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Investigating the underlying components of long-term committed mating psychology

Master's thesis in Learning – brain, behavior, environment

Supervisor: Mons Bendixen

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Preface

This dissertation looks at the “Investigating the underlying components of long-term committed mating psychology”, and is based on data gathered regarding individual variation in sexual desires and behaviors. The dissertation has been written to complete the graduation requirements for a Master in psychology with a specialization towards learning – brains, development, environment, at the department of psychology at the Norwegian University of Science and Technology. The research aim and hypotheses were pre-approved, letting me focus and direct my project towards individual differences in sexual psychology. My research question and questionnaire was developed and formulated together with my supervisors Mons Bendixen and Leif Edward Ottesen Kennair, both professors at the department of psychology at the Norwegian University of Science and Technology. The data was gathered through an online questionnaire shared on social media and through physical posters. All data was cleaned, systemized and analysed by myself. Neither the data nor the resulting article is a part of a bigger research project.

While writing a master's thesis in the middle of a pandemic complicated the process, my supervisors were always available and willing to answer my questions. I would like to thank them for their help and guidance during the process. Futher, I also greatly appreciate the help of my friends and study colleagues who helped me develop and pre-test the questionnaire.

Hope you enjoy your reading!

Torstein Rodahl

Trondheim, October 1, 2020

Sammendrag

Menneskelig seksualitet er pluralistisk på den måten at folk både ønsker og opplever flere forskjellige forhold som varierer i forpliktelse og lengde i løpet av livet. Mens individuelle forskjeller i korttidsseksualitet er godt forstått, er de underliggende komponentene som forårsaker langtidsforhold mindre klare. I et snøballutvalg bestående av 183 menn og 423 kvinner fra en likestilt kultur etablerte vi et måleinstrument på langtidsseksualitet basert på de adaptive utfordringene ved langtidsforhold. Gjennom en prinsipiell faktoranalyse bekreftet vi de predikerte komponentene våre, og en konfirmerende faktoranalyse bekreftet at de tre komponentene passet dataen bedre enn en totalskåre. Inkluderingen av de nye komponentene forbedret forklaringsevnen til prediktive modeller for menneskelig langtidsatferd over effekten av to andre etablerte mål i fire av de fem regresjonsanalysene. Forpliktelseskomponenten og eksklusivitetskomponenten, men ikke intimitetskomponenten, forklarte variasjon i utfallsmålene når de var kontrollert for de andre variablene. Forpliktelseskomponenten forklarte variasjon i forholdsstatus, tid som singel, og antall forpliktete forhold. Eksklusivitetskomponenten forklarte unik varians i utroskap, forholdsstatus, tid som singel og antall forpliktete forhold. Vi fant også at sosioseksualitet var et sentralt mål for å forstå variasjon i langtidsatferd. Funnene og implikasjonene er diskutert opp mot en multidimensjonal forståelse av menneskelig seksualitet.

Abstract

Human mating is pluralistic in that most people both desire and experience multiple relationships of varying degrees of commitment and duration throughout their life. While individual variation in short-term uncommitted mating is well understood, the underlying components of long-term committed mating psychology are less so. In a snowball sample of 183 men and 423 women from a high ranked gender-egalitarian culture, we successfully established a multi-component measurement based on the assumed adaptive functions of long-term committed relationships. Principal factor analysis extracted our predicted three-component structure, and a confirmatory analysis confirmed that the three-component structure fit the data better than an overall total score. The inclusion of our new components improved upon the explanatory power of predictive models of human sexuality over and above the effect of contemporary and established measurements of human mating (SOI-R and LTMO-MSOI) in four of our five behavioral outcome variables. The commitment component and the exclusivity component, but not the intimacy component, uniquely explained individual variation when controlled for the other predictors. The commitment component significantly explained variation in relationship status, time spent single, and history of committed relationships. However, it was unrelated to infidelity, which was better explained by the exclusivity component. The exclusivity component also explained unique variation in the probability of being partnered, time spent single, and the number of committed relationships. We also found that sociosexuality was an essential measurement of long-term behavioral outcomes. Findings and implications are discussed in light of the multidimensional conceptualization of sexual strategies.

Introduction

Human mating is pluralistic in that most people both want and experience multiple romantic relationships of varying degree of commitment, investment, and duration throughout their life (Buss & Schmitt, 1993; Eastwick et al., 2018; Gangestad & Simpson, 2000; Jackson & Kirkpatrick, 2007). Sexual Strategies Theory (Buss & Schmitt, 1993) conceptualize different romantic relationships as distinct reproductive strategies that direct behavior towards fitness increasing outcomes. These different strategies are commonly conceptualized along the temporal dimension, separating them into short-term uncommitted strategies and long-term committed strategies. Low investment, less emotional closeness, non-monogamy, mating effort, and shorter durations characterize short-term mating strategies. Long-term investment, emotional closeness, mutual obligations, monogamy and parental effort characterize long-term committed strategies. While these strategies are separately understood (Buss & Schmitt, 1993, 1993; Penke & Asendorpf, 2008), less is known about how these two strategies relate to each other. The current study focuses on the relationship between these relationship types and how they might occur within the same individual. This study focus on the theoretical structure and empirical measurement of long-term committed mating psychology to further understand its relation to short-term mating psychology and long-term relevant behavioral outcomes. To investigate this relationship, we developed a multi-component measurement intended to captures long-term committed mating psychology's underlying components. Our new measurement should reveal the unique contribution of the underlying components, and let us investigate whether these components better explain variation in long-term committed behavior compared to contemporary measurements of short-term uncommitted mating (SOI-R) (Penke & Asendorpf, 2008) and long-term committed mating (LTMO-MSOI) (Jackson & Kirkpatrick, 2007).

The dimensionality of sexual strategies

The most used conceptualization of individual variation in mating psychology is sociosexuality, which is an individual's willingness and desire to engage in sexual relations without closeness and commitment. More *restricted* individuals require closeness and commitment before they want to have sex, while more *unrestricted* individuals are comfortable engaging in casual and uncommitted sex (Kinsey et al., 1948, 1953). The original Sociosexual Orientation Inventory (SOI) (Simpson & Gangestad, 1991) found that sociosexuality was associated with a series of relationship relevant outcomes, such as engaging in sex earlier in a relationship, engaging in sex with more than one partner at the

time, and being in relationships characterized by less commitment, investment, and dependency. Unrestricted sociosexuality has further been associated with relationship dissolution, overperceive the sexual interest from others, and more flirting (Howell et al., 2012; Kohl & Robertson, 2014; Penke & Asendorpf, 2008). Unrestricted sociosexuality is also associated with a higher number of partners in the past year and is one of the strongest predictors for infidelity (Barta & Kiene, 2005; Miller, 1997; Ostovich & Sabini, 2004). So while more unrestricted sociosexuality seems to predict a higher degree of relationship initiation, it also seems to affect the length and amount of relationships. This reflects the assumed adaptive function of short-term relationships, which is the increase of reproductive output through short-term and less committed relationships. Simpson & Gangestad (1991) found that sex accounted for a substantial amount of the variation in sociosexuality, with men being more unrestricted compared to women. The measurement was later revised (Penke & Asendorpf, 2008), resulting in a three-component structure consisting of desires, attitudes, and behaviors, with each component contributing unique variation to the overall sociosexuality construct. The desire component was closely associated with sexual fantasies about uncommitted partners and was associated with relationship status, where single individuals scored higher than partnered individuals. The level of desire also seemed to track commitment status, where the level of sociosexual desire decreased when a new relationship was initiated (Penke & Asendorpf, 2008). Further supporting this notion, they found that the desire component strongly predicted reduced relationship quality, a higher degree of infidelity, and relationship dissolution. Compared to the other components, the desire component contained high degrees of between-sex variation, with men scoring significantly higher than women. The attitude component was mostly related to expressed self-representation and cultural norms but was less associated with actually implemented mating strategies. The behavior component measured the individual's history of uncommitted behavior, predicting similar behavior in the future. Penke & Asendorpf (2008) further found that while the components explained variation individually, the measurement could also be used as a global total score, measuring the individual's tendencies towards short-term uncommitted mating.

While Simpson & Gangestad (Simpson & Gangestad, 1991) defined sociosexuality solely as a measurement of interest in short-term uncommitted mating, the measurement's original description does not explicitly mention how it relates to long-term committed mating. Many studies have assumed short-term uncommitted mating as alternate and inversely related to long-term committed mating, meaning that individuals favor either long-term mating

strategies or short-term mating strategies (Gangestad & Simpson, 1990). This conceptualization of human mating strategies implies that higher desires for short-term mating means decreased interest for long-term mating. This has resulted in studies using the SOI-R as an overall measurement of human mating, resulting in misconstrued interpretations regarding the dimensionality of human sexual psychology (Brase & Walker, 2004; A. P. Clark, 2004; Greiling & Buss, 2000; Hirsch & Paul, 1996; Klusmann, 2002; Mattingly et al., 2011). One such misinterpretation is that given the substantial sex difference in sociosexuality (Penke & Asendorpf, 2008; Simpson & Gangestad, 1991), men are mainly interested in short-term uncommitted mating while women are mainly interested in long-term committed mating. However, Buss & Schmitt (1993) investigated this assumption directly, finding that while men and women varied in their desire for short-term mating, they did not significantly differ in their desire for long-term relationships. This finding suggests that long-term committed desires and short-term uncommitted desires are independently related, meaning that interest towards one type of relationship does not necessarily reduce the interest towards the other.

