Beyond The Bedroom: Understanding The Ways in Which Sexual Arousal and Desire Shape Our Wellbeing and Romantic Relationships

Chloe Angel Tasker

A thesis submitted for the degree of PhD in Psychology

Department of Psychology

University of Essex

November 2025

Table of Contents

List of Tables

List of Figures

Acknowledgements

I am so lucky to have had an amazing support system around me throughout the journey, and there is an almost endless list of people I want to thank. Firstly, a huge thank you to my supervisor Dr Veronica Lamarche. I am so fortunate to have become your student in my second year, and I'm eternally grateful for your support, wisdom, and mentorship. You have taught me so much and have helped shape my identity as a researcher for the better. Thank you for challenging me, and pushing me when I needed it, but thank you also for your kindness. Thank you to my second supervisor Dr Helge Gillmeister for your support and kindness throughout the entire journey. Special thanks to Dr Gerulf Rieger, for without your support I would have never even considered applying for a PhD. Thank you for introducing me to the world of sexuality psychology and helping me secure funding.

Thank you to the many people supporting me and guiding me at the University of Essex. A big thank you to Karen, Trudi, and Rick for always supporting me and allowing me to share my problems. Special thanks to the tech team who were crucial during data collection – you always came to help when I needed it most! To my many RAs throughout the years – Barbara, Yasminne, Megan, Nikita, Bradley, Tiara, Charlie, Salma, Angela, Jack, Jade, Paola, Razia, and Jasmine. Each of you has helped shape this thesis in some way and I cannot thank you enough. Additional thanks to Guyan, Ola, and Isaac for helping with data collection. To the friends I've made within the PGR community, I am so grateful to you all for cheering me on. It is so heartwarming to come to the office every day and see you all, and I'm going to miss being in the office (I'll only be a few doors down though – don't worry!). Most importantly, thank you to my close friends Övgün Ses and Paige Leggett. Övgün – thank you for all of the emotional support, for being my collaborator, and my close friend. Chapter 4 wouldn't exist without you! Paige – thank you for always listening to me, being there for me, and collecting data with me. Chapter 5 wouldn't exist without you!

A huge thank you to SeNSS DTP for funding this research. Not only are you the reason why this was possible in the first place, but it was a pleasure to be a part of the SeNSS community. Special thanks to Felicity and Rach for their support whenever it was needed, whether it was financial, practical, or just to have a good old chat! Thank you to the wonderful SeNSS Student Committee, in particular Lily, Rea, and Sonali, who have been wonderful friends. You each inspire me so much. A shoutout to the PhD Instagram community who always motivate, celebrate with me, and commiserate with me. I never thought I would find so much strength in sharing my journey with others online. A further thanks to all my wonderful participants, without whom none of this would have been possible.

To my family, thank you for always cheering me on, even if you're never exactly sure what I'm doing! You've always motivated me to go for my dreams and supported me every step of the way. To my younger siblings – I miss you every day I'm not around! Thanks for your patience and understanding whilst I'm away. I love you all so much!

To my best friends, Josie, Kyra, and Charlotte, thank you so much for listening to my 'waffles' and encouraging me throughout this journey. I love you all so much - we've come a long way since those pink school uniforms!

Finally, but most importantly, thank you to my wonderful partner Alex. Meeting you on my first day at Essex changed my life for the better. You have been here every step of the journey. From my first lecture in undergrad, to the moment I submitted my thesis, you've been cheering me on, reading my work, correcting my typos, listening to all of my rambles about research, taking care of me, and always making sure I drink enough water! You show me kindness and gentleness that I never thought was possible. You make me the best version of myself. Thank you.

