						
08 Objective opportunity composite t_2						
09 Objective opportunity composite t_3						
10 Descriptive Norms t_3						
11 Personality composite t_1						
12 Personality composite t_2						
13 Personality composite t_3						
14 Relationship quality composite t_1	—					
15 Relationship quality composite t_2	.78***	—				
16 Relationship quality composite t_3	.74***	.78***	—			
17 Sex ^a t_1	-.01	-.04	.06	—		
18 Relationship duration t_1	.15***	.08	.07	-.00	—	
19 Lifetime infidelity t_3	.05	.12*	.11*	.06	-.08	—

Note. Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 328 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$. ^a Item was categorical. 1 *male* and 2 *female*.

To test the proposed model (see Figure 1, p. 170) I computed a cross-lagged mediation model (Selig & Preacher, 2009). Through the inclusion of autoregressive effects, the model controls for past behavior in each wave which in turn leads to an increase in validity of the effect of a certain construct at timepoint t_X on the criterion at point in time t_{X+1} , given that (a) significant effect/s emerge/s. Error terms of the same indicators over time and disturbances within time were correlated. In addition, I computed a cross-lagged panel model with direct effects of the focal variables only; without any of the hypothesized mediational and moderational associations. This model, rudimentarily depicted in Figure 2, represents the common view that proposes and tests for direct effects only. To control for potentially confounding variables three control variables, namely sex, relationship duration and infidelity in past relationships, were included in both models.



Note.

For reasons of clarity and readability only predictors at t_2 and the criterion at t_3 are included in this Figure. The model however, was computed with the full number of autoregressive paths from t_1 to t_3 .

Figure 2: Competing Model: Direct Effects Only

Apart from the significant χ^2 -test, that is almost always significant in samples with sizes larger than 200 (Kenny, 2015), both models exhibited good to acceptable fit (see Table 8). The χ^2 -test of model comparison was significant with $\chi^2(5, 341) = 35.67, p < .001$ indicating a better fit of the less parsimonious model that represents the (B)ODD-model of infidelity as shown in Figure 1 (p. 170).

Table 8: Comparison of the Direct Effects Only-Model (1) with the (B)ODD-Model of Infidelity (2)

Models	χ^2	df	p	RMSEA [90%-CI] ^a	CFI ^b	SRMR ^c
Model 1	340.597	125	.000	.071 [.062;.080]	.936	.051
Model 2	304.932	119	.000	.068 [.058;.077]	.945	.045

Note.

^a RMSEA = Root Mean Square Error of Approximation. Interpretation: RMSEA < .01 vs. .05 vs. .08 indicate excellent, good and mediocre fit, respectively; RMSEA < .10 as a cut-off for poor fitting models (MacCallum, Browne, & Sugawara, 1996); CI = Confidence Interval.

^b CFI = Comparative Fit Index. Interpretation: CFI < .90 indicates acceptable fit (Hu & Bentler, 1999)

^c SRMR = Standardized Root Mean Square Residual. Interpretation: SRMR < .08 indicates good fit (Hu & Bentler, 1999)

Table 9 (p. 181) summarizes the effects obtained. A graphical representation of all effects in the full model can be found in Appendix D (p. 201). According to the results, H_1 must be rejected – personality traits do not

uniquely predict sexual infidelity ($B = -.00$, $SE = .01$, $p = .741$, 95% CI $[-.03, .02]$). The same holds for the mediation-hypothesis pair 3. The data and analyses suggest no mediational role of subjective opportunity for sexual infidelity for personality traits and relationship quality: The direct paths from t_1 -personality traits ($B = .04$, $SE = .03$, $p = .188$, 95% CI $[-.03, .08]$) and t_1 -relationship quality ($B = -.03$, $SE = .05$, $p = .582$, 95% CI $[-.01, .06]$), respectively, to t_2 -subjective opportunity failed to reach statistical significance. However, t_2 -subjective opportunity uniquely predicted t_3 -sexual infidelity ($B = .08$, $SE = .04$, $p = .026$, 95% CI $[.02, .17]$). The standardized indirect effect for the personality-subjective opportunity-infidelity-link was $(.062) * (.189) = .012$ ($p = .314$) with a 95% bias-corrected bootstrap interval of 1000 bootstrapped samples of $[-.01, .04]$. The standardized indirect effect for the relationship quality-subjective opportunity-infidelity-link was $(-.025) * (.189) = -.005$ ($p = .622$.) with a 95% bias-corrected bootstrap interval of $[-.02, .01]$. Post-hoc analyses revealed a marginally significant full mediation of t_2 -objective opportunity through t_2 -subjective opportunity on sexual infidelity $((.134) * (.189) = .025$, $p = .067$, 95% CI $[-.00, .05]$).

In addition, I was not able to detect interaction effects between objective opportunity for sexual infidelity and personality traits (H_4 , $B = .01$, $SE = .00$, $p = .142$, 95% CI $[-.00, .01]$), relationship quality (H_4 , $B = .00$, $SE = .01$, $p = .946$, 95% CI $[-.01, .02]$), respectively and between subjective opportunity and descriptive norms (H_6 , $B = .07$, $SE = .06$, $p = .214$, 95% CI $[-.04, .18]$). No direct effect of objective opportunities ($B = .01$, $SE = .01$, $p = .240$, 95% CI $[-.01, .04]$) and descriptive norms ($B = .05$, $SE = .06$, $p = .362$, 95% CI $[-.05, .17]$) emerged, either. However, as hypothesized, higher levels of t_2 -objective opportunity predicted higher levels of t_2 -subjective opportunity for sexual infidelity (H_5 , $B = .05$, $SE = .022$, $p = .022$, 95% CI $[.01, .10]$) and t_1 -relationship quality uniquely predicted t_3 sexual infidelity with marginal significance (H_2 , $B = .06$, $SE = .03$, $p = .055$, 95% CI $[.01, .12]$). Finally, against the expectation, none of the control variables exhibited a significant association with t_3 -infidelity (H_7 , see Table 9).

Table 9: *Path Coefficients of the Full Model for Predicting Infidelity at t_3*

	B	SE	β	$\frac{B}{SE}$	p
Full Model [$R^2 = .378$]					
Subjective opportunity t_2	.079*	.036	.189	2.223	.026
Objective opportunity t_2	.014	.012	.088	1.176	.240
IA $P_{t1} * OO_{t2}$	.006	.004	.127	1.468	.142
Personality t_1	-.004	.013	-.018	-.330	.741
IA $RQ_{t1} * OO_{t2}$	.000	.007	.006	.067	.946
Relationship quality t_1	.055 [†]	.028	.127	1.916	.055
IA $N_{t3} * SO_{t2}$	.070	.056	.141	1.241	.214
Descriptive norms t_3	.051	.056	.067	.911	.362
Control: Sex t_1	-.011	.080	-.005	-.142	.887
Control: Relationship duration t_1	.000	.000	.066	1.572	.116
Control: Lifetime infidelity t_3	.005	.006	.106	.873	.383
Control: Infidelity t_2	.281	.173	.322	1.624	.104

Note.

Abbreviations. IA = Interaction term; P = Personality; RQ = Relationship quality; N = Descriptive norm; OO = Objective Opportunity; SO = Subjective opportunity.

*** $p < .001$; ** $p < .01$; * $p < .05$; [†] $p < .10$. All significance tests two-tailed.

4 Discussion

Studies with US-representative samples estimate the prevalence of extradyadic sexual contacts over the lifespan between 11 and 16% for women and 21 and 25% for men (Kröger, 2010). Numbers drop significantly when only the past year (1–5% ♀; 4–12% ♂) or the current relationship is of interest. The numbers for Europe are slightly higher: 10 to 24% of women and 16 to 38% of men report extradyadic sexual contacts within their current romantic relationship (past year: 4–13% ♀; 13–23% ♂). The question is, why do some people remain faithful throughout their relationships while others do not. This study aimed to confirm the (B)ODD-model of infidelity as derived in Hergert (2016) to explain these differences in behavior. This attempt was partially fruitful (see Figure 3 for a graphical overview of which effects were confirmed and which were not): Only relationship quality and subjective opportunity had detectable effects on later sexual infidelity. Neither personality traits, objective

opportunity nor descriptive and injunctive norms regarding sexual infidelity seem to play an important role in the prediction of sexual infidelity. Still, the magnitude of objective opportunity indicators seemed to influence subjective opportunity-perceptions which in turn had a positive effect on sexual infidelity – quite possibly the effect of objective opportunity is mediated by subjective opportunity as the post-hoc analyses suggested.