This reflects the underlying assumption of Sexual Strategies Theory (Buss & Schmitt, 1993), which argues that human mating psychology is context-dependent, activating short-term and long-term strategies in order to increase reproductive fitness in a particular situation. The large sex-difference in short-term mating is thought to reflect the reproductive output following uncommitted sex, which for women is limited by internal gestation and lactation. However, men are mainly constrained by the number of partners they can attract due to the low investment costs of short-term relationships. This results in divergent reproductive costs and benefits following short-term uncommitted mating (Trivers, 1972), and is thought to be why men generally have stronger desires for short-term relationships compared to women. However, the smaller sex-difference in long-term mating desires reflects that the sexes have faced more similar reproductive costs and benefits from long-term committed relationships. This cost-benefit trade-off further implies that mating strategies should vary within sex, where individual traits and environmental inputs should make certain strategies more viable for certain individuals. Physical attractiveness seems to be one such trait (Lukaszewski et al., 2014), where higher potential for attracting partners reduces the cost and increases the benefit of short-term strategies, resulting in overall stronger short-term desires (Gangestad & Simpson, 2000).

Consequentially, conceptualizing long-term and short-term mating desires along a single dimension conflates two distinct aspects of human mating psychology and results in misinterpretations of how the same individual can simultaneously or sequentially use both

long-term and short-term strategies. To our knowledge, four studies have investigated the dimensional relationship between long-term committed mating desires and short-term uncommitted mating desires directly (Holtzman & Strube, 2013; Jackson & Kirkpatrick, 2007; Lukaszewski et al., 2014; Strouts et al., 2017) finding that the two mating strategies are not inversely related. In order to investigate the relationship between short term and long-term mating strategies, Jackson & Kirkpatrick (2007) developed the "Multidimensional Sociosexuality Orientation Inventory" (MSOI) consisting of three separate components corresponding to desires towards long-term mating orientation (LTMO), desires towards short-term mating orientation (STMO), and previous sexual behavior. Supporting their assumption of long-term and short-term strategies as independently related, they found a weak inverse correlation between STMO and LTMO for men ($r = -.27$) and a medium effect for women ($r = -.42$). They also measured short-term sexuality through the SOI (Simpson & Gangestad, 1991), again finding a stronger association between the SOI and the LTMO for women ($r = -.41$) than for men ($r = -.22$). These findings were later replicated, with Holtzman & Strube (2013) finding weak correlation ($r = -.24$) between the LTMO and the SOI-R (both sexes), while Strouts et al. (2017) found that men's STMO and LTMO was non-significantly associated, while the association was moderate to strong in women ($r = -.49$). Jackson & Kirkpatrick (2007) further found that the LTMO was entirely unrelated to previous sexual behavior, clearly illustrating the independent nature between actual uncommitted behavior and overall desires for long-term mating. The behavioral component correlated moderately with STMO (women: $r = .36$, men: $r = .40$), indicating that uncommitted behavior was a consequence of short-term uncommitted mating desires and not an effect of lacking interest in long-term committed mating. This finding was later replicated by Lukaszewski et al. (2014), finding no significant ($p > .05$) association¹ between the LTMO component and previous uncommitted behavior (SOI-R Behavior: Penke & Asendorpf, 2008), number of sexual partners, sexual experience, and one-night stands. Replicating (Buss & Schmitt, 1993), Jackson & Kirkpatrick, (2007) also found that men and women reported equal attitudes towards long-term committed relationships but unequal desires for short-term uncommitted relationships. These findings indicate that solely measuring mating strategies through short-term desires is limited in reflecting overall mating psychology. While short-term and long-term mating desires were often negatively correlated, conceptualizing mating strategies along a single bipolar continuum conflates two distinct dimensions and is not sensitive to the fact

¹ The LTMO-MSOI was correlated with the number of sex partners ($r = -.17, p < .10$) for women and sexual experience for men ($r = -.15, p < .10$).

that many people desire both these relationship types. So while the SOI-R is a valid and reliable measurement of short-term uncommitted mating, it does not suffice to measure overall mating psychology due to its inability to measure specific variation in long-term committed mating.

While the LTMO-MSOI provides a measurement for investigating the general interaction between long-term and short-term mating desires it has two main limitations. Firstly, the original study was limited by the low range of variation in the LTMO-MSOI scale, finding that almost all participants highly desired committed relationships. While the findings fit the hypothesis of long-term mating as a human universal (Fisher, 1989; Gangestad & Simpson, 2000; Jankowiak & Fischer, 1992), the scale's inability to detect substantial variation in committed mating psychology challenge its validity. Considering that long-term relationships contain several distinct features such as commitment, investment, monogamy, and intimacy (Rusbult et al., 1998; Schacht & Kramer, 2019; Sternberg, 1986), a single dimension measuring desire for a long-term relationship might not detect more distinct aspects of these relationships.

Secondly, the measurement's validation is based entirely on associations with features assumed to reflect long-term mating strategies and behavior. The basis of Jackson & Kirkpatrick's (2007) validation of the LTMO-MSOI was its ability to clarify and extend previous empirical research on sociosexuality and mating. They found a weak to medium positive correlation towards preferring personal and parenting qualities in a potential mate ($r = .33, p < .01$), reflecting that stronger desires for long-term relationships predicted partner preferences relevant to this relationship type. They further found a weaker negative correlation with self-perceived attractiveness ($r = -.22, p < .05$), a trait that previously had been positively associated with unrestricted sociosexuality (A. P. Clark, 2004). Both of these correlations were solely correlated for men, and not women or the total sample. Lukaszewski et al. (2014) also investigated the association between the LTMO-MSOI and self-perceived attractiveness, finding no significant associations. Jackson & Kirkpatrick (2007) further found that the LTMO-MSOI was strongly correlated ($r = -.54, p < .01$) with an "avoidant" attachment style, though to reflect the extent to which a person desire and is able to engage in close and intimate relationships (Brennan et al., 1998). Two additional studies found associations between the LTMO-MSOI and a slow life history (Giudice et al., 2015). Life history theory reflects the strategic allocation of time and resources, where a fast life history strategy focuses on the immediate use of resources and the pursuit of uncommitted short-term mates, while a slow life history focuses on the long-term allocation of resources for

themselves, their partner, and their offspring. Holtzman & Strube (2013) and Strouts et al. (2017) found that the LTMO-MSOI was associated with a slow life history strategy, and personality traits associated with this strategy such as conscientiousness, agreeableness, and honesty/humility. So while the LTMO-MSOI show associations with traits relevant for long-term mating strategies, no previous studies have validated the LTMO-MSOI against actual long-term behavioral outcomes.

This study aims to solve these two main challenges that face the LTMO-MSOI. We first want to construct the Romantic Preference Questionnaire (RPQ), a multi-component measurement of long-term committed mating psychology based on the main adaptive challenges of long-term mating. This should provide a more nuanced conceptualization of its underlying mechanisms and capture more overall variation towards long-term mating. This measurement will then be validated against relevant long-term committed behavioral outcomes. Investigating the components predictive ability of long-term committed mating outcomes in relation to sociosexuality (SOI-R) should provide further nuance to the multidimensional relationship between long-term and short-term mating psychology.

Expected dimensions of the Romantic Preference Questionnaire

Commitment

People generally report strong desires for committed relationships (Jackson & Kirkpatrick, 2007), and finding a long-term committed partner seems to be one of most people's main life goals (Fletcher et al., 2015; Jankowiak & Fischer, 1992). This reflects long-term committed mating's role as a fundamental human mating strategy and underline the importance of its assumed adaptive function to increase reproductive success through pooled resources and parental investment (Buss & Schmitt, 1993; Conroy-Beam et al., 2015). However, committed relationships also entail a significant opportunity cost since investing in a committed relationship naturally decreases the amount of resources and time available to invest in alternate life goals. Temporarily opting out of the long-term "mating game" might therefore be beneficial in more than one way. Firstly, increasing highly valued mate traits such as education, social status, and wealth requires time and resources (Buss, 2003). Therefore, it might be beneficial to direct available resources and time towards increasing the value of these traits and reenter the mating market later with the increased possibility of high quality partners. Secondly, individuals might find themselves in environments with limited access to high-quality mates. Investing in a long-term committed relationship with a partner unable or unwilling to return the investment towards their shared investment pool would dramatically

reduce the relationship's benefit and value. Committing to a partner that increase the possibility of breakups and infidelity further heightens the risk of relationship investment. In these situations, it might be more beneficial to stay single and wait for better alternatives to appear instead of committing to the best current alternative and miss out on a better alternative in the future (Apostolou, 2017). Apostolou et al. (2019) and Apostolou & Panayiotou (2019) found that a substantial amount (40% - 60%) of their sample of single individuals reported being single by choice. These participants reported that they were single because it let them have the freedom to pursue their goals, they were happy being single, and it let them pursue varied amounts of casual relationships. The benefits, costs, and risks of long-term committed relationships therefore suggest that while long-term committed relationships should be a fundamental human mating strategy, people should express some variation in their pursuit and desire for them. Given that long-term committed relationships solve the same adaptive challenges for both men and women, we expect that the sexes should show similar desires towards committed relationships. We further expect that the commitment components should be positively associated with relationship status, relationship duration, and spending less time as single between relationships, leading to an accumulation of lifetime committed relationships. However, desiring committed relationships should not necessarily increase the probability of staying in an unsatisfactory one, making the commitment component less associated with infidelity compared to the other components.