Thesis Abstract

As engaging in good sex frequently has positive benefits for our sexual wellbeing, our romantic relationships, and our lives as a whole, it is highly important to understand what might impact our sex lives. The present thesis offers a novel exploration into how sexual arousal, the physiological response to sexual stimuli, and desire, the psychological/ motivational response to sexual stimuli, can impact our wellbeing and romantic relationships beyond the bedroom. In Study 1, we demonstrated how sexual arousal and desire work in conjunction with other facets of sexual activation to influence sexual, relational, and personal wellbeing. Across Studies 2-5, we demonstrated how alignment between arousal and desire at high levels is important for sexual and relationship satisfaction. Additionally, we demonstrated that on days when arousal-desire alignment is greater than usual, this leads to greater than usual sexual satisfaction (Study 4). Moreover, women's greater arousal-desire alignment had positive impacts on their male partner's relationship satisfaction (Study 5). Those with greater alignment on average, also reported engaging in sexual intimacy more frequently (Study 4). Finally, we found that a person's beliefs about what makes a sexual relationship satisfying might change how important arousal-desire alignment is to their sexual satisfaction (Study 4). This thesis offers potential practical implications with suggestions for future research and interventions that could help people bolster the benefits that we gain from having good sex in our relationships. Moreover, it demonstrates the value that can be added to research by taking the theoretical position that arousal and desire are separate concepts, and by integrating concepts, theories, and methodologies from the fields of relationship and sexuality psychology.

Chapter 1 - General Introduction

Overview of Literature

Despite the importance of sex within romantic relationships (Birnbaum et al., 2006; Diamond & Huebner, 2012; Muise, Kim, et al., 2016), and sex being what typically distinguishes romantic relationships from aromantic ones (Connolly et al., 1999; McKeever, 2016), the two psychological fields of sexuality and relationships have remained remarkably distinct. In 2018, a review by Muise et al. highlighted the importance of bringing together the theories, methods, and research of the two previously distinct research areas. Importantly, relationship science as a field is highly theory-driven (Finkel et al., 2017), whereas sexuality research tends to lack theoretical support (Weis, 2002), primarily due to its interdisciplinary nature (Muise et al., 2018). The research presented in this thesis draws on theoretical contributions from both the fields of relationship and sexuality psychology, and is only possible due to integrating concepts from both fields. Across the present thesis, the terms 'sex' and 'sexual intimacy' are frequently used. An important note to highlight is that when such a term is used, it is referring to sexual activities with a partner, including oral, vaginal, and anal sex (i.e. not including forms of solo sex such as solo masturbation).

Sexual arousal is the physiological or bodily response to sexual stimulus (Pfaus et al., 2003; Toledano & Pfaus, 2006), whereas sexual desire is our psychological motivation to have sex (Laan & Both, 2008; Levine, 2003; Pfaus et al., 2003; Regan & Berscheid, 1999). As good and frequent sex has positive benefits for our romantic relationships (e.g., Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Fallis et al., 2016; Frederick et al., 2017; Henderson-King & Veroff, 1994; Litzinger & Gordon, 2005; McNulty et al., 2016; Muise, Schimmack, et al., 2016), and our lives as a whole (e.g., Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Chernyavska et al., 2022; Davison et al., 2009; Flynn et al., 2016; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017), it is highly important to understand what might impact our sex lives. Arousal and desire both play integral roles in

preparing us and motivating us to engage in sexual intimacy (Levine, 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006), and are both independently important in driving satisfaction and wellbeing within the relationship (Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022; Regan, 2000). However, research has rarely examined whether the associations between arousal and desire are additionally important to these outcomes. Alignment, or misalignment, between arousal and desire may have important implications beyond the impacts of arousal and desire individually. When aligned, the coherence between mind and body states might allow a person to feel more certain of their interpretation of a sexual situation (Biddell et al., 2024; Brown et al., 2020), but misalignment may cause a sense of dissonance due to their mind and body being out of sync (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003). This might impact how positively people feel about their sexual relationship and how frequently they engage in sex, which might further be projected onto their feelings about the wider relationship. The aim of the present thesis is to understand people's experiences of the alignment between their arousal and desire, and what implications it has for the person, and their romantic relationship.

The present chapter will detail the importance of sexual arousal and sexual desire beyond the bedroom, in shaping our romantic relationships and our lives as a whole. Importantly, it will detail the reasons why the alignment between arousal and desire has rarely been examined, and present rationale as for why understanding experiences with (mis)alignment between arousal and desire is essential to further research on sexual health and wellbeing in relationships. Then, it will discuss the potential importance of alignment between arousal and desire for people's wellbeing, and their relationships with romantic partners. Finally, I will detail the studies conducted as part of this research project, and the rationale behind them.