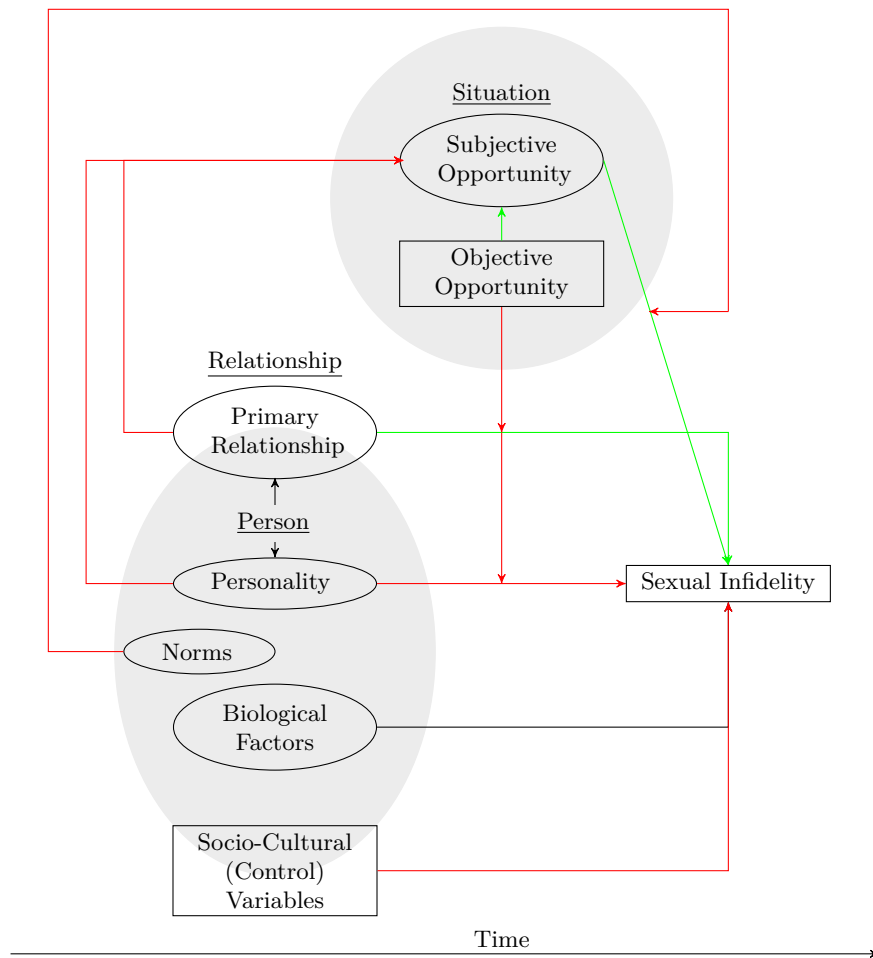


Figure 3: (B)ODD-Model of Sexual Infidelity

The missing link between personality traits and infidelity might seem especially odd at first glance because a multitude of other studies reported this link for a variety of traits. However, to my knowledge, the present research has the strongest study design as well as analytical design. Past studies that investigated this link were mostly cross-sectional, and if they were longitudinal, they did not have three points of measurement to even properly test for more complex associations. The three points of measurement allowed for testing the model with state-of-the-art CLPM, which tests for the exact complex associations while controlling for autoregressive effects. Unfortunately, none of the suggested mediational (and moderational for that matter) links became apparent. Ad hoc, I estimated the model without the autoregressive effects: And behold, most of the effects – apart from the interactions and norm-related ones – stated in the (B)ODD-model, emerged. Thus, when using the inferior analysis strategy that does not consider the powerful cross-lagged design, the effects of both personality traits and relationship quality were fully mediated by the subjective opportunity perceptions⁷.

All in all, the CLPM-results provide strong evidence that opportunity for infidelity is a necessary but not sufficient precondition for sexual infidelity to occur. Only when a person is capable of perceiving that an opportunity for extradyadic sex just presented itself, this person can actually become unfaithful. The idea that personality traits might be responsible for inducing and construing those opportunities is not supported by the data. This conclusion applies to the idea that a deficient primary relationship might cause people to perceive those opportunities rather than people with a perfectly healthy and happy primary relationship, too. Still,

⁷For the statistical details, please contact the author.

deficiencies in the primary relationship alone accounted for variance in sexual infidelity.

The (B)ODD-model was developed from an interactionist theoretical perspective. And although the results point more towards the importance of the situation rather than the person – while subjective opportunity proved important, personality traits did not – I feel, it would be shortsighted to abandon the (B)ODD-model altogether. First, indicators of relationship quality proved to be important in the prediction of sexual infidelity. Those are at least partially belonging to the person-category as constructs like emotional and sexual relationship satisfaction are influenced by certain personality traits (e.g., Schaffhuser, Wagner, Lüdtke, & Allemand, 2014). Second, at least univariately the associations were visible and in the predicted direction. Third, the following section will explore other possible reasons why the model as stated could not be confirmed.

4.1 Limitations

Self-Selection and Representativeness Issues. Admittedly, the sample consists of self-selected participants and is certainly not representative for the German population. However, this limitation does not pose a major problem as the (B)ODD-model is an effects model rather than a mean model. A potential problem could be range restriction due to the fact that the sample is mostly composed of students, though. But again, this should be less severe than in other classic student samples because the students from the University of Hagen vary much more substantially on the major sociodemographic variables (see section 2.2, p. 171 and Appendix A, pp. 194–195 for the specific descriptives) than participants in classic student samples. Still, range restriction might have lead to an underestimation of effects which can explain insignificant results.

Panel Mortality. As pointed out in section 2.2 already, 54.7% of participants dropped out of the study between t_1 and t_3 . Several points – rooted in the structure of the BSc Psychology at the University of Hagen – can explain the magnitude of this attrition rate, though: First, the study started at the same time as the summer semester started in Hagen and with them the 2,994 newly enrolled freshman, as the intention was to acquire as many participants as possible with the least possible psychological background knowledge. This seemed like a good match because undergraduates need to accumulate 30 hours of participation in scientific studies, too. However, to increase their chances of being allowed to enroll in a certain module with a restricted number of spots, which is unusual for this specific University, they were supposed to finish these 30 hours. Unfortunately, this requirement conflicted with the last point of measurement of the study in the way that they needed to complete the 30 hours before the last time of measurement took place. It is therefore possible that students dropped out because they were not in need of the participation certificates for course credit anymore. Second, and even more likely is that a large portion of my sample left the university altogether before they could get the chance to finish the questionnaire/s for t_2 and/ or t_3 , respectively. Again, the exmatriculated participants would not need any more participation certificates. This notion corresponds with official numbers from the university stating that 68.9% of the 2,944 freshman from summer semester 2012 have left the degree program by June 2015. We also know that the first two modules of the program are popular basins for students that may have started with the intention of achieving the degree (and starting the necessary 30 hours of participation in scientific research studies to obtain the required participation certificates) but quickly come to realize that they either do not have the time or it is too hard or too boring. Some of them remain in the program but without actively pursuing their studies. A reason for the high drop-out may have also been the quite long and exhausting questionnaire itself. However, most of the arguments point in the direction that the missingness in the data is missing at random due to no need of participation certificates for course credit either because it was accumulated through participation in other studies already or exiting the degree program altogether.