Exclusivity

One central feature of long-term committed relationships is monogamy and the investment towards one partner at the time (Schacht & Kramer, 2019). Therefore, individuals are faced with the substantial opportunity cost and need to decide whether their current relationship situation is the best use of their limited time and resources. As a result, all individuals should be sensitive to alternate partners, ensuring that their current relationship is their best course of action. However, individuals who repeatedly abandon relationships to pursue alternate partners and mating opportunities will never benefit from the pooled resources that long-term committed relationships can offer. Therefore, each individual is faced with evaluating to what degree they should exclusively focus on a single long-term relationship. While the benefits of long-term relationships might be similar to the sexes, the use of men's exclusive long-term strategy comes with substantial reproductive opportunity costs compared to women's, caused by the divergent reproductive output following partner variety. While women's reproductive output is severely limited by internal gestation and lactation, men's reproductive output is restricted by the number of partners he can impregnate

(Trivers, 1972). This sex-difference is one of the most consistent sex differences found in psychology, showing that men are, on average, more interested in uncommitted and non-exclusive mating (e.g., Schmitt, 2003a, 2005). We, therefore, expect that the exclusivity component should show considerable between-sex variation.

Rusbult et al. (1998) found that individual belief about having high-quality alternatives to their current committed relationship was one of the strongest predictors of breakups and overall shorter relationship durations. Multiple studies have replicated this finding (e.g., Emmers-Sommer et al., 2010; Simpson, 1987), and similar findings show that higher inattentiveness to alternate partners is related to a higher degree of relationship satisfaction, investment, and commitment. Further, higher attentiveness to alternate partners is also associated with lower degrees of emotional closeness in relationships and predicted a higher number of partners in the past year (Miller, 1997). Based on the above findings and the function of exclusivity, we expect that the degree of exclusivity should be a substantial restriction on the expression of unfaithful behavior. We further expect that higher exclusivity levels should be negatively associated with the number of previous committed relationships, positively associated with longer relationship duration and relationship status, and spending more time single between relationships.

Intimacy

A central challenge of long-term committed relationships is to ensure continued investment from both partners. Because long-term committed relationships require long durations of time to return reproductive benefit, there is a significant challenge to maintain relationships in the face of alternate opportunities and fluctuating relationship satisfaction. The "commitment device hypothesis" claims that one solution to this problem might be to promote commitment over and above the partner's mate value and repress interest in alternate partners (Fletcher et al., 2015). This would imply that while people should have strict requirements when choosing a partner, they should be more motivated to maintain the current relationship once they are in them (Conroy-Beam et al., 2015). The expression of intimate emotional information has been found to activate this mechanism by generating feelings of closeness and interdependence, and increasing the probability of continued investment and relationship maintenance. The importance of emotional intimacy is extensively researched in the close relationship literature where intimacy has been repeatedly associated with relationship satisfaction and positive relationship outcomes (Fletcher et al., 1999; Greeff & Malherbe, 2001; Moore et al., 1998; Rubin & Campbell, 2012; Yoo et al., 2014). The

expression of emotional disclosure is a primary tactic used in relationship initiation (C. L. Clark et al., 1999) and is one of the central features separating people's experience of short-term relationships as opposed to long-term relationships (Eastwick et al., 2018; Jonason et al., 2011). Eastwick et al. (2018) found that the initial stages of short-term and long-term relationships were indistinguishable in terms of behavior and romantic interest. However, while romantic interest in short-term relationships seemed to plateau and decline after seven early relationship events (which they used to measure relationship duration instead of time), the romantic interest level continued to increase in the relationships participants defined as long-term relationships. While both relationship types contained behavior that indicated sexual desire, self-promotion, and intra-sexual competition, only long-term relationships featured behavior like caregiving, self-disclosure, and receiving self-disclosure. Further supporting this notion, people also seem to strategically avoid intimate behavior and emotional disclosure when pursuing uncommitted mating to avoid relationship entanglement (Jonason & Buss, 2012). At least in western cultures, men have been found to have an overall higher level of a dismissive attachment style, which might cause them to have less interest in expressing intimate behavior (Schmitt, 2003b). Therefore, we expect that men should have lower desires for intimacy compared to women. Due to its association with relationship satisfaction, expect the intimacy component to be positively associated with relationship status and relationship duration, and negatively associated with infidelity. We also expect that the intimacy component should be positively associated with spending less time as single between relationship dues to its relationship "generating" function, which might also make it associated with the number of committed relationships.

Aims, hypotheses and research question

This study investigates the association between individual variation in mating psychology and history of committed behavior. While the SOI-R (Penke & Asendorpf, 2008) validly measures individual variation in the propensity towards short-term uncommitted sexual relationships, we argue that it is insufficient when measuring the variation in long-term committed mating psychology due to the two mating strategies' independent nature. While the Multidimensional Sociosexual Orientation Inventory (MSOI) (Jackson & Kirkpatrick, 2007) attempted to rectify this problem, we argue that the measurement is problematic for two reasons. Firstly, the measurement's validation is based on its associations with short-term mating and its ability to clarify and extend previous empirical findings on sociosexuality. To our knowledge, it has not been validated against actual long-term relevant behavioral

outcomes, which strongly challenges the validity of the measurement. Secondly, the measurement is not sufficiently nuanced to investigate the complex nature of long-term committed mating psychology. Therefore, this study aims to construct and validate a measurement of long-term committed mating psychology's underlying components, based on the adaptive challenges of long-term committed mating. We expect three components that should reflect individual variation in long-term committed mating psychology, and these should be desire towards long-term committed relationships, desire for exclusivity, and desire for intimacy. We expect that these components should explain additional variation in committed mating behavior over and above the variation explained by the SOI-R and the LTMO-MSOI.

Hypotheses

1. We expect that our new measurement should contain three factors responding to commitment, exclusivity, and intimacy.
2. We expect that measuring human mating through independent short-term and long-term mating measurements will better explain individual variation compared to solely the SOI-R (Penke & Asendorpf, 2008) or the LTMO-MSOI (Jackson & Kirkpatrick, 2007).
3. We expect that our new measurement should explain additional variation in commitment relevant outcome variables (relationship status, relationship duration, time as single, number of committed relationships, infidelity) in addition to the variation explained by the SOI-R total score (Penke & Asendorpf, 2008) and the LTMO-MSOI (Jackson & Kirkpatrick, 2007).

Method

Procedure

The data gathering process was based on convenience and snowball sampling in two ways. Firstly, we shared a flyer with a short description of the project on social media through personal accounts, and multiple participants further shared the study. The flyer contained an html-link and a QR-code directing the participants to the online questionnaire that contained additional information about the study. An identical flyer was distributed around NTNU (Norwegian University of Science and Technology) campuses. It was also shared with some local businesses in order to reach older participants. All flyers informed that the study was

completely anonymous (including no collection of IP-addresses) and did not offer any compensation.

Design and Subjects

A cross-sectional study with a within-subject design was carried out through online questionnaires reaching participants of a wide age range, including students ($N = 355$) and non-students ($N = 249$). Due to the study's nature and aim, only heterosexual cis-gendered individuals were included. Heterosexuality was defined as being exclusively or mostly attracted to the opposite sex, resulting in the removal of 87 participants due to non-heterosexuality (gay men and lesbian women = 29: 14 men and 15 women, bisexual individuals = 27: 5 men and 22 women, asexual individuals = 4: all women, pansexual individuals = 27: 3 men and 24 women). Three additional participants were removed due to contradictory infidelity responses. All participants over the age of 60 were excluded, resulting in the removal of 6 participants and an age range from 17 to 60 (Men: $M = 29.4$, $SD = 8.6$; women: $M = 26.6$, $SD = 7.6$). The final sample contained 183 (30%) men and 423 women ($N = 606$). One hundred and two men (55%) and two hundred and fifty-three women (83%) reported that they were in some form of a long-term committed relationship (married/co-inhabitants = 175, boy/girlfriend = 92, long-distance relationship = 77, committed sexual partner = 11). The average relationship length was 58.8 months (4.9 years). In addition, eighty-one men and one hundred and seventy women reported being uncommitted, e.i., uncommitted sexual partner ($N = 11$), friends with benefits ($N = 30$), being single and having one-night stands ($N = 103$), and being singles and not having one-night stands ($N = 107$). Those participants currently uncommitted had been so for an average of 38.2 months (3.2 years).