The Benefits of Good and Frequent Sexual Intimacy

Despite its importance to our wellbeing, sex research still tends to focus on the risks and negatives that may occur from engaging in sex (i.e., sexual assault, sexually transmitted infections; Diamond & Huebner, 2012). However, a shift has begun towards focusing on the benefits people can gain from engaging in good sex. Not only does sex provide the potential to create human life, it can fulfill social and personal needs and benefit our lives positively in many ways (Satcher, 2001). Sex enables us to build intimacy and foster closeness within our romantic relationships (Debrot et al., 2017; Meltzer et al., 2017; Satcher, 2001), and facilitates pair bonding through the activations of dopamine and oxytocin (Acevedo et al., 2019; Birnbaum & Finkel, 2015; Meltzer et al., 2017; Meston & Buss, 2007; Young & Wang, 2004). It has a range of positive health outcomes, including satisfaction with mental health, better metabolism, improved cardiovascular health, and a longer life expectancy (for a review, see Brody, 2010). Such benefits of sex for our relationships, and our wellbeing overall, have been identified in relationship research. The following paragraphs detail the ways in which sex has been determined as beneficial to our romantic relationships, beyond just being a means to reproduce.

Research suggests that people experience the most benefits from sex when it is both frequent and satisfying. People who have more frequent sex with a romantic partner report greater satisfaction with their sex lives and their romantic relationships (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016). These benefits also extend to overall happiness and satisfaction with life (Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017). However, it is important to note that the benefits of frequent sex tend to plateau at a frequency of once per week (Loewenstein et al., 2015; Muise, Schimmack, et al., 2016), which also coincides with the average sexual

frequency of couples in established relationships (Blanchflower & Oswald, 2004; Call et al., 1995). Importantly, sex is most satisfying when the frequency of sex aligns with a person's ideal sexual frequency, and this in turn boosts relationship satisfaction (Santtila et al., 2007). This is likely because the sexual needs of the person are being met, reducing sexual frustration and fostering feelings of closeness within the relationship.

Above and beyond having frequent sex, it is additionally important to be having satisfying (i.e., "good") sex (Schmiedeberg et al., 2017; Schoenfeld et al., 2017). Being satisfied with one's sex life is associated with greater satisfaction within the romantic relationship (Fallis et al., 2016; Henderson-King & Veroff, 1994; Litzinger & Gordon, 2005; McNulty et al., 2016). Moreover, sexual satisfaction is associated with satisfaction with life overall (Schmiedeberg et al., 2017; Stephenson & Meston, 2015a), a greater quality of life (Flynn et al., 2016), happiness (Kahneman et al., 2004), and greater psychological wellbeing (Chernyavska et al., 2022; Davison et al., 2009). These associations may have indirect effects due to the association between sexual and relationship satisfaction, but it has also been theorized that satisfying sex may help to regulate negative emotions (Diamond & Huebner, 2012; Stephenson & Meston, 2015a). However, it is important to note that sexual satisfaction can dwindle over the course of a romantic relationship (Edwards & Booth, 1994; Liu, 2003; McNulty & Widman, 2013), with declines beginning at approximately a year into the relationship (Schmiedeberg & Schröder, 2016). This can have negative consequences as couples experiencing declines in sexual satisfaction are more likely to dissolve the relationship (Sprecher, 2002). Additionally, many studies find that sexual satisfaction can fluctuate day-to-day (for a review, see Velten et al., 2025). This might be associated with daily fluctuations seen in relationship satisfaction (Arriaga, 2001), and such fluctuations are related to depressive symptoms, decreased life satisfaction, increased psychological distress, lower commitment to the relationship, and increased likelihood of dissolving the relationship,

even after controlling for relationship satisfaction as a whole (Arriaga, 2001; Whitton et al., 2014; Whitton & Whisman, 2010).

Theories underpinning the maintenance of long-term relationships provide insights into why the quality of a couple's sex life can influence their evaluations of their relationship more broadly. Such theories highlight that close relationships are sustained through processes that promote intimacy, bonding, and mutual rewards. For example, social exchange theories propose that satisfaction within a relationship depends on the balance of costs and rewards within the relationship (Rusbult, 1983; Thibault & Kelley, 1978). Positive sexual experiences with partner can be perceived as a reward depending on the reasons why a person has chosen to engage in sex. As demonstrated by Meston & Buss (2007), people engage in sex for a multitude of reasons, many of which relate to perceived benefits including pleasure, stress reduction, and to boost self-esteem. As commitment to the relationship also depends on the quality of potential alternative partners (Investment Model; Rusbult et al., 1998), being able to meet the sexual needs of a romantic partner means the partner will be less likely to find an alternative partner than can better meet their needs. Indeed, theories of communal motivation highlight that the extent to which people are motivated to be responsive to their partner's sexual needs is associated with greater commitment to, and satisfaction with their romantic relationship (Muise & Impett, 2015; Muise & Impett, 2016; Muise et al., 2013). Therefore, sex is beneficial in maintaining the relationship both by increasing commitment through perceived benefits gained from sex, and decreasing the likelihood of the romantic partner leaving the relationship to have sexual needs met elsewhere.