Choice of Data Collection Methodology. Recent findings of T. D. Fisher and Brunell (2014) indicate that the bias of over- (men) vs. underreporting (women) of sexual experiences (Brown & Sinclair, 1999; Jonason, Li, Webster, & Schmitt, 2009) that includes experiences with sexual infidelity might actually affect anonymously collected data as well. The authors assessed extradyadic sexual behavior under three conditions: anonymously, exposure threat (with a research assistant sitting close by) and a bogus pipeline approach. Manipulation checks revealed that in fact the participants believed in the manipulation as they reported a higher pressure of answering

honestly and answers low in social desirability on a respective scale. Interestingly, sex differences in occurrence rates of sexual infidelity were only apparent in the anonymous condition. This bias could have affected the prevalence rates of infidelity reported here. The focus of this research is on effects rather than prevalence rates, though.

Role of Time in this Study. Researchers concerned with the design of longitudinal studies (e.g., Ployhart & Vandenberg, 2010; Ployhart & Ward, 2011; Selig & Preacher, 2009) repeatedly emphasized, a good amount of thinking should be dedicated to the interval length between points of measurement. Thus, a valid question is whether the intervals in this study were chosen appropriately to allow the expected mediation to unfold. In addition, were duration and points of measurement sufficient? The three points of measurement were necessary in order to appropriately be able to test for mediation effects. Of course, four or even six points of measurement would have been better – but after a thorough cost (considerable elongation of data collection; possible increase in drop-outs)-benefit (possible cross-validation of effects) analysis I decided against adding more points of measurement. The measurement intervals were each six months long. This equals the study spanning a period of one year in total which seems necessary to capture the somewhat punctiform or selective character of unfaithful behavior apart from ongoing affairs. The timespan of the study is no coincidence: Yearly incidence of infidelity is a common marker reported by studies with representative samples. 13.2% of this sample have been unfaithful within (12% female; 20% male) that year which is in accordance with the numbers for Europe reported in the overview-article of Kröger (2010, see above).

Choice of Data Analysis Strategy. Some might argue that an analysis strategy like latent growth models (LGM) would have been better suited. However, as LGM are focused on inter- and intraindividual change in the level of a variable over time (Selig & Preacher, 2009) and the model does not predict anything like that, I believe the CLPM-approach has been the right choice. According to Selig and Preacher (2009), cross-lagged panel models capture interindividual change best and they recommend it for models where the variables do not exhibit that much intraindividual change over time which should be the case here. The obtained stability coefficients (see Figure D in Appendix D, (p. 201) concur with that. Agreed, estimating the models with latent variables would have been preferable – unfortunately the complexity of the model as well as sample size did not allow for that.

Composites. The reduction of data complexity via building composites of constructs that belonged to the same underlying causal category make it impossible to distinguish effects of single constructs on infidelity from one another. However, univariate associations indicated small to moderate associations between the focal variables and sexual infidelity which is in line with what the literature review brought to light. Future research could aim at analyzing data on a less global level (e.g., personality) and strive to uncover the stated moderational and mediational effects on a more dimensional (e.g., Big Five) or even faceted level (e.g. excitement seeking as a facet of sensation seeking). This strategy would shed a more differential light on the associations between the groups of focal variables and sexual infidelity than the findings reported here.

Sex Differences in Opportunity Perceptions. Although not that relevant here because of the small male subsample, a legitimate objection to the study results might be that there are – similar to the sex differences in reporting sexual experiences – sex differences in opportunity perceptions. Maybe men perceive more situations as sexually loaded than women. In fact, there is an area of research that specifically deals with those kinds of questions: Error Management Theory (Haselton & Buss, 2000) predicts on the basis of evolutionary psychological argumentation that heterosexual men should overpercept or -infer the sexual intent of women. However, results of a recent study suggest this is only true for situations of low and medium strength (Hergert & Meiritz, 2016): Men tended to overestimate the sexual intent of women in vignettes where the described situations were sexually ambiguous with none to medium sexual connotations, like a random eye contact in a bar. One important construct that made up the subjective opportunity composite was the number of unambiguous situations the participants encountered within the past six months. Situations where it only depended on them whether they lead to a sexual encounter or not. Therefore, subjective opportunities for sexual infidelity are by definition

strong situations.

Future Directions. In light of the replication crisis in psychology (e.g., Asendorpf et al., 2013; Open Science Collaboration, 2015; Pashler & Harris, 2012; Yong, 2012) a systematic replication of these results is clearly needed. Existing panel data, like the pairfam panel (Brüderl et al., 2015; Huinink et al., 2015), can be used to back up parts of the model, too. Interesting new insights should emerge when future research projects on infidelity analyze the dyadic data of anchor person and primary partner this panel provides. Empirical results that analyzed dyadic data with the Actor-Partner-Interdependence Model suggest that not only individual characteristics [actor effects] but also characteristics of the romantic partner [partner effects] can affect individual outcomes. For example, several authors have shown actor and partner effects of personality traits, especially the Big Five, on relationship satisfaction (Barelds, 2005; Dyrenforth, Kashy, Donnellan, & Lucas, 2010; Orth, 2013). In addition, it is known that if interpersonal relationships or dependencies [partner effects] exist but are not incorporated in the data-analytical strategy, intrapersonal effects [actor effects] are overestimated and vice versa (Cook & Kenny, 2005; Kenny & Cook, 1999). In infidelity-research to my knowledge only six studies worked with dyadic data (Allen et al., 2008; Atkins et al., 2005; McNulty & Widman, 2014; Russell et al., 2013; Shackelford, 2001; Træen & Martinussen, 2008) so far.

Conclusion. Although the present research did not tackle every issue raised in section 1.3 (p. 169), it does have several strengths: First of all, it used a three-wave longitudinal design. Another major strength of the present research is its detailed measurement and consideration of dyadic infidelity norms as well as actual infidelity which stands in stark contrast to most of the previous research on the topic, where infidelity was mostly measured with one single item. Finally, the present research employed an integrative strategy by incorporating various strains of theoretical and empirical work into one single explanatory model and testing it with state-of-the-art statistical methodology.