Measures

Committed Mating Measurements. The long-term mating orientation (LTMO) component of the multidimensional sociosexuality orientation inventory (MSOI) (Jackson & Kirkpatrick, 2007) consists of six items concerning desires towards long-term committed relationships. We only used the LTMO component of the LTMO-MSOI, given that the SOI-R measures attitudes, desires, and behaviors towards short-term mating in a highly valid and reliable way. Alpha level was slightly lower ($\alpha = .80$) than the original study ($\alpha = .88$), but still highly acceptable. We added additional questions concerning committed behavior in the same item group as the SOI-B items. The first question asked about the number of long-term committed

relationships, finding a mean of 2.8 relationships ($SD = 1.3$). Approximately 47% of the sample had two partners and below, with 36% having experienced a single relationship while 11% had no relationship experience. We further added items measuring the longest committed relationship's duration, finding that the mean committed relationship had lasted for 58.8 months (4.9 years), but these values were far from normally distributed ($SD = 63.4$). The median was substantially lower (37 months/3 years). The duration of time spent single was measured, finding an average of 38 months/3.1 years ($SD = 54.3$ months). The median was 20 months/1.6 years.

Sociosexual Orientation Inventory - Revised. Participants' preference for uncommitted mating was measured through the Revised sociosexual orientation inventory (SOI-R; Penke & Asendorpf, 2008), and all three components (desire, attitudes, behaviors) of the SOI-R were included. Scaling and scoring of the SOI-R were based on the original study and followed Penke and Asendorpf's recommendations (Penke & Asendorpf, 2008). Internal consistency was acceptable for the total global score ($\alpha = .85$), attitudes ($\alpha = .83$), desires ($\alpha = .85$), and behaviors ($\alpha = .84$). Following the principle of parsimony (Michael Olusegun, 2015), only the SOI-R total score was used in our stepwise regression analyses due to the higher number of predictors.

Infidelity Measurement. Our measurement of infidelity was based on the "susceptibility to infidelity"-scale (Buss & Shackelford, 1997), but some additional items were added to create a scale with increasingly serious transgressions. Considering the somewhat vague term of infidelity, we decided that the items should measure the degree of sensitivity to alternate partners (being attracted to or having a crush on) and the degree of sexual unfaithful behavior. The first question asked whether the participant had experienced attraction to another individual while being in a long-term committed relationship, and the last question asked if the participant has had two romantic relationships at the same time. The other question asked about flirting, having a crush on, kissing, having sex with one time, having sex with more than one time, been on a date with, and had a short relationship with another person while being partnered. Scalability was tested through a Mokken scale (Stochl et al., 2012), resulting in a non-significant finding indicating that the measurement did not significantly increase in seriousness based on the participant's answers. While the scalability failed, using all items in a total score would add nuance to the degree of unfaithful behavior. Alpha levels were sufficient for the total score ($\alpha = .80$). The mean score was at 2.9 "infidelity acts" ($SD = 2.3$),

and there was no significant difference between the sexes. The lack of a sex difference goes against previous studies finding that men, on average, are more unfaithful than women (Atkins et al., 2001; Labrecque & Whisman, 2017; Wiederman, 1997). The lack of a sex difference was also found in both "been unfaithful once" and "been unfaithful multiple times" suggested that it was not an effect of our new measurement.

Romantic Preference Questionnaire. The main goal of this study was to create and validate a new measurement of long-term committed relationships. Building on Jackson & Kirkpatrick (2007) LTMO-MSOI measurement, we intended to create a multifaceted measurement based on three theoretically predicted factors. These were desires for long-term committed relationships, desire exclusivity, and desire for intimacy. Creating both a global measure and separate components would allow us to undertake a novel investigation of the multifaceted nature of long-term committed mating psychology and provide a basis for testing the individual components' unique contribution. The three initial test batteries consisted of 38 items, with 12 items intended to measure commitment, 13 items intended to measure exclusivity, and the final 13 items intended to measure intimacy. The commitment items contained items inspired by Jackson & Kirkpatrick's (2007) LTMO-MSOI and Rusbult et al. (1998) Investment Model Scale. We reframed Rusbult's questions to be directed towards the individual and not the particular relationship's dyadic structure. We also generated some new questions to measure desires toward long-term committed relationships. The exclusivity component was based on the LTMO-MSOI (Jackson & Kirkpatrick, 2007) and Rusbult et al. (1998) "quality of alternatives" measurement, but we generated some new questions to measure exclusivity in committed relationships. The intimacy items were based on Rusbult et al.'s (1998) Investment Model Scale and the "relationship events" found in Eastwick et al. (2018) Relationship Trajectory study. The items were diverse by design and intended to be reduced through factor analysis, creating more specified components consisting of fewer items.

Results

Testing our first hypothesis through factor analysis, the three predicted components appeared and were tested for model fit through confirmatory factor analysis. The second hypothesis was tested through assessing the individual components against previously established mating measurements (SOI-R and LTMO-MSOI) examining their nomological relationship. Our third hypothesis was tested by assessing the predictive validity of the RPQ

components, the SOI-R, and the LTMO-MSOI in five different long-term relevant outcome variables.

Structure of the Romantic Preference Questionnaire

Testing our first hypothesis, a principal factor analysis with orthogonal varimax rotation and a scree plot² resulted in the predicted three-factor solution accounting for 65% of the variance in the sample. Scales were constructed including items that loaded over 0.4, and items loading on more than one factor were assigned to their highest loaded factor. Accordingly, seven items from the first factor were averaged to create the intimacy component (Item 1-7) ($\alpha = .88$). Eight items loading on the second factor, and was averaged and created the commitment component (item 8 – 15) ($\alpha = .87$), and the final factor contained seven items that were averaged to create the exclusivity component (item 17 - 22) ($\alpha = .85$) (Appendix 1). The alpha level of all included items loading on the global score was higher than the individual factor ($\alpha = .91$). Testing for model fit using confirmatory factor analysis revealed that the global score model fit the data poorly with multiple items falling below the 0.4 factor loading threshold, $\chi^2(209, N = 579) = 2764.22, p < .001$, (CFI = 0.59, RMSEA = .147 [.142, .152], TLI = 0.55, SRMR = 0.124). A confirmatory factor analysis of the three theoretically predicted latent variables fit the data better $\chi^2(206, N = 579) = 949.39, p < .001$, (CFI = 0.88, RMSEA = .079 [.072, .083], TLI = 0.86, SRMR = 0.064. While the model showed sufficient predictive values, it showed some problems towards convergent validity with AVE values below 0.5 (commitment = .48, exclusivity = .47), suggesting that the indicators were not sufficiently correlated with its underlying latent variable. However, Raykov's reliability coefficient was acceptable ($< .86$), indicating that our indicators were sufficiently associated with our latent variables. The model also showed below threshold CFI and TLI ($< .90$), indicating that the model did not reach the desired threshold for improving on the baseline model.

Sex Differences, Group Differences, and Bivariate Correlations

Investigating the individual component, we found that the sexes differed significantly in all components of the Romantic Preference Questionnaire (RPQ) (Table 1). The exclusivity

² The initial varimax rotation provided five factors. The fifth was dropped due to a scree-plot and the fourth was dropped in favor of the third due to prediction fit and explained variation, creating our predicted three-factor solution. Promax rotation was also tested, resulting in no clear factor solution.

component contained a large sex difference with men being less exclusive than women. The commitment component contained a smaller sex difference with women scoring higher than men. The general positivity towards long-term committed relationships was clearly illustrated through that only 3% of the sample crossed the halfway-point threshold of having negative desires towards long-term committed relationships. Only 1.6% ($N = 10$) of the sample felt the commitment items at average fit them “somewhat bad” or worse. The biggest single component sex difference was found in the intimacy components, with men scoring lower than women. The RPQ global score also showed a large sex difference.

Table 1
Descriptive Statistics and Sex Difference

Variable	No. items (scale)	α	Women		Men		Sex Differences	
			M	SD	M	SD	t	<i>Cohen's d</i>
RPQ	22 (6)	.90	5.08	0.60	4.62	0.66	-8.46***(-0.45)	-.75
Intimacy	7	.88	5.38	0.67	4.87	0.81	-8.07***(-0.52)	-.72
Commitment	8	.86	5.20	0.71	4.94	0.76	-4.21***(-0.24)	-.37
Exclusivity	7	.85	4.65	0.95	4.00	1.13	-7.43***(-0.65)	-.66
LTMO-MSOI	6 (9)	.81	7.95	1.29	7.60	1.55	-2.85**(-0.35)	-.25
SOI-R	9 (9)	.85	4.64	1.61	5.25	1.62	-4.26***(-0.61)	.38

Note. dfs for t tests were 601-604. SOI-R = Sociosexual Orientation Inventory - Revised; LTMO-MSOI = Long term mating orientation – multidimensional sociosexual orientation inventory; RPQ = Romantic Preference Inventory. * $p < .05$, ** $p < .01$ & *** $p < .001$.