Another relevant theoretical framework to consider is approach-avoidance motivational theory (Gable, 2006). Such theories suggest that engaging in approach sexual goals, which involve engaging in sex to obtain positive outcomes such as pleasure, greater intimacy in the relationship, or to deepen the relationship, are associated with better

relationship outcomes than engaging in sex for avoidance sexual goals, which involve pursing sex to avoid negative outcomes, such as conflict or rejection (Gable, 2006; Gable & Impett, 2012). People feel more positively, and both themselves and their partners report greater sexual and relationship satisfaction, when engaging in sex for approach reasons such as to increase intimacy or express love for their partner (Impett et al., 2005, 2010; Muise et al., 2013). On the other hand, engaging in sex for avoidance motives has been recognized as detrimental to satisfaction and to the maintenance of relationships over time. These findings suggest that the motivations underlying why a person is engaging in sexual activity is important for determining whether sex enhances relationship wellbeing, or not. People who are motivated by approach goals are more likely to sustain high levels of sexual desire for their partner, whereas when people engage in sex for avoidance goals they feel lower sexual desire, and so does their partner (Impett et al., 2008; Muise et al., 2013). Therefore, experiencing high levels of desire may reflect approach-oriented motivations towards sex.

Clearly, having both frequent and satisfying sex is relationally, sexually, and psychologically beneficial. However, our sexual frequency and satisfaction can fluctuate daily, which can lead to declines in relational and wellbeing outcomes. Therefore, it is important to understand what influences people to engage in frequent and satisfying sex, so that we can find ways to help amplify the benefits that people gain from a positive sex life. This thesis details how researching and understanding the alignment between sexual arousal and sexual desire has important implications for how people can engage in good and frequent sexual intimacy, and how this benefits the wider romantic relationship.

The Preparation and Motivation for Sex: Sexual Arousal and Sexual Desire

The bodily preparation for, and psychological motivations towards engaging in, sex are captured by sexual arousal and sexual desire, two important components of the human sexual response. Sexual arousal is the physiological response a person has towards a sexual

stimulus, which includes autonomic changes within the body—such as increased blood flow to the genitals, increased heart and breathing rate, as well as a neural preparedness (defined as 'arousability'; Whalen, 1966)—to respond to sexual stimuli (Pfaus et al., 2003; Toledano & Pfaus, 2006). Evaluations of these physiological changes can be assessed subjectively (Laan & Both, 2008; Toledano & Pfaus, 2006). Throughout this thesis, I focus on measures of subjective sexual arousal, as subjective awareness of physiological changes within the body can have important implications for how people interpret their sexual functioning (Dixon et al., 2024; Handy & Meston, 2016). On the other hand, sexual desire is most often discussed as a motivational concept, capturing a person's willingness and 'want' to obtain sexual rewards (Laan & Both, 2008; Levine, 2003; Pfaus et al., 2003; Regan & Berscheid, 1999).

Though originally proposed as distinct constructs there is a lack of consensus as to whether arousal and desire are the same experience, with different names, or if they are indeed distinct (Kleinplatz, 2011; Mark & Lasslo, 2018). This debate has culminated in the controversial collapse of disorders of arousal and desire into one diagnosis for women in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2013; Brotto et al., 2010; Graham, 2016). Arousal and desire often occur concurrently to one another (Blumenstock et al., 2024; Dawson & Chivers, 2014; Goldey & van Anders, 2012), which results in high comorbidity (Brotto et al., 2010; Brotto et al., 2009). This makes it more difficult to distinguish between the two, as most people will experience both simultaneously in response to a sexual stimulus. Due to this, some researchers approach arousal and desire as the same construct.

However, others conceptualize arousal and desire as distinct. For example, widely adopted models of human sexual response include arousal and desire as two distinct constructs. Models from Kaplan (1995) and Lief (1977), adapted from Masters and Johnson's (1966) framework, proposed a linear response where arousal emerges in response to desire.