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Appendix A Descriptives

Table A10: *Sociodemographics of the Sample. Nominal Variables.*

Variable	value	n_{t_1} (%)	n_{t_2} (%)	n_{t_3} (%)	
sex	($N = 1,318 / 735 / 568$)				
	male	235 (17.8)	108 (14.7)	94 (16.5)	
	female	1,083 (82.2)	627 (85.3)	474 (83.5)	
marital status	($N = 1,288 / 664 / 534$)				
	dating	641 (49.8)	278 (41.9)	208 (39.0)	
	engaged	81 (6.3)	38 (5.7)	30 (5.6)	
	married	479 (37.2)	301 (45.3)	259 (48.5)	
	civil union (homosexuals)	11 (.9)	10 (1.5)	9 (1.7)	
	widowed	2 (.2)	1 (.2)	0 (0)	
	separated	8 (.6)	6 (.9)	2 (.4)	
	divorced	61 (4.7)	29 (4.4)	23 (4.3)	
	other	5 (.4)	1 (.2)	3 (.6)	
	living situation	($N = 1,296 / 722 / 568$)			
cohabiting w/ partner		943 (72.8)	534 (74.0)	455 (80.1)	
living w/o partner		244 (18.8)	88 (12.2)	58 (10.2)	
long distance relationship		103 (7.9)	42 (5.8)	21 (3.7)	
currently w/o partner different partner than half a year ago		6(.5) ^a	44(6.1)	27 (4.8)	
type of relationship agreement	($N = 1,296 / 722 / 568$)				
	monogamous	1,233 (95.1)	47(89.6)	522 (91.9)	
	open ^a	47 (3.6)	25(3.5)	13 (2.3)	
	polyamorous ^a	16 (1.2)	7 (1.0)	7 (1.2)	
sexual orientation	($N = 1,288 / 657 / 524$)				
	heterosexual	968 (75.2)	512 (77.9)	407 (77.7)	
	rather heterosexual	240 (18.6)	100 (15.2)	79 (15.1)	
	bisexual ^a	29 (2.3)	12 (1.8)	14 (2.7)	
	rather homosexual ^a	20 (1.6)	8 (1.2)	7 (1.3)	
	homosexual ^a	30 (2.3)	21 (3.2)	17 (3.2)	
	asexual ^a	1 (.1)	4 (.6)	0 (0)	
highest educational degree	($N = 1,312$)				
	none	0 (0)			
	grade school / primary school (8th grade)	9 (.7)			
	junior high / secondary school	67 (5.1)			
	specialized secondary school	166 (12.7)			
	high school / grammar school (gymnasium)	1070 (81.6)			
	highest training qualification	($N = 1,301 / 727 / 493$)			
none		339 (26.1)	165 (22.7)	95 (19.3)	
completed apprenticeship		393 (30.2)	203 (27.9)	144 (29.3)	
foreman		25(1.9)	17 (2.3)	17 (3.4)	
diploma from an university of cooperative education		52(4.0)	34 (4.7)	26 (5.3)	
degree from a university of applied sciences		107(8.2)	53 (7.3)	39 (7.9)	
university degree		354(27.2)	235 (32.3)	155 (31.4)	
PhD		28(2.2)	20 (2.8)	17 (3.4)	
Other		3(.2)	0 (0)	0 (0)	
current employment		($N = 1,301 / 727 / 493$)			
		employed	780 (60.0)	433 (59.6)	279 (56.6)
	self-employed/ freelancing	214 (16.4)	117 (16.1)	72 (14.6)	
	retired	12 (.9)	4 (.6)	5 (1.0)	
	occupational disability	13 (1.0)	9 (1.2)	5 (1.0)	
	unemployed	185 (14.2)	115 (15.8)	81 (16.4)	
	never worked for 6 months or longer	97 (7.5)	49 (6.7)	24 (4.9)	
type of employment	($N = 995 / 550 / 351$)				
	blue-collar worker	45 (4.5)	19 (3.5)	9 (2.6)	
	white-collar worker	677 (68.0)	385 (70.0)	256 (72.9)	
	public servant	55 (5.5)	25 (4.5)	13 (3.7)	
	temporary worker	10 (1.0)	4 (.7)	1 (.3)	
	self-employed/ freelancing	208 (20.9)	117 (21.3)	72 (20.5)	
	personal monthly net-income	($N = 1,298 / 727 / 490$)			
no income		177 (13.6)	107 (14.7)	73 (14.9)	
<400€		172 (13.3)	92 (12.7)	54 (11.0)	
401-1,200€		393 (30.3)	221 (30.4)	155 (31.6)	
1,201-2,000€		309 (23.8)	168 (23.1)	109 (22.2)	
2,001-3,000€		157 (12.1)	92 (12.7)	58 (11.8)	
3,001-6,000€		80 (6.2)	39 (5.4)	36 (7.3)	
>6,000€		10 (.8)	8 (1.1)	5 (1.0)	
monthly household-net income	($N = 1,298 / 726 / 490$)				
	no income	105 (8.1)	31 (4.3)	13 (2.7)	
	<400€	54 (4.2)	25 (3.4)	7 (1.4)	
	401-1,200€	173 (13.3)	104 (14.3)	41 (8.4)	
	1,201-2,000€	214 (16.5)	117 (16.1)	66 (13.5)	
	2,001-3,000€	263 (20.3)	142 (19.6)	115 (23.5)	
	3,001-6,000€	408 (31.5)	254 (35.0)	205 (41.8)	
	>6,000€	80 (6.2)	53 (7.3)	43 (8.8)	
religious group	($N = 1,318 / / 568$)				
	none, without confession	530 (40.2)		249 (43.8)	
	Roman Catholic Church	335 (25.4)		122 (21.5)	
	Protestant Church	383 (29.1)		162 (28.5)	
	other Christian religious group	36 (2.7)		19 (3.3)	
	Islam	18 (1.4)		7 (1.2)	
	Judaism	b		1 (.2)	
	other religious group	16 (1.2)		8 (1.4)	
	opinion poll ("Sonntagsfrage")	($N = 1,317 / / 568$)			
		CDU/CSU	213 (16.2)		121 (21.3)
SPD		224 (17.0)		79 (13.9)	
FDP		33 (2.5)		13 (2.3)	
B90/ Die Grünen		413 (31.4)		202 (35.6)	
Die Linke		80 (6.1)		35 (6.2)	
Piratenpartei		178 (13.5)		38 (6.7)	
DVU/NPD/ Die Republikaner		2 (.2)		1 (.2)	
Other		49 (3.7)		33 (5.8)	
Would not vote.		125 (9.5)		46 (8.1)	
number of inhabitants of place of residence		($N = 1,318 / / 568$)			
	<2,000	109 (8.3)		49 (8.6)	
	2,001-5,000	107 (8.1)		38 (6.7)	
	5,001-20,000	187 (14.2)		87 (15.3)	
	20,001-100,000	285 (21.6)		123 (21.7)	
	100,001-1,000,000	392 (29.7)		169 (29.8)	
>1,000,001	238 (18.1)		102 (18.0)		

Note.

Empty cells mean, the variable has not been measured on that time of measurement.

^a Screened out prior to data analysis.

^b Not measured. Therefore, the category "other religious group" in t_1 might include some participants of Jewish belief.

Table A11: *Sociodemographics of the Sample. Ordinal-/ Interval-scaled variables.*

Variable	t_1				t_2				t_3			
	N	M	SD	α	N	M	SD	α	N	M	SD	α
Age	1,296	32.56	9.34		731	34.17	9.65		568	35.55	9.69	
Schoolgrade	1,309	2.39	.63									
Children	1,296	.79	1.18		722	.89	1.25		568	.96	1.27	
Relationship duration ^a	1,252	94.80	92.83		644	116.91	100.41		516	125.15	99.96	
Religiosity ^b	1,318	2.41	1.23	0.71					568	2.45	1.25	.74
Political attitude ^c	1,318	3.25	.96						568	3.30	.96	

Note.

Empty cells mean, either the variable has not been measured on that time of measurement or Cronbach's α was not computable because the variable of interest was measured with one item only.

^a in months.

^b 2 items: (1) Are you a religious person? 1 = *not at all* to 7 = *very*; (2) How often do you go to church? 1 = *never* to 7 *daily*.

^c 1 left wing to 7 right wing.