All relationships between the components were positive and significant (Table 2). The correlation between the commitment component and the two other components was strong, with a slightly stronger correlation for exclusivity than for intimacy. The correlation between exclusivity and intimacy was small. All correlations were significant, and none of these correlations were significantly different between the sexes. All components were also highly correlated with the global score, with the correlation being slightly weaker for intimacy than for commitment and exclusivity (Table 2).

Relationship between long-term and short-term measurements

To investigate our second hypothesis, we executed a bivariate regression analysis of the SOI-R total score and its underlying components, the LTMO-MSOI, the RPQ global score, all RPQ components, and age (Table 2). Investigating the RPQ components relation to the LTMO-MSOI, we found that the commitment component showed the highest correlation with the LTMO-MSOI ($r = .61, p < .001$). The exclusivity component showed a stronger

correlation with the LTMO-MSOI for women than for men, and the intimacy component showed weak to moderate correlations for both sexes.

Table 2

Intercorrelations between scales and components, disaggregated by sex of participants

Scale	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. RPQ	---	.67 ^{***}	.84 ^{***}	.76 ^{***}	.52 ^{***}	-.38 ^{***}	-.30 ^{***}	-.38 ^{***}	-.24 ^{**}	-.10
2. Intimacy	.69 ^{***}	---	.48 ^{***}	.15 [*]	.35 ^{***}	-.02	.11	-.09	-.05	-.13
3. Commitment	.87 ^{***}	.57 ^{***}	---	.46 ^{***}	.58 ^{***}	-.18 [*]	-.20 ^{**}	-.19 ^{**}	-.03	.07
4. Exclusivity	.78 ^{***}	.20 ^{***}	.49 ^{***}	---	.28 ^{***}	-.59 ^{***}	-.49 ^{***}	-.51 ^{***}	-.39 ^{***}	-.15 [*]
5. LTMO -MSOI	.61 ^{***}	.31 ^{***}	.63 ^{***}	.47 ^{***}	---	-.09	-.10	-.05	-.06	-.01
6. SOI-R	-.52 ^{***}	-.13 ^{**}	-.35 ^{***}	-.64 ^{***}	-.37 ^{***}	---	.69 ^{***}	.85 ^{***}	.82 ^{***}	.09
7. SOI-D	-.45 ^{***}	-.10 [*]	-.33 ^{***}	-.58 ^{***}	-.31 ^{***}	.67 ^{***}	---	.41 ^{***}	.30 ^{***}	.02
8. SOI-A	-.39 ^{***}	-.07	-.23 ^{***}	-.51 ^{***}	-.27 ^{***}	.85 ^{***}	.37 ^{***}	---	.59 ^{***}	.03
9. SOI-B	-.38 ^{***}	-.13 ^{**}	-.26 ^{***}	-.43 ^{***}	-.29 ^{***}	.82 ^{***}	.30 ^{***}	.57 ^{***}	---	.15 [*]
10. Age	.02	-.13 ^{**}	.10 [*]	.05	.06	-.11 [*]	-.16 [*]	-.17 ^{***}	.05	---

Men's score is displayed above/to the right of the diagonal. * $p < .05$, ** $p < .01$, *** $p < .001$.

LTMO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-Revised, SOI-Desire, SOI-Attitudes, SOI-Behavior (Penke & Asendorpf, 2008)

The exclusivity component ($r = -.64$) was strongly correlated with the SOI-R and the correlation with intimacy ($r = -.14$) and commitment ($r = -.31$) were weak and moderate. Men's intimacy score was the only RPQ component where the correlation was non-significant in relation to SOI-R global score, while women showed a small significant correlation between SOI-R global score and intimacy. The exclusivity score was highly correlated with SOI-R global score and had a large effect size for both men and women (Table 2). Further investigating the relationship between short-term uncommitted mating and long-term committed mating, found the correlation between SOI-R and LTMO-MSOI was weak ($r = -.28, p < .001$). Sorting the correlation by sex showed a significant difference ($z = -3.37, p < .001$) with men showing no significant association between SOI-R and LTMO-MSOI.

Testing for predictive validity through stepwise regression

In order to test our third hypothesis, we tested the SOI-R, LTMO-MSOI, RPQ total score, and the RPQ components through stepwise logistic regression analysis and stepwise regression analysis against five long-term relevant outcome variables.

Relationship status

Given that the RPQ should measure variation in tendencies towards long-term committed mating we expected that the RPQ components should be associated with

relationships status. Testing for an effect of relationship status and sex on the RPQ global score through 2 x 2 ANOVA analysis resulted in a significant model, $F(2, 603) = 46.79, p < .001, \eta_p^2 = .13$, with both relationship status ($\eta_p^2 = .13$) and sex ($\eta_p^2 = .13$) having significant effects on RPQ global score. Subsequent t-test showed that the effect of relationship status on RPQ was significant for women, $t(421) = -6.29, p < .001$, but there was no association for men. This indicates that single women's RPQ global score ($M = 4.68, SE = .05$) was significantly different from partnered women's RPQ global score ($M = 5.05, SE = .04$), but single men's RPQ global score ($M = 4.42, SE = .07$) was not significantly different from partnered men's RPQ global score ($M = 4.48, SE = .06$).

To test for an effect of relationship status on the individual RPQ component, three separate 2 (sex) x 2 (relationship status) ANOVA models was used. The commitment component revealed significant associations with relationship status, $F(1, 601) = 20.83, p < .001, \eta_p^2 = .08$, and there was no interaction effected of sex ($p = .09$) with both sexes having slightly higher commitment scores when partnered (Women: $M = 5.38, SE = .04$; Men: $M = 5.04, SE = .08$) then when single (Women: $M = 4.96, SE = .05$; Men: $M = 4.82, SE = .08$). An identical model for the exclusivity component resulted in a significant model, $F(3, 602) = 22.72, p < .001, \eta_p^2 = .10$, with significant effects for both sex and relationship status, and no interaction effect between the two. This resulted in partnered women ($M = 4.78$) having higher exclusivity score than single women ($M = 4.44$) ($t = -3.62$), but no difference for men (Partnered: $M = 4.00$; Single: $M = 3.99$). The same model for intimacy was significant, $F(3, 599) = 27.07, p < .001, \eta_p^2 = .12$. Relationship status did not prove significant in the model, but there was an interaction effect of sex, showing that women's (Partnered: $M = 5.48$; Single: $M = 5.22$) but not men's intimacy level was affected by commitment status (Partnered: $M = 4.80$; Single: $M = 4.94$).

To test the predictive validity of our new measurement, the RPQ components, the SOI-R, and the LTMO-MSOI, was included in a stepwise logistic regression (Table 3). We expected that all the RPQ components should be positively associated with relationship status. The probability of being in a relationship significantly increased with age ($\chi^2(2) = 12.81, p < .001, \eta_p^2 = .02$), so all the following analyses were controlled for age. The model showed that the inclusion of the components ($\eta_p^2 = .12$), but not the global score ($\eta_p^2 = .09$), significantly improved upon the model containing SOI-R and LTMO-MSOI ($\eta_p^2 = .09$). The final model revealed that the SOI-R, the commitment component and the exclusivity component

significantly explained the probability of being in a relationship. The commitment component was positively associated with probability of being in a relationship while the exclusivity was negatively associated with being in a relationship controlled for the other variables. However, the SOI explained the most overall variation.

Table 3
Logistic regression of probability of being in a committed relationship

Predictor	η_p^2	SE B	χ^2	df	p	e^β
1. Overall model	.09		76.65	3	<.001	
Constant		-.88	-1.20	3	.230	NA
Age		.01	3.78	3	< .001	1.04
SOI-R		-.34	-5.84	3	< .001	.71
LTMO-MSOI		.21	3.10	3	.002	1.23
2. Overall model	.09		77.00	4	< .001	
Constant		1.05	-1.26	4	.206	NA
Age		.01	3.82	4	<.001	1.05
SOI-R		.06	-5.12	4	<.001	.72
LTMO-MSOI		.10	2.35	4	.019	1.20
RPQ		.18	0.56	4	.554	1.11
3. Overall model	.12		55.86	6	< .001	
Constant		1.09	-0.37	6	.712	NA
Age		.01	2.85	6	.004	1.04
SOI-R		.08	-6.36	6	< .001	.61
LTMO-MSOI		.08	1.18	6	.239	1.1
Commitment		.20	3.61	6	< .001	2.06
Exclusivity		.13	-3.67	6	< .001	.62
Intimacy		.15	-0.27	6	.788	.96

Note. $N = 602$, LMTO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-R Total score (Penke & Asendorpf, 2008)

Relationship duration

Testing the effect of our measurements on relationship duration, we predicted that all component of the RPQ should be significant associated with longer relationship duration. Age was strongly correlated with relationship duration in our sample ($r = .79, p < .001$), and explained 62% of the variation in the dependent variable $F(1, 569) = 956.32, p < .001, R^2_{adj} =$

.62, so all subsequent models included age as a control variable. Sex showed no significant interaction with relationship status. A stepwise multiple regression with relationship duration as dependent variables and age, SOI-R, LTMO-MSOI, RPQ, and the components of the RPQ as predictors revealed that the predictors explained minimal variation over and above the effects of age (Table 4). Both the SOI-R and the LTMO-MSOI showed significant interactions, but in different directions. Neither the RPQ global score nor the individual component significantly predicted relationship duration controlled for the other predictors.