However, subsequent research has demonstrated the bidirectionality between arousal and desire, wherein desire may precede and/or follow sexual arousal (Basson, 2000, 2001; Both et al., 2007; Goldey & van Anders, 2012). Further models not only proposed a cyclical pattern between arousal and desire, but also that arousal and desire reinforce one another (e.g., Incentive Motivation Model; Singer & Toates, 1987; Toates, 2009). Empirical data has shown consistency with these theoretical models. For example, a study involving people reporting low arousal and/or desire, alongside controls, found a clear distinction between the symptomology of arousal and desire difficulties (Sarin et al., 2013). In men, a group emerged who had difficulties with their sexual arousal, but not their sexual desire. A similar group appeared for women, as well as a group that experienced desire difficulties, but no difficulties with their sexual arousal. Not only does this support the idea that disorders of arousal and desire should remain separate to one another (Sarin et al., 2013), contradictory to the collapse of the disorders in the DSM-V (APA, 2013; Brotto et al., 2010; Graham, 2016), but it suggests that there are people who experience differences in the alignment between their arousal and desire. This further supports the fact that these are two distinct concepts. Interestingly, women diagnosed with arousal disorders have been found to be more likely to distinguish between concepts of arousal and desire, and women without such disorders were more likely to conflate the two (Brotto et al., 2009). Arousal and desire are usually experienced concurrently, however for those with arousal disorders it is more likely for arousal and desire not to be experienced concurrently which makes distinguishing between the two easier. Therefore, as researchers, we should be distinguishing between the two concepts of arousal and desire if this is beneficial in helping and understanding the experiences of those who may experience the two separately.

This thesis aligns with the theoretical position that arousal and desire are distinct and reinforce each other, as the argument that the two are the same concept is undermined by

imprecise definitions and measurements which conflate the two experiences. Whilst arousal and desire are often experienced concurrently (Blumenstock et al., 2024; Dawson & Chivers, 2014; Goldey & van Anders, 2012), the Incentive Motivation Model accounts for this as one tends to trigger the other (Singer & Toates, 1987; Toates, 2009), and researchers are seldom measuring arousal and desire in ways which allow us to disentangle to two. Alongside the comorbidity of arousal and desire, a lack of definitional precision has not helped research to distinguish between the two (Levine, 2003; Pfaus et al., 2003; Sachs, 2000, 2007). Moreover, the construct of subjective sexual arousal has been operationalized multiple ways, including 'awareness of genital change' and 'feelings of mental excitement' (Sarin et al., 2013). It has also been suggested that desire and subjective arousal may have been used interchangeably in research (Handy et al., 2018), which makes untangling the two even more difficult. However, when subjective sexual arousal and desire are measured in a distinct manner, the differences between the constructs are clearer. Correlations between desire and subjective arousal have been reported to share only 58% of variance, which although this is high enough to suggest relatedness between the constructs, much of the variance in subjective arousal was still unexplained by sexual desire (Althof et al., 2017). In fact, this was a lower shared variance than that seen between the constructs of subjective sexual arousal and orgasm, which have not been conflated as equivocal. Additionally, it has been shown that women with clinically low sexual desire did not report significantly lower subjective arousal compared to women without desire problems, whilst if subjective arousal and desire where the same construct, it would be expected for those with diminished desire to also show evidence of low subjective arousal (Althof et al., 2017). Therefore, despite there often being a lack of definitional distinction between the two concepts, there is empirical and conceptual support for viewing arousal and desire as related, yet distinct components of sexual response. If we use a theoretical lens that recognizes that the bodily experience of arousal can exist alongside, yet

separately to, the psychological experience of desire, we can better understand these motivators of sexual intimacy.

Arousal-Desire (Mis)Alignment

When taking the theoretical position that arousal and desire are two distinct, although related concepts, that map onto mind and body responses to sexual stimuli, it allows us to ask questions about the association between the two, which has rarely been examined directly (Blumenstock et al., 2024). As research suggests that people may experience problems with either arousal or desire, and not the other (Sarin et al., 2013), this suggests that some people experience differences between their arousal and desire. Moreover, research has found that the association between arousal and desire depends on the quality of the relationship with the person which the arousal/desire is being felt towards (Blumenstock et al., 2024). These studies suggest that a person may feel arousal, without the same level of desire, or vice versa, and therefore people may experience differences in the alignment between their arousal and desire. This thesis presents an examination of the association between arousal and desire to confirm whether people do, or do not, experience differences in the alignment between their arousal and desire, and whether (mis)alignment might have any potential implications more broadly.