Appendix B Reliabilities of Standardized Instruments

Table B12: Reliabilities of Standardized Instruments

Variable	Originally reported			t_1				t_2				t_3						
	α^a (n) ^a	M^a (n) ^a	SD^a	α^b	n_{items}	n	M	SD	α^b	n_{items}	n	M	SD	α^b	n_{items}	n	M	SD
Situational constructs																		
Extradyadic opportunities ^c	.80 (302)	3.25	–	.85	5	1286	2.68	1.07	.86	5	657	2.27	1.11	.88	5	511	2.26	1.15
Ability to attract a romantic partner ^d	.91 (1275)	3.30	1.44						.94	4	657	4.48	1.64	.95	4	512	4.38	1.65
Norms																		
Injunctive norms ^e	–	–	–											.74	2	524	2.52	1.31
Descriptive norms ^e	–	–	–											.73	2	520	2.78	1.08
Personality-constructs																		
<i>Big Five</i> ^f																		
Neuroticism	.87 (388-393)	-8.07 (216, German sample)	11.13 (216)	.87	12	1318	-10.39	14.46						.88	12	495	-.875	12.26
Extraversion	.89	8.19	11.06	.81	12	1317	7.95	10.23						.81	12	494	7.31	10.17
Openness	.76	13.37	10.32	.75	12	1318	17.00	8.73						.73	12	494	16.52	8.44
Agreeableness	.74	11.15	8.82	.69	12	1318	13.90	7.84						.72	12	495	14.38	8.00
Conscientiousness	.85	12.29	10.31	.83	12	1315	15.32	10.00						.84	12	494	15.41	9.87
Honesty/Humility ^g	.79 (928)	3.30 (645 φ)	0.66 (φ)						.74	10	727	3.57	.61	.74	10	493	3.53	.61
Self-control ^h	.79 (267-300)	2.93	0.58	.86	13	1317	3.27	.67	.85	13	733	3.27	.61	.87	13	493	4.94	3.38
Narcissism ⁱ	.77 (627)	4.44 (627)	3.17	.77	15	1317	5.21	3.21	.78	15	730	4.92	3.26	.80	15	494	3.27	.67
Sensation Seeking ^j	.86 (555)	41.17-47.01 (105)	6.61-8.41 (105)	.88	17	1317	48.01	10.38	.90	17	730	46.93	10.47	.90	17	494	47.06	10.56
Need for stimulation	.88	23.20-28.80	5.57-7.41	.90	11	1317	32.96	8.31	.91	11	730	31.59	8.05	.93	11	494	32.03	8.70
Avoidance of rest	.82	15.92-16.05	3.19-3.78	.84	6	1318	15.05	4.56	.86	6	730	15.34	4.57	.88	6	494	15.03	4.54
Attachment ^l																		
Willingness to open	.89 (402)	2.80	-.72	.90	11	1289	3.01	.68	.91	11	659	2.98	.69	.91	11	529	3.01	.68
Feeling not accepted by partner	.88	1.21	.76	.89	11	1289	.99	.70	.88	11	660	.93	.68	.89	11	529	.86	.66
Need for affiliation	.77	1.93	.67	.82	8	1287	1.89	.75	.83	8	660	1.83	.73	.83	8	529	1.72	.71
Sociosexuality ^m																		
	.75-.76	4.01 (φ) / 4.93 (σ)	1.52 (φ) / 1.50 (σ)	.86	9	1287	3.71	1.59	.86	9	657	3.64	1.57	.85	9	524	3.56	1.56
Behavior																		
	.79-.85	2.65 (φ) / 2.76 (σ)	1.73 (φ) / 1.83 (σ)	.76	3	1287	2.87	1.69	.74	3	657	2.77	1.64	.72	3	524	2.71	1.58
Attitude																		
	.76-.87	5.41 (φ) / 6.42 (σ)	2.37 (φ) / 2.33 (σ)	.86	3	1287	5.38	2.56	.86	3	657	5.35	2.54	.88	3	524	5.46	2.60
Desire																		
	.83-.86	3.96 (φ) / 5.62 (σ)	1.94 (φ) / 1.91 (σ)	.86	3	1287	2.86	1.70	.88	3	657	2.82	1.71	.86	3	524	2.86	1.69
Relationship-related constructs																		
Emotional relationship satisfaction ⁿ	.87 (140)	–	–	.92	7	1289	3.98	.81	.93	7	658	3.98	.82	.93	7	529	4.00	.81
Sexual relationship satisfaction ^o	.90-.96	–	–	.93	5	1287	5.40	1.35	.92	5	657	5.28	1.31	.93	5	524	5.22	1.39
Investment model ^p																		
Quality of alternatives	.82-.88 (186, 313, 415)	–	–						.79	5	657	2.52	.84	.81	5	526	2.57	.87
Investment	.82-.84	–	–						.78	5	657	3.24	.87	.78	5	525	3.26	.88
Commitment	.91-.95	–	–						.92	7	657	4.42	.79	.92	7	526	4.42	.79

^a Originally reported Cronbach's α / M / SD (based on n).

^b Observed Cronbach's α / M / SD (based on n).

^c *EOS-K* (Peterman, 2008); ^d *ATARP* (Lammers et al., 2011); ^e Buunk and Bakker (1995); Baumgartner et al. (2011); ^f *S5* (Konstabel et al., 2012); ^g *HEXACO 60* (Ashton & Lee, 2009); ^h *SCS-K-D* (Bertrams & Dickhäuser, 2009); ⁱ *NPI15* (Schütz et al., 2004); ^j *NISS* (Roth & Hammelstein, 2012); ^l *BFPE* (Höger & Buschkämper, 2002); ^m *SOI-R* (Penke & Asendorpf, 2008); ⁿ *ZIP* (Hassebrauck, 1991); ^o *GMSEX* (Lawrance et al., 2011); ^p *IMS* (Rusbult et al., 1998);

Appendix C Intercorrelations

See following pages.

Table C13: Part 1 Descriptives and Intercorrelations of All Study Variables

Variable	M	SD	01	02	03	04	05	06	07	08	09	10	11	12
01 Infidelity t_3	.15	.73	(-)											
<u>Subjective Opportunity</u>														
02 Sum subjective opportunities t_2	3.20	6.96	.14**	(-)										
03 EOS t_2	2.22	1.10	.22***	.52***	(.86)									
04 ATARP t_2	4.49	1.63	.13*	.39***	.54***	(.94)								
<u>Objective Opportunity</u>														
05 Personal income t_2	3.21	1.40	.08	.06	.06	-.05	(-)							
06 Weekly workload in hours t_2	21.05	17.05	.10	.09*	.02	-.05	.73***	(-)						
07 Time spent with boss on workday t_2	1.40	1.97	-.06	.13*	.12*	.09	-.05	-.00	(-)					
08 ... colleagues ... t_2	3.48	2.91	.03	.06	.07	.06	.07	.16**	.30***	(-)				
09 ... subordinates ... t_2	2.69	2.89	.16	.00	.11	.08	-.05	.06	.50***	.52***	(-)			
10 ... clients/ patients ... t_2	3.63	2.87	.11	.07	.10	.02	-.13*	-.02	.16**	.32***	.27***	(-)		
11 Number of opposite-sex team members t_2	1.46	4.16	.03	.09*	-.01	-.07	.41***	.45***	.07	.29***	.01	.04	(-)	
12 Number of business trips t_2	1.27	4.21	.18**	.11*	.11*	.03	.47***	.50***	.03	-.03	.03	-.14*	.27***	(-)
13 Number of business lunches t_2	.62	2.42	.08	.03	.05	-.03	.27***	.30***	.05	-.11*	-.02	-.07	.22***	.40***
14 Number of business parties t_2	.50	.97	.06	.04	.07	-.03	.34***	.41***	.04	-.07	.00	.00	.26***	.24***
15 Living situation ^a t_2	1.19	.39	.00	.11*	.14**	.09*	-.08	-.07	.10	.08	.11	.02	-.08	-.05
16 Time spent w/ partner on weekday t_2	3.89	2.80	-.08	-.03	-.06	.00	-.08	-.12**	.07	.05	-.01	-.05	.01	-.06
17 Time spent w/ partner on weekend-day t_2	10.27	4.58	-.10	-.03	.00	.08	.04	.03	-.03	.04	.00	-.03	-.01	.02
18 Nights w/ partner t_2	4.74	1.32	-.03	-.06	-.11*	.01	-.03	.01	-.01	-.06	.03	.01	.03	-.09*
19 Going out w/o partner t_2	3.62	1.64	.05	.20***	.22***	.09*	-.04	-.03	.07	.05	.03	.13*	.03	-.03
20 Shared network w/ partner ^b t_2	2.04	.75	-.06	-.05	-.11*	-.08	.05	.03	.07	.00	.20**	-.10	.03	.10*
21 Inhabitants place of residence ^b t_1	4.06	1.50	-.06	.01	.09	.11*	.06	.08*	-.01	.03	.01	-.02	.09*	.03
<u>Norms</u>														
22 Injunctive norm t_1	2.38	1.24	.10	.10*	.20***	.06	.07	.05	.06	-.06	.04	-.06	-.01	.06
23 Descriptive norm t_1	2.71	1.04	.13*	.28***	.20***	.13*	.13*	.09	.05	-.01	-.03	-.03	.07	.09
<u>Personality</u>														
24 Neuroticism t_1	-7.52	11.80	-.07	-.00	-.00	-.09	-.18***	-.11*	-.03	.05	-.12	-.07	-.07	-.14**
25 Extraversion t_1	7.86	9.99	.11*	.24***	.23***	.26***	.07	.05	.09	.07	.08	.08	.06	.15**
26 Openness to Experience t_1	16.60	8.55	.05	.14***	.19***	.17***	-.06	-.04	.04	-.02	-.01	.07	-.05	.04
27 Agreeableness t_1	14.10	7.48	.01	-.07*	-.10*	-.16***	-.04	-.03	.01	-.00	.01	.01	.00	-.02
28 Conscientiousness t_1	15.65	9.92	.11*	-.06*	-.00	.11*	.08	.06	.02	.00	.07	.07	.02	.09*
29 Honesty/Humility t_2	3.58	.60	-.06	-.18***	-.17***	-.19***	-.10*	-.05	-.09	-.07	-.09	-.07	.00	-.03
30 Self-control t_1	3.28	.67	.08	-.12***	-.04	.02	.08	.05	.01	-.05	.02	.07	.02	.10*
31 Narcissism t_1	5.10	3.14	.04	.20***	.26***	.34***	.11*	.08	.03	-.01	.07	.01	.00	.19***
32 Sensation Seeking - Need for stimulation t_1	32.44	8.25	.09	.25***	.25***	.27***	.02	-.00	.08	.11*	.02	.09	.04	.02
33 Attachment - Willingness to open t_1	3.04	.66	-.13*	-.06	-.03	.06	-.09*	-.09*	.12*	.08	.06	.03	-.09*	-.02
34 Attachment - Feeling not accepted t_1	.98	.70	.09	.18***	.14**	.01	-.07	-.00	.01	-.02	-.05	.02	-.03	-.03
35 Attachment - Need for affiliation t_1	1.92	.74	-.12*	.04	.04	.13**	-.12**	-.07	.06	.04	.06	.02	.00	-.06
36 Sociosexuality without Behavior-Facet t_1	3.94	1.78	.14**	.32***	.31***	.21***	.11**	.13**	-.07	.03	-.07	.04	.12**	.09*
<u>Relationship Quality</u>														
37 Emotional relationship satisfaction t_1	4.00	.79	-.16**	-.15***	-.14**	.08	-.05	-.04	.12*	.07	.07	.08	-.00	-.02
38 Sexual relationship satisfaction t_1	5.43	1.33	-.20***	-.06	-.05	.14**	-.10*	-.07	.08	.05	.04	.08	-.12**	-.06
39 Quality of Alternatives t_2	2.45	.85	.27***	.28***	.42***	.18***	.11*	.10*	-.00	.03	-.04	-.04	.04	.10*
40 Investment t_2	3.27	.88	.03	-.01	.00	.06	-.05	-.02	.03	-.01	.12	.12*	-.00	.01
41 Commitment t_2	4.47	.75	-.30***	-.17***	-.28***	-.05	-.07	-.05	-.04	-.04	-.11	-.02	-.03	-.01
<u>Control Variables</u>														
42 Sex ^b t_1	1.84	.37	-.08	.02	.04	.05	-.24***	-.23***	.01	-.02	.00	.09	-.16***	-.14**
43 Age t_1	32.48	9.32	.04	-.19***	-.17***	-.16***	.27***	.14**	-.16**	-.19***	-.10	-.15**	.01	.15***
44 Highest school degree ^b t_1	4.74	.59	-.07	-.01	.03	.01	-.08	-.09*	.03	-.02	-.00	.03	-.04	-.03
45 Highest Work degree ^b t_1	3.29	2.12	.01	-.10**	-.04	-.10*	.35***	.30***	-.21***	-.16**	-.13	-.13*	.16***	.31***
46 Relationship duration t_1	94.64	93.79	.11*	-.18***	-.20***	-.25***	.08	.02	-.12*	-.11*	-.04	-.10	.04	.07
47 Relationship status ^b t_1	2.12	.79	.01	-.23***	-.23***	-.22***	.01	-.01	-.09	-.13*	-.12	-.09	.04	.05
48 Kids present ^b t_1	.36	.48	.04	-.17***	-.12**	-.07	-.19***	-.20***	-.04	-.16**	-.05	.01	-.14**	-.13**
49 Number of kids t_1	.79	1.16	.04	-.18***	-.14**	-.12**	-.05	-.11**	-.11	-.16**	-.05	-.02	-.11*	-.05
50 Lifetime infidelity t_3	4.64	13.80	.10*	.17***	.12*	.20***	.11*	.08	.01	-.00	-.01	-.04	.08	.08
51 Political attitude t_1	3.30	.94	.04	-.02	-.01	.02	.06	.04	-.02	.04	.00	-.04	-.00	.03
52 Religiosity t_1	2.45	1.25	-.03	-.08**	-.07	-.04	.02	.03	-.06	-.13*	-.02	-.02	-.02	.11*