Table 4
Results of multiple regression analyses of relationship duration

Model		<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	$adjR^2$
1. Overall model					512.56	(2, 568)	< .001	.64
	SOI-R	-5.13	.001	-.13				
2. Overall model					347.47	(3, 567)	< .001	.65
	SOI-R	-4.16	< .001	-.10				
	LTMO-MSOI	2.61	.009	.07				
3. Overall model					261.44	(4, 566)	< .001	.65
	SOI-R	-4.34	< .001	-.13				
	LTMO-MSOI	2.93	.003	.08				
	RPQ	-1.35	.177	-.04				
3. Overall model					172.36	(6, 561)	< .001	.64
	SOI-R	-4.07	< .001	-.13				
	LTMO-MSOI	2.63	.009	-.08				
	Commitment	0.00	1.000	.00				
	Exclusivity	-1.13	.260	-.04				
	Intimacy	-0.63	.528	-.02				

Note. *N* = 602, LMTO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-R Total score (Penke & Asendorpf, 2008). All models were controlled for age $F(1.569) = 956.32, p < .001, R^2_{adj.} = .63, \beta = .79, t = 30.92$.

Time spent single

Testing the effect of our measurements on time spent single, we predicted that the PRQ commitment and intimacy component should predict spending less time as single and the exclusivity component should predict more time as single. A bivariate regression analysis revealed that time spent single was significantly predicted by age $F(1, 214) = 6.25, p = .013$,

$R^2_{adj} = .02$, so all subsequent regression analyses were controlled for age. A stepwise multiple regression analyses with time as single as dependent variable and SOI-R, LTMO-MSOI, RPQ, and RPQ component as predictors revealed that the commitment and the exclusivity component was significantly associated with the dependent variable, but in opposite directions. The inclusion of the RPQ components increased the variance explained from 5 to 13%. Checking for interaction effects we found that the LTMO-MSOI ($t = -2.26, p = .025$) (M: $r = -.34, p = .003$, W: $r = -.02, p = .837$) and the commitment component ($t = -2.72, p = .007$) (M: $r = -.45, p < .001$, W: $r = -.11, p = .206$) significantly interacted with sex. All other predictors showed non-significant interactions ($p > .3$) (Table 5).

Table 5

Results of multiple regression analyses of time spent single

Model		<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	$adjR^2$
1. Overall model					3.48	(2, 213)	.033	.02
	SOI-R	-0.85	.397	-.06				
2. Overall model					4.54	(3, 212)	.004	.05
	SOI-R	-1.46	.146	-.10				
	LTMO-MSOI	-2.54	.012	-.18				
3. Overall model					4.09	(4, 211)	.003	.05
	SOI-R	-1.93	.055	-.14				
	LTMO-MSOI	-1.13	.258	-.10				
	RPQ	-1.63	.105	-.15				
4. Overall model					6.08	(6, 206)	< .001	.13
	SOI-R	0.13	.897	.10				
	LTMO-MSOI	0.12	.908	.01				
	Commitment	-4.29	< .000	-.44				
	Exclusivity	2.60	.010	.25				
	Intimacy	0.78	.434	-.05				

Note. $N = 214$, LMTO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-R Total score (Penke & Asendorpf, 2008).

All models were controlled for age $F(1.214) = 6.25, p = .013, R^2_{adj} = .02, \beta = .17, t = 2.50, p = .013$

Number of long-term committed relationships

Investigating the number of committed relationships we expected that the commitment component and the intimacy component should be associated with a higher number of

committed relationships, while the exclusivity component should be negatively associated with a higher number of committed relationships controlled for the other predictors. The number of long-term committed relationships was highly associated with age, $F(1, 604) = 123.02, p < .001, R^2_{adj} = .17, \beta = .41, t = 11.09, p < .001$, so all subsequent models was controlled for this effect. There was no significant association between sex and the number of long-term committed relationships. A stepwise multiple regression model including SOI-R, LTMO-MSOI, RPQ global score, and the RPQ components (Table 6). The model showed that the commitment component and sociosexuality (SOI-R) positively predicted an increased number of committed relationships controlled for the other variables and age. Exclusivity and the LTMO-MSOI had a negative effect, being significantly associated with fewer committed relationships controlled for the other variables. There were no significant interaction effects by sex.

Table 6

Results of multiple regression analyses of the number of committed relationships

Model	<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	R^2_{adj}
1. Overall model				68.72	(2, 603)	< .001	.18
SOI-R	3.49	.001	.12				
2. Overall model				46.03	(3, 602)	< .001	.18
SOI-R	3.58	< .001	.13				
LTMO-MSOI	0.84	.402	.03				
3. Overall model				37.06	(4, 601)	< .001	.19
SOI-R	4.50	< .001	.19				
LTMO-MSOI	-0.83	.408	-.04				
RPQ	2.91	.004	.15				
4. Overall model				28.61	(6, 595)	< .001	.22
SOI-R	2.14	.033	.10				
LTMO-MSOI	-1.97	.050	-.09				
Commitment	4.55	< .001	.25				
Exclusivity	-2.42	.016	-.12				
Intimacy	0.45	.653	.02				

N = 604, LMTO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-R Total score (Penke & Asendorpf, 2008).

All models were controlled for age $F(1.604) = 123.02, p < .001, R^2_{adj} = .17, \beta = .41, t = 11.09, p < .001$

Infidelity

Investigating infidelity, we expected that the exclusivity component should show a particularly strong negative association. We further expected that the intimacy component should be negatively associated with infidelity while the commitment should show the weakest association with infidelity controlled for the other predictors. Checking for an effect of age on infidelity showed significant results, where age was positively associated with higher levels of infidelity, $F(1, 604) = 114.43, p < .001, R^2_{adj} = .16, \beta = .40, t = 10.70$. Sex did not significantly affect infidelity, so the following regression models were controlled only for age. A stepwise multiple regression model, including SOI-R, LTMO-MSOI, RPQ global score, and its components supported our overall predictions, indicating that our new measurement's inclusion significantly improved upon the model (Table 7). The final stepwise regression, including all measurements, indicated that only the exclusivity component explained significant variation in previous infidelity behavior controlled for all other predictors and age. There were no significant interaction effects. Fitting our prediction, infidelity seems best predicted by low exclusivity levels, and not low levels of desires towards committed relationships (MSOI) or high desires toward uncommitted mating (SOI-R).

Table 7

Results of multiple regression analyses of infidelity

Model		<i>t</i>	<i>p</i>	β	<i>F</i>	<i>df</i>	<i>p</i>	R^2_{adj}
1. Overall model					99.42	(2, 603)	< .001	.24
	SOI-R	8.43	< .001	.30				
2. Overall model					66.27	(3, 602)	< .001	.24
	SOI-R	8.22	< .001	.30				
	LTMO-MSOI	0.43	.633	.07				
3. Overall model					56.31	(4, 601)	< .001	.27
	SOI-R	5.62	< .001	.23				
	LTMO-MSOI	2.79	.005	.12				
	RPQ	-4.48	< .001	-.21				
4. Overall model					55.82	(6, 595)	< .001	.35
	SOI-R	1.15	.249	.04				
	LTMO-MSOI	1.92	.055	.08				
	Commitment	1.04	.297	.05				
	Exclusivity	-9.89	< .001	-.47				

Intimacy 1.66 .098 .06

N = 604, LMTO-MSOI: Long-Term Mating Orientation – Multidimensional Sociosexuality orientation inventory (Jackson & Kirkpatrick, 2007), SOI-R Total score (Penke & Asendorpf, 2008). All models were controlled for age $F(1.604) = 114.43, p < .001, R^2_{adj} = .16, \beta = .40, t = 10.70, p < .001$

Discussion

Testing our first hypothesis, the theoretically hypothesized three-factor solution of our Romantic Preference Questionnaire (RPQ) consisting of commitment, exclusivity, and intimacy appeared through a principal factor analysis with varimax rotation. The three components were further supported through a confirmatory factor analysis, revealing that the three-component solution fit our data better than a global score consisting of all items. This supported our initial contention that long-term mating psychology is not a unitary construct but consists of at least three separate underlying components. The predicted sex differences of the RPQ components were generally supported, finding strong overall desire and a small sex difference in the commitment component. The exclusivity component contained a considerably larger sex difference where men were less interested in exclusivity than women. The largest overall sex difference was found in the intimacy component, suggesting that men were considerably less interested in intimacy than women. The three components also exhibited different relationships with established measurements. The commitment component and the intimacy component were more strongly associated with the LTMO-MSOI than the SOI-R, and the overall correlations were weaker for the intimacy component than the commitment component. The pattern was the opposite for the exclusivity component, showing stronger correlation with the SOI-R than the LTMO-MSOI. Therefore, the three components exhibited distinct characteristics, supporting our first hypothesis that long-term mating psychology contains three distinct components. This further implies that measuring long-term mating psychology solely through long-term desires, as with the LTMO-MSOI, will result in a less nuanced understanding of human mating psychology.