Firstly, greater alignment between arousal and desire might be beneficial to boosting our satisfaction with our sex lives, and our romantic relationships. We know that it is especially beneficial to ourselves and in our relationships to be engaging in satisfying sex (Chernyavska et al., 2022; Davison et al., 2009; Fallis et al., 2016; Flynn et al., 2016; Henderson-King & Veroff, 1994; Litzinger & Gordon, 2005; McNulty et al., 2016; Schmiedeberg et al., 2017; Schoenfeld et al., 2017; Stephenson & Meston, 2015a), however, our satisfaction with our sex lives and our relationships can wax and wane (Arriaga, 2001; Edwards & Booth, 1994; Liu, 2003; McNulty & Widman, 2013; Schmiedeberg & Schröder,

2016; Velten et al., 2025). Therefore, it is important to find what can buffer against potential declines to be able to maximize the benefits that come from engaging in satisfying sex. Arousal-desire alignment could be a predictor of both sexual and relational satisfaction. Individually, sexual arousal and sexual desire are both associated with sexual satisfaction (Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022). Arousal and desire are also independently associated with satisfaction with the wider romantic relationship (Brezsnyak & Whisman, 2004; Lawless et al., 2022; Regan, 2000), but this is important to note that this is only the case when the target of a person's arousal/desire is their romantic partner, rather than a non-partner (Lawless et al., 2022). Moreover, experiencing arousal or desire disorders is associated with lower relationship and sexual satisfaction for both the person and their romantic partner (Rosen et al., 2020; Schwenck et al., 2025), suggesting that there is a dyadic impact of arousal and desire within the relationship. However, the associations with arousal and desire, and relational and sexual satisfaction, have typically been examined separately to one another (e.g., Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022), or conjointly (e.g., Rosen et al., 2020). Thus, there is a limited understanding of how the interplay between sexual arousal and desire can shape our sexual and relational satisfaction.

As arousal and desire are so important to sexual and relational satisfaction, we predict that satisfaction will be greatest when arousal and desire are perfectly aligned. Evidence suggests that people benefit when their mind and body experiences are in alignment, as interventions that focus on increasing mind-body awareness, and help people to bring mind and body experiences into alignment, improve sexual wellbeing (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). Additionally, when mind and body experiences are aligned a person can feel greater certainty about their interpretation of a situation, which can also positively benefit wellbeing (Biddell et al., 2024;

Brown et al., 2020). Therefore, greater alignment should increase satisfaction. On the other hand, less arousal-desire alignment might have negative outcomes for sexual and relational satisfaction, as in other fields of psychology it is found that mismatches between mind and body are associated with increased anger, anxiety, emotional distress, and even relational struggles (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003). Less alignment between arousal and desire may additionally lead to a dissonant state between the mind and body, which could cause a state of discomfort (Festinger, 1962; Harmon-Jones & Harmon-Jones, 2012). Usually, the mind and body work in tandem with one another to create a coherent subjective experience (Niedenthal, 2007). However, a state of dissonance can also exist between the mind and the body (Centerbar et al., 2008; Henning et al., 2018; Huang & Galinsky, 2011). There are often times when the two do not portray the same experience. For example, a team leader in a company may nod along to a presentation of ideas that they oppose, or forcing a smile when dealing with a difficult customer (Huang & Whitson, 2020). Experiencing less alignment between arousal and desire may therefore contribute to negative and discomforting psychological states due to experiencing mind-body dissonance, which can in turn impact wellbeing.

Whilst enjoying satisfying sex is very beneficial, it is additionally beneficial to be having frequent sex (approximately once a week) for our wellbeing and our romantic relationships (Blanchflower & Oswald, 2004; Call et al., 1995; Cheng & Smyth, 2015; Loewenstein et al., 2015; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017), especially when this is meeting a person's ideal sexual frequency (Santtila et al., 2007). But, as with sexual satisfaction, sexual frequency can also wax and wane over time (Call et al., 1995; Karraker et al., 2011; McNulty & Fisher, 2008), and thus exploring what can boost sexual intimacy to protect against such declines is equally important. As arousal and desire both prepare and motivate people to engage in sexual

intimacy (Levine, 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006), when the two are aligned they should feel the most motivated to engage in such behavior. Moreover, as alignment between mind and body can lead to greater certainty about a situation (Biddell et al., 2024; Brown et al., 2020), greater arousal-desire alignment might increase the certainty a person feels about their preparedness for engaging in sex, and therefore increase the actual likelihood of engagement. On the other hand, less alignment might cause greater uncertainty, and therefore hinder engagement in sex. Thus, within this thesis we explore whether arousal-desire alignment has an impact on the frequency of sexual intimacy within the relationship.