Note.

Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 206 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$ ".

^a Item was categorical. 1 *living with partner* and 2 *not living with partner*.

^b Item was categorical. See Table A10 (p. 194) for answering categories.

Table C14: Part 2 Descriptives and Intercorrelations of All Study Variables

Variable	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
01 Infidelity t_3															
Subjective Opportunity															
02 Sum subjective opportunities t_2															
03 EOS t_2															
04 ATARP t_2															
Objective Opportunity															
05 Personal income t_2															
06 Weekly workload in hours t_2															
07 Time spent with boss on workday t_2															
08 ... colleagues ... t_2															
09 ... subordinates ... t_2															
10 ... clients/ patients ... t_2															
11 Number of opposite-sex team members t_2															
12 Number of business trips t_2															
13 Number of business lunches t_2	(-)														
14 Number of business parties t_2	.29***														
15 Living situation ^a t_2	-.10*	(-)													
16 Time spent w/ partner on weekday t_2	-.05	-.09*	(-)												
17 Time spent w/ partner on weekend-day t_2	.00	-.08	-.04	.37***	(-)										
18 Nights w/ partner t_2	-.05	.01	-.52***	.41***	.12**	(-)									
19 Going out w/o partner t_2	-.01	.08	.17***	-.10*	-.09*	-.11*	(-)								
20 Shared network w/ partner ^b t_2	.05	.06	-.22***	.17***	.14**	.19***	-.18***	(-)							
21 Inhabitants place of residence ^b t_1	.01	.06	.05	.01	-.06	-.01	.09*	-.13**	(-)						
Norms															
22 Injunctive norm t_1	.07	-.00	-.06	-.07	-.07	-.04	.02	-.03	-.01	(.74)					
23 Descriptive norm t_1	.07	.04	.01	.01	-.04	.01	.01	-.02	.03	.43***	(.73)				
Personality															
24 Neuroticism t_1	-.10*	-.09*	.13**	-.05	-.06	-.04	-.00	-.13**	.05	-.04	-.09	(.87)			
25 Extraversion t_1	.09*	.07	-.05	.02	-.00	.07	.12**	.16***	-.04	.08	.18***	-.49***	(.81)		
26 Openness to Experience t_1	.05	-.01	.00	.01	-.04	-.02	.09*	-.01	.04	.13*	.19***	-.20***	.41***	(.75)	
27 Agreeableness t_1	.02	.02	-.09*	-.01	-.11*	.02	-.02	-.01	-.03	-.00	-.11*	-.27***	.12***	.28***	
28 Conscientiousness t_1	.05	.04	-.07*	.05	.04	.05	-.03	.11*	-.02	.03	.00	-.46***	.25***	.13***	
29 Honesty/Humility t_2	-.05	.01	-.12**	.01	-.07	-.02	.00	.05	-.05	-.06	-.13*	-.11**	-.02	.16**	
30 Self-control t_1	.10*	.09*	-.09*	.01	.02	-.01	.03	.10*	-.06	.04	-.04	-.51***	.18***	.07*	
31 Narcissism t_1	.13**	.06	.04	-.04	.02	-.02	.02	.08	.02	.01	.16**	-.20***	.36***	.11**	
32 Sensation Seeking – Need for stimulation t_1	-.02	-.01	.11*	-.06	-.05	-.04	.02	-.05	.01	.08	.15**	-.00	.32***	.19***	
33 Attachment – Willingness to open t_1	-.04	.00	-.10*	.23***	.13**	.18***	.05	.17***	.05	-.12*	-.12*	-.16***	.22***	.15***	
34 Attachment – Feeling not accepted t_1	.03	-.01	.14**	-.15***	-.19***	-.14**	-.00	-.20***	-.03	.09	.13**	.45***	-.23***	-.08*	
35 Attachment – Need for affiliation t_1	-.03	-.00	.11*	.13**	.07	.09*	-.07	-.01	.04	-.15**	-.08	.35***	-.11***	-.15***	
36 Sociosexuality without Behavior-Facet t_1	.05	.04	.00	-.04	-.03	-.02	.12**	-.15***	.14***	.18***	.27***	.07*	.07*	.10**	
Relationship Quality															
37 Emotional relationship satisfaction t_1	-.07	-.00	-.02	.24***	.22***	.17***	-.05	.20***	.02	-.23***	-.14**	-.25***	.16***	.05	
38 Sexual relationship satisfaction t_1	-.06	-.02	.16***	.10*	.15***	.03	-.00	.08	-.03	-.13**	-.14**	-.17***	.16***	.07*	
39 Quality of Alternatives t_2	.07	-.00	.07	-.16***	-.11*	-.16***	.18***	-.15**	.01	.28***	.26***	.01	.06	.03	
40 Investment t_2	.04	.04	-.14**	.18***	.07	.14**	-.02	.18***	.00	-.14*	-.09	.01	.00	-.02	
41 Commitment t_2	-.02	.00	-.10*	.17***	.19***	.17***	-.08	.20***	.02	-.29***	-.26***	-.01	.02	-.03	
Control Variables															
42 Sex ^b t_1	-.12**	-.04	-.09*	.02	-.05	.04	.08	-.03	-.01	.04	-.13*	.10**	.09**	.08*	
43 Age t_1	.15***	.03	-.30***	-.06	.04	.05	-.14**	.13**	-.12***	.14**	.15**	-.24***	-.01	.11***	
44 Highest school degree ^b t_1	-.01	-.02	.07	.07	-.03	-.04	-.02	-.01	.14***	-.03	-.09	.08**	-.09**	.03	
45 Highest Work degree ^b t_1	.19***	.22***	-.17***	-.06	.03	-.01	.03	.05	.11***	.08	.08	-.15***	.02	.06	
46 Relationship duration t_1	.12**	.04	-.41***	.03	-.01	.12*	-.13**	.31***	-.15***	.04	-.04	-.11***	-.05	-.02	
47 Relationship status ^b t_1	.12**	.03	-.61***	.11*	-.01	.26***	-.17***	.28***	-.13***	.02	-.10	-.13***	-.00	.02	
48 Kids present ^b t_1	-.00	-.13**	-.22***	.00	-.02	.05	-.16***	.13**	-.17***	.01	-.06	-.07**	-.00	.01	
49 Number of kids t_1	.09*	-.09*	-.26***	-.01	-.02	.03	-.21***	.19***	-.20***	.09	.02	-.16***	.00	.08*	
50 Lifetime infidelity t_3	.09	-.03	.01	.02	.05	.08	-.00	.02	.04	.13*	.24***	.01	.11*	.09	
51 Political attitude t_1	-.02	.02	-.02	-.06	.13**	.01	-.06	.07	-.10**	-.08	-.03	-.01	.03	-.15***	
52 Religiosity t_1	.11**	.10*	-.09*	-.06	-.01	-.04	-.09*	.08	-.11***	-.15**	-.06	-.07*	.05	.02	