Relationship between long-term and short-term mating measurements

The findings in this study further support the assumption that long-term and short-term mating strategies are two distinct dimensions. The desires for long-term mating was strong for both men and women, supporting the argument that long-term mating is a fundamental human mating strategy (Buss & Schmitt, 1993; Fletcher et al., 2015). However, the sex-difference in short-term desires was considerably higher, showing that the sexes differed more in their desire to engage in short-term mating than long-term mating. Further, the commitment

component and the LTMO-MSOI were weakly to non-significantly associated with short-term behavior (SOI-R Behavior), implying that higher degrees of long-term desires do not necessarily reduce the tendencies for short-term mating behavior. These findings replicate and support the argument proposed by Jackson & Kirkpatrick (2007), stating that conceptualizing human mating strategies along a single bipolar continuum conflates two distinct dimensions and leads to misinterpretation of between-sex and within-sex variation.

Our findings further reflected that the components of the RPQ showed individual patterns concerning the SOI-R and the LTMO-MSOI. The commitment and the intimacy component were more associated with the LTMO-MSOI than the SOI-R, while the opposite was true for the exclusivity component. This was particularly true for men, reflecting their overall tendency to pursue both long-term and short-term strategies. These findings showed that the components of the RPQ were distinctly associated with different aspects of mating psychology. The use of the LTMO-MSOI as an overall measurement of long-term committed mating psychology might therefore be problematic, given that desire for committed relationships, exclusivity, and intimacy are all important aspects of long-term relationships (Buss & Schmitt, 1993; Eastwick et al., 2018; Jackson & Kirkpatrick, 2007; Rusbult et al., 1998). These findings supported our second hypothesis and underlined the importance of measuring human mating behavior through both long-term and short-term measurements.

The value of a multi-component measurement of long-term mating

While the LTMO-MSOI has been used in multiple studies (Holtzman & Strube, 2013; Jackson & Kirkpatrick, 2007; Lukaszewski et al., 2014; Strouts et al., 2017), it has previously not been validated by actual long-term mating relevant behavioral outcomes. The tests performed in this study provide novel findings connecting measurements of individual variations in long-term mating psychology with long-term mating behavioral outcomes. Testing the predictive validity of the RPQ components, we found that the inclusion of the commitment and exclusivity component, but not the intimacy component, significantly improved the predictive models in four of our five outcome variables.

Relationship duration was the only outcome variable where the RPQ components' inclusion did not significantly improve the model over the effect explained by the SOI-R and the LTMO-MSOI. This was also the only outcome variable where the RPQ commitment component's inclusion did not control for the effect of the LTMO-MSOI. Overall, relationship duration was positively associated with the LTMO-MSOI and negatively associated the SOI-R, confirming that relationship duration was best understood through a multidimensional

model of mating. However, the predictive effects of the measurements were minuscule over the effect of age. The SOI-R was also the best predictor of relationship status, being negatively associated with being partnered. The commitment and the exclusivity component were also significantly associated with relationship status. However, their effects were in opposite directions. Higher levels of commitment desire increased the probability of being partnered, while stronger exclusivity desire were associated with a decreased probability of being partnered. The inverse relationship between the commitment and exclusivity component was further present in the model predicting time as single and the number of committed relationships. Spending more time as single was negatively associated with the commitment component while positively associated with exclusivity. Neither the SOI-R, LTMO-MSOI or the intimacy component was significantly associated with time spent single. A similar pattern was associated with the number of committed relationships, where stronger commitment desires were associated with having a higher number of committed relationships, while higher exclusivity levels were negatively associated with the number of committed relationships. The SOI-R was also positively associated with a higher number of committed relationships, while the LTMO-MSOI was slightly negatively associated with a higher number of committed relationships. The degree of the previous infidelity was solely explained by the exclusivity component when controlled for the other predictors, showing that infidelity is not necessarily the result of the desire for short-term mating, but the result of utilizing both long-term and short-term strategies at the same time. Therefore, our third hypothesis was supported, showing that a multi-component measurement assessing separate features of long-term relationships in addition to measurements of short-term mating allows for a more nuanced understanding of human mating psychology.

General discussion

Interestingly, both the SOI-R and the commitment component positively predicted a higher number of committed relationships. Considering that the short-term vs. long-term nature of romantic relationships is usually uncertain in its early phases (Eastwick, 2018), both long-term and short-term mating desires might motivate the individual towards relationship initiation. The fact that a more unrestricted sociosexuality is associated with having sex earlier in a relationship (Simpson & Gangestad, 1991), and that sex is an essential factor in establishing relationships (Eastwick et al., 2018), might further support the notion that both long-term and short-term desires are contributing factors in relationship initiation. The low correlation between long-term desires and short-term desires found in this study, and the fact

that long-term desires and not sociosexuality were associated with time as single, further supports the argument that people initiate long-term relationships independent of their desire for uncommitted sex. But while short-term and long-term mating desires might have similar relationship initiation functions, desires towards long-term and short-term mating seemed to have different effects over time. Considering the uncertain nature of new relationships (Eastwick et al., 2018), stronger long-term mating desires might motivate the individual to turn these relationships into long-term ones and further motivate relationship maintenance, resulting in longer durations. Higher levels of sociosexuality, however, are associated with traits such as higher sensitivity to alternate mates, overperception of the sexual interest from opposite-sex others, and more flirting (Howell et al., 2012; Kohl & Robertson, 2014; Penke & Asendorpf, 2008), and might affect the stability and duration of these relationships. This further implies that both short-term and long-term mating aspects are important when investigating long-term behavior, given that they both seem to predict relationship initiation but might differently affect the overall trajectory.

These findings reflect that human mating psychology contains a certain degree of flexibility, letting individuals pursue both long-term and short-term mating strategies. Sexual Strategies Theory (Buss & Schmitt, 1993) argues that this allows individuals to adapt to their current situation, pursuing short-term relationships with some partners and long-term relationships with others. Containing both long-term and short-term mating desires might, therefore, let the individual evaluate the specific relationship's costs and benefits and pursue the relationship type they currently deem most beneficial. Both long-term and short-term desires seem to motivate relationship initiation, and this clearly illustrates that constricting these two mating strategies as inversely related would conflate two distinct aspects of human mating psychology. This underlines the importance of conceptualizing human mating as multidimensional and investigating long-term and short-term mating desires through separate measurements.

Contrary to the SOI-R and the measurements of long-term mating desires (LTMO-MSOI and RPQ commitment), higher levels of exclusivity seemed to function restrictively on mating initiation. The exclusivity component was strongly negatively associated with sociosexuality, illustrating that the higher exclusivity levels restrict short-term mating. More importantly, the exclusivity component also seemed to restrict the expression of long-term mating behavior, resulting in a higher probability of being single, spending more time as single, and having fewer committed relationships. Considering the uncertain nature of new relationships (Eastwick et al., 2018), higher exclusivity levels might function as a protective

mechanism against investing in uncertain relationships that are less likely to turn into long-term committed relationships, resulting in fewer relationships and spending more time as single. In the same way, higher exclusivity levels were the strongest predictor for not engaging in infidelity, supporting exclusivity's predicted function as a mechanism ensuring investment towards one relationship at the time. The high sex difference in this trait seems to reflect the potential reproductive costs of failed relationships, where the investment towards an uncertain relationship should be more costly for women than for men considering the divergent costs of reproduction (Trivers, 1972). Therefore, the exclusivity component seemed to capture unique variation in mating behavior, restricting overall relationship initiation and the degree of simultaneous use of long-term and short-term strategies. This effect was particularly apparent in the infidelity outcome, suggesting that the level of exclusivity was a better predictor for infidelity than the desire for uncommitted sex. Therefore, the exclusivity component seems to be sensitive to individual variation towards being long-term exclusive vs. long-term non-exclusive that the LTMO-MSOI, RPQ commitment component or the SOI-R were able to detect, making it an important contribution to the research of long-term mating psychology and behavior.

Intimacy

The intimacy component was intended to measure individual variation in preferences towards traits known to facilitate pair-bonding and relationship satisfaction. The intimacy component was strongly associated with the commitment component for both men and women, suggesting that the desire for a long-term relationship and emotional intimacy often occurred together. However, the intimacy component did not significantly explain variation in any outcome variables when controlled for the other predictors. This might suggest that the commitment component better measured the predicted function of the intimacy component. The fact that the commitment component predicted relationship status, longer relationships, and less time as single supports this notion. Multiple studies have shown that intimacy is a central feature of long-term committed relationships (Eastwick et al., 2018; Rusbult et al., 1998), so conceptualizing intimacy as a feature of long-term relationships more than an individual difference trait might explain why it was positively associated with long-term mating measurements, but lacked any predictive validity itself. This notion was argued by Rusbult et al. (1998), who found that while intimacy was an essential factor for the interdependent structure of relationships, it had no associations with personal dispositions. This study only included outcome variables relating to the individual's history of long-term

committed behavior, so the component might be more relevant in studies investigating the dyadic aspects of long-term relationships such as relationship satisfaction or relationship conflict. In similar studies to this one however, the intimacy component seems to be less relevant and might be removed.

Implications and future research

The findings in this study have two main implications. Firstly, our findings support and strengthen the conceptualization of human sexuality as multidimensional, as the independent nature of long-term and short-term mating was continuously illustrated throughout the study. We found high overall desires for long-term committed relationships for practically all participants, medium-low to non-significant correlations between the measurements of long-term and short-term mating desires, and that short-term mating desires, long-term mating desires, and exclusivity was all essential aspects of understanding long-term mating behavior. These findings support the argument that long-term mating functions as a fundamental reproductive strategy for both sexes and that the substantial strategic variation is in the desire and pursuit of short-term mating (Buss & Schmitt, 1993; Fisher, 1989; Gangestad & Simpson, 2000). These findings, therefore, underline the importance of applying the SOI-R in line with its original conceptualization and not as a unidimensional measurement conflating short-term and long-term mating psychology along a single continuum. Consequently, it is essential to apply the specific measurement to investigate the specific mating strategy. Secondly, long-term committed psychology appears to contain at least two underlying components individually explaining distinct aspects of the mating strategy. Therefore, utilizing a unitary construct of long-term committed mating such as the LTMO-MSOI (Jackson & Kirkpatrick, 2007) will not be sensitive to the individual component's unique contribution and result in a less nuanced understanding of human mating psychology.

While the commitment and the exclusivity component revealed essential aspects of long-term committed mating, they should both be further developed. The exclusivity component should be further investigated and developed in order to differentiate what type of extra-relational values the component measures. This would be useful in the case of infidelity, where infidelity sometimes seems to be a mate-switching tactic (Buss et al., 2017) leading to a new long-term committed relationship, but in other cases seems to be motivated by a desire for uncommitted sex (Gangestad & Simpson, 2000; Gangestad & Thornhill, 1997). Further understanding the distinct relationship between exclusivity and these two aspects of extra-relational interest might be a promising avenue for further research. The commitment

component should also be further developed. While the LTMO-MSOI contains items solely directed at the desire for long-term relationships, the RPQ commitment component attempted to measure desires towards specific features of long-term committed relationships to capture more overall variation. While the commitment component, in most cases, controlled for the effect of the LTMO-MSOI, the two measurements seem to contain some degree of variation between them. Future research should further develop these measurements, combining the best items from each measurement to create an overall better measurement of long-term mating desires. While the intimacy component was unsuccessful towards predicting specific long-term behavioral outcomes, the importance of intimacy in long-term relationships is well established (Moore et al., 1998; Rubin & Campbell, 2012; Rusbult et al., 1998). Therefore, while the intimacy component might not be a significant predictor for overarching behavioral outcomes, it might be better fitted to investigate the dyadic aspects of long-term relationships such as relationship satisfaction or relationship conflict.

Given that this study's focus was long-term mating psychology, we choose to use only the SOI-R total score to measure short-term mating psychology to avoid a higher number of predictors and potential suppressor effects (Michael Olusegun, 2015). However, the three components measure distinct aspects of short-term mating (Penke & Asendorpf, 2008) and should be further investigated in relation to long-term mating. More nuanced investigations between the exclusivity component and SOI-R desire component might be especially relevant considering the tendency for the desire component to decrease with relationship status (Penke & Asendorpf, 2008). The interaction between exclusivity and to what degree this suppression effect takes place might be a promising area for future research.

Lastly, while both the commitment and the exclusivity component contained above threshold alpha values, predictive validity, and reliability, both components contained below threshold values for convergent validity (AVE) and for improving upon the baseline model (TLI). Future research should further develop the components in order to rectify these problems.

Limitations

Because of this study's cross-sectional design, we can not draw conclusions regarding the directionality of causal effects. For instance, we cannot decisively know if partnered individuals are more interested in long-term committed relationships because they are currently partnered or are partnered because they desire long-term committed relationships. Studies usually find such an interaction effect when investigating sociosexuality, where an

individual's desire for uncommitted mating is reduced as they become partnered and committed (Penke & Asendorpf, 2008). A similar effect might be present in the RPQ components.

Our cross-sectional design and investigation of the intercorrelations between attitudes and behaviors make this study especially vulnerable to Common Method Variance (Lindell & Whitney, 2001), which might have resulted in inflated correlations due to a systemic error variance introduced by the research method. Given that our participant answered questions regarding attitudes towards committed and uncommitted mating while also reporting past committed and uncommitted behavior might have introduced some error in the correlation between them (Tourangeau et al., 2000).

Another source of uncertainty in this study is due to the convenience/snowball sampling method. The questionnaire was mainly shared online on personal accounts reaching friend groups that most likely share similar views on sexual liberalism. This effect might have been amplified because volunteers in sexual research have, on average, more positive sexual attitudes and sexual experience (Dawson et al., 2019; Wiederman, 1997). This might have caused our sample to contain less restrictive sociosexuality and more sexual experience than the average population. Therefore, the unrelated nature of the long-term and short-term mating found in this study might not accurately represent the general population, especially if the general population is less sexually liberal than the current sample. Even though our sample was quite diverse in terms of students vs. non-students and age, all participants were Norwegian. Norwegian culture is generally egalitarian, secular, and sexually liberal culture (Bendixen et al., 2017) even for western countries. This might contribute to why our sample exhibited a weaker inverse relationship between short-term and long-term mating desires compared to similar studies in American and Indian samples (Holtzman & Strube, 2013; Jackson & Kirkpatrick, 2007). Generalizing these findings outside western cultures and "WEIRD" populations (Henrich et al., 2010) are therefore important.

Conclusion

Most people both want and experience multiple romantic relationships varying in commitment, investment, and exclusivity throughout their life. While the effect of individual differences in short-term mating is well understood, contemporary mating measurements have been limited in their ability to measure individual variation in long-term mating psychology. This study developed the Romantic Preference Questionnaire, a multi-component measurement of long-term mating psychology based on the adaptive challenges thought to

underlie long-term committed relationships. The measurement resulted in a novel investigation of the associations between individual variation in long-term mating psychology and long-term mating behavior and validated two of our three predicted components against long-term relevant behavioral outcomes. The commitment component and the exclusivity component provided novel insight into long-term mating's underlying factors resulting in two main findings. Firstly, short-term mating psychology, as measured through the SOI-R (Penke & Asendorpf, 2008), provides limited information regarding long-term mating behavior, and underlines the importance of understanding short-term mating and long-term mating as independent mating strategies. Secondly, long-term mating psychology contains at least two distinct components. The commitment component reflected general motivations towards long-term mating while the exclusivity component measured the exclusive use for long-term mating strategies. These components provide a new way of measuring long-term mating psychology and illustrate that human sexual behavior is best understood through the interactions of multiple distinct psychological factors.

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Appendix 1

Factor loading of the 22 RPQ items (Including intimacy items)			
Item	Intimacy	Commitment	Exclusivity
1. I want to share my private thoughts, feelings and problems with my partner	0.83	0.16	0.05
2. I want my partner to share his/her private thoughts, feelings and problems with me	0.84	0.14	0.07
3. I need a partner who want to listen to my private thoughts, feelings and problems	0.80	0.09	0.05
4. When my partner share his/her private thoughts, feelings and problems I am genuinely interested	0.52	0.15	0.16
5. I have a desire to tell my partner about my experiences, even if they embarrassing, sad or shameful	0.69	0.07	0.06
6. I have a strong desire to feel very emotionally close to my partner	0.61	0.17	0.02
7. It is important for me that my partner consult me for emotional support	0.53	0.22	0.02
8. I like to be in a relationship that demands commitment and investment	0.24	0.71	0.17
9. I like the stability, safety and commitment I can get in a long-term relationship	0.25	0.67	0.21
10. It is important to me that my partner and I can imagine a future together	0.28	0.42	0.16
11. I get very invested in my romantic relationship/s	0.33	0.44	0.12
12. I gladly give up the freedom and opportunities of being single to get the benefits of a long-term relationship	0.12	0.63	0.17
13. I need commitment from my partner and myself to be happy in a relationship	0.39	0.43	0.23
14. I am willing to spend a lot of time and energy to make a relationship work	0.29	0.46	0.09
15. I feel satisfied with few but very close relationships	0.21	0.40	0.20
16. I like the thought of having one partner the rest of my life	0.15	0.42	0.49
17. I experience to be attracted to others than my partner quite often (<i>Reversed</i>)	0.06	0.07	0.58
18. I can imagine myself being in an open relationship (<i>Reversed</i>)	0.10	0.20	0.67
19. I am interested in having multiple sexual partners throughout my life (<i>Reversed</i>)	0.09	0.22	0.65
20. I flirt with other people than my partner (<i>Reversed</i>)	-0.01	0.08	0.51
21. I could imagine having multiple sexual relationship at the same time (<i>Reversed</i>)	0.05	0.14	0.74
22. I enjoy having sex with a new person (<i>Reversed</i>)	0.13	0.11	0.52

N = 606 (423 females, 183 males). All questions were scaled over 6 alternatives stretching from "strongly disagree" to "strongly agree".