Note.

Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 206 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$.

^a Item was categorical. 1 *living with partner* and 2 *not living with partner*.

^b Item was categorical. See Table A10 (p. 194) for answering categories.

Table C15: Part 3 Descriptives and Intercorrelations of All Study Variables

Variable	27	28	29	30	31	32	33	34	35	36	37	38	39	40
01 Infidelity t_3														
Subjective Opportunity														
02 Sum subjective opportunities t_2														
03 EOS t_2														
04 ATARP t_2														
Objective Opportunity														
05 Personal income t_2														
06 Weekly workload in hours t_2														
07 Time spent with boss on workday t_2														
08 ... colleagues ... t_2														
09 ... subordinates ... t_2														
10 ... clients/ patients ... t_2														
11 Number of opposite-sex team members t_2														
12 Number of business trips t_2														
13 Number of business lunches t_2														
14 Number of business parties t_2														
15 Living situation ^a t_2														
16 Time spent w/ partner on weekday t_2														
17 Time spent w/ partner on weekend-day t_2														
18 Nights w/ partner t_2														
19 Going out w/o partner t_2														
20 Shared network w/ partner ^b t_2														
21 Inhabitants place of residence ^b t_1														
Norms														
22 Injunctive norm t_1														
23 Descriptive norm t_1														
Personality														
24 Neuroticism t_1														
25 Extraversion t_1														
26 Openness to Experience t_1														
27 Agreeableness t_1	(.69)													
28 Conscientiousness t_1	.21***	(.83)												
29 Honesty/Humility t_2	.29***	.12**	(.74)											
30 Self-control t_1	.22***	.73***	.19***	(.86)										
31 Narcissism t_1	-.33***	.13***	-.19***	.08*	(.77)									
32 Sensation Seeking – Need for stimulation t_1	-.18***	-.09**	-.19***	-.17***	.29***	(.90)								
33 Attachment – Willingness to open t_1	.10**	.23***	.09*	.05	-.09**	-.09**	(.90)							
34 Attachment – Feeling not accepted t_1	-.18***	-.30***	-.14**	-.33***	-.04	.18***	-.50***	(.89)						
35 Attachment – Need for affiliation t_1	-.13***	-.09**	-.24***	-.16***	.00	.07*	.16***	.32***	(.82)					
36 Sociosexuality without Behavior-Facet t_1	-.18***	-.17***	-.26***	-.26***	.14***	.26***	-.16***	.16***	-.12***	(.86)				
Relationship Quality														
37 Emotional relationship satisfaction t_1	.10**	.22***	.02	.20***	.06*	-.04	.56***	-.57***	.16***	-.21***	(.93)			
38 Sexual relationship satisfaction t_1	.06	.14***	.04	.15***	.06	.05	.37***	-.30***	.15***	-.20***	.54***	(.92)		
39 Quality of Alternatives t_2	-.08	-.12**	-.15**	-.12**	.10*	.16***	-.33***	.27***	-.23***	.36***	-.44***	-.30***	(.79)	
40 Investment t_2	-.02	.10*	.00	.06	.04	.04	.16***	.06	.29***	-.05	.11*	.06	-.16***	(.78)
41 Commitment t_2	.03	.08	.03	.05	.00	-.09*	.33***	-.25***	.29***	-.18***	.47***	.28***	-.55***	.31***
Control Variables														
42 Sex ^b t_1	.09**	.06*	.09*	.05	-.12***	-.11**	.15***	-.02	.05	-.22***	.01	.02	-.15**	.03
43 Age t_1	.17***	.11*	.22***	.18***	-.02	-.17***	-.05	-.16***	-.33***	-.13***	-.09**	-.12***	.00	-.13**
44 Highest school degree ^b t_1	.05	-.01	-.03	-.05	-.04	.03	.05	.00	.06	.01	.03	.01	-.05	.04
45 Highest Work degree ^b t_1	.04	.14***	.10*	.14***	.07*	-.07*	.04	-.08**	-.16***	.00	-.03	-.10**	-.03	-.05
46 Relationship duration t_1	.14***	.14***	.20***	.18***	-.11**	-.19***	.04	-.15***	-.16***	-.11***	-.06	-.20***	-.03	.11*
47 Relationship status ^b t_1	.14***	.13***	.22***	.15***	-.05	-.14***	.07*	-.19***	-.13***	-.12***	.04	-.13***	-.08	.10*
48 Kids present ^b t_1	.12***	.07*	.13**	.08*	-.08**	-.07*	-.05	-.07*	-.17***	-.07*	-.11**	-.04	-.05	.01
49 Number of kids t_1	.18***	.11**	.20***	.15***	-.06*	-.12***	-.08*	-.11**	-.25***	-.13***	-.12***	-.06	-.03	-.02
50 Lifetime infidelity t_3	-.13**	-.08	-.07	-.09	.11*	.10*	-.05	.10*	.30***	-.05	-.03	.12**	.01	
51 Political attitude t_1	-.15***	.09**	-.12**	.09**	.10**	-.02	.03	-.05	.05	-.08*	.06*	.03	-.09*	.11*
52 Religiosity t_1	.14***	.09**	.12**	.13***	.06	-.10**	.07*	-.02	.00	-.23***	.02	.06	-.08	.08

Note.

Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 206 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$ ¹.

^a Item was categorical. 1 *living with partner* and 2 *not living with partner*.

^b Item was categorical. See Table A10 (p. 194) for answering categories.

Table C16: Part 4 Descriptives and Intercorrelations of All Study Variables

Variable	41	42	43	44	45	46	47	48	49	50	51	52
01 Infidelity t_3												
Subjective Opportunity												
02 Sum subjective opportunities t_2												
03 EOS t_2												
04 ATARP t_2												
Objective Opportunity												
05 Personal income t_2												
06 Weekly workload in hours t_2												
07 Time spent with boss on workday t_2												
08 ... colleagues ... t_2												
09 ... subordinates ... t_2												
10 ... clients/ patients ... t_2												
11 Number of opposite-sex team members t_2												
12 Number of business trips t_2												
13 Number of business lunches t_2												
14 Number of business parties t_2												
15 Living situation ^a t_2												
16 Time spent w/ partner on weekday t_2												
17 Time spent w/ partner on weekend-day t_2												
18 Nights w/ partner t_2												
19 Going out w/o partner t_2												
20 Shared network w/ partner ^b t_2												
21 Inhabitants place of residence ^b t_1												
Norms												
22 Injunctive norm t_1												
23 Descriptive norm t_1												
Personality												
24 Neuroticism t_1												
25 Extraversion t_1												
26 Openness to Experience t_1												
27 Agreeableness t_1												
28 Conscientiousness t_1												
29 Honesty/Humility t_2												
30 Self-control t_1												
31 Narcissism t_1												
32 Sensation Seeking – Need for stimulation t_1												
33 Attachment – Willingness to open t_1												
34 Attachment – Feeling not accepted t_1												
35 Attachment – Need for affiliation t_1												
36 Sociosexuality without Behavior-Facet t_1												
Relationship Quality												
37 Emotional relationship satisfaction t_1												
38 Sexual relationship satisfaction t_1												
39 Quality of Alternatives t_2												
40 Investment t_2												
41 Commitment t_2	(.92)											
Control Variables												
42 Sex ^b t_1	.09	(-)										
43 Age t_1	-.05	-.09**	(-)									
44 Highest school degree ^b t_1	.04	.08*	-.19***	(-)								
45 Highest Work degree ^b t_1	.01	-.04	.40***	.05	(-)							
46 Relationship duration t_1	.07	-.00	.59***	-.07*	.26***	(-)						
47 Relationship status ^b t_1	.12**	.00	.54***	-.11***	.24***	.71***	(-)					
48 Kids present ^b t_1	-.03	-.00	.33***	-.03	.06	.41***	.43***	(-)				
49 Number of kids t_1	-.02	-.03	.62***	-.11***	.15***	.55***	.54***	.78***	(-)			
50 Lifetime infidelity t_3	-.10	.06	.09	-.13*	-.01	-.08	-.05	-.02	.03	(-)		
51 Political attitude t_1	.13**	-.02	-.07*	-.06	-.03	.00	.00	-.01	-.03	-.15**	(-)	
52 Religiosity t_1	.10*	.08**	.24***	-.03	.09**	.22***	.21***	.17***	.22***	-.12*	.12***	(.71)

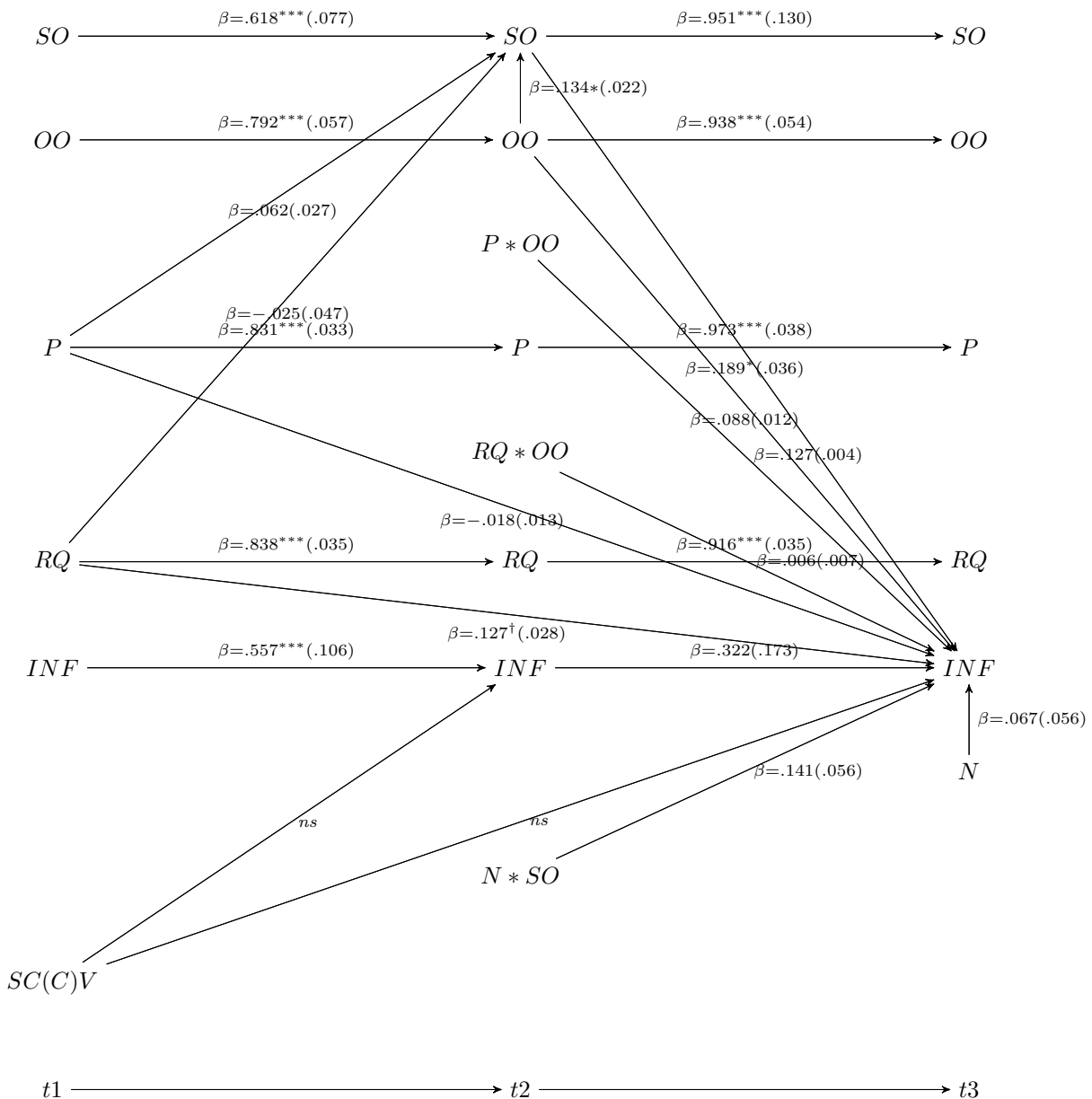
Note.

Due to non-normality and partially categorical character of variables all correlations are Spearman's ρ . Cronbach's α reliability estimates appear in parentheses. N ranges from 206 to 1,034. *** $p < .001$, ** $p < .01$, * $p < .05$ (two-tailed). Conventions for effect sizes (Cohen, 1988): small effect = $r > .10$; medium effect = $r > .30$; large effect = $r > .50$.

^a Item was categorical. 1 *living with partner* and 2 *not living with partner*.

^b Item was categorical. See Table A10 (p. 194) for answering categories.

Appendix D Depicting CLPM-results – Full Model



Note.

Abbreviations. SO = Subjective opportunity; OO = Objective Opportunity; P = Personality; RQ = Relationship quality; INF = Infidelity; N = Descriptive norm; SC(C)V = Socio-cultural (control) variables.

*** $p < .001$; ** $p < .01$; * $p < .05$; $\dagger p < .10$. All significance tests two-tailed.

For clarity reasons, correlated measurement errors over time as well as disturbances of indicators within time are not shown.

Figure D4: Results – Full Model