Arousal-desire alignment might additionally impact how people reflect on and discuss their sexual experiences. As people who experience less arousal-desire alignment might experience greater uncertainty about how they feel about their sexual experiences, discussing these experiences might be particularly stressful as it requires evaluating conflicting feelings that exist due to the inconsistences between mind and body states during sex. Whilst discussing your sex life with a romantic partner can feel stressful for many people, due to the potential for rejection or judgment (Rehman et al., 2019), a person experiencing greater arousal-desire alignment might feel like they have the resources and self-confidence to engage in discussion about their sex life due to feeling greater confidence about their feelings towards their sex life. On the other hand, a discussion about sex may feel particularly threatening to a person who experiences less alignment between their arousal and desire and therefore may feel less clear about their sexual wants and needs due to inconsistent mind and body signals.

Growing Together or Destined to Be? Potential Individual Differences in the Impact of Arousal-Desire Alignment

Although we expected that most people would experience these potential impacts of arousal-desire alignment, we wanted to take into consideration that there might be individual

differences that could potentially influence how people would interpret (mis)alignment. This thesis draws on theories of implicit sexual beliefs (Maxwell et al., 2017), particularly in Chapters 3 and 4. In the media, we are often exposed to the idea that if your partner is 'meant for you', then maintaining a sexual relationship should be easy and wonderful (Galician, 2004). However, sex is often not always easy or as wonderful as this media describes, and couples often struggle to maintain having satisfying and frequent sex lives (e.g., Call et al., 1995; Edwards & Booth, 1994; Karraker et al., 2011; Liu, 2003; McNulty & Fisher, 2008; McNulty & Widman, 2013; Schmiedeberg et al., 2017). Whether people believe this idea that sex is easy if your partner is 'meant for you', or whether they believe that struggles in a sexual relationship are normal, could help determine how (mis)alignment in arousal and desire are interpreted. Such beliefs are called implicit sexual beliefs; lay beliefs about what it takes to maintain a sexually satisfying relationship (Maxwell et al., 2017). The theory of implicit sexual beliefs is an example of a highly relevant application of a relationship science theory used to understand sexuality, by adapting implicit theories of relationships to explain individual differences in maintaining high quality sexual relationships (Maxwell et al., 2017). Implicit theories of relationships state that people's beliefs about what makes a satisfying romantic relationship influence their motivations and behaviors within that relationship, and can shape important relationship outcomes (for a review, see Knee & Canevello, 2006). On the other hand, implicit theories of sexual beliefs state that people's beliefs about what makes *sexual* relationships satisfying can shape important outcomes for the sexual relationship (Maxwell et al., 2017). Those who hold sexual destiny beliefs about the sexual relationship view sexual satisfaction as something that should come naturally between two partners, and will be easy if the partners are destined to be together (Maxwell et al., 2017). On the other hand, those who hold sexual growth beliefs understand that sexual satisfaction requires work

and effort from both partners, and that sexual struggles within the relationship are natural and can be overcome with effort.

As people who are high in implicit sexual growth beliefs believe that maintaining a sexually satisfying relationship takes effort, they are more likely to respond to any struggles with a positive mindset, and the intention to work through such struggles to improve the sexual relationship (Bőthe et al., 2017; Maxwell et al., 2017). Therefore, holding sexual growth beliefs might 'protect' a person from any negative consequences of arousal-desire misalignment, as they believe that not everything can be perfect in their sexual relationship. In contrast, as people who are high in implicit sexual destiny beliefs expect natural compatibility in their sexual relationship, they find struggles to be more distressing (Maxwell et al., 2017; Rossi et al., 2022). Therefore, having high alignment in arousal and desire might be more important—and misalignment more harmful—to those who hold high sexual destiny beliefs as they might interpret such a 'struggle' as a sign that the sexual relationship will fail. Thus, we anticipate that arousal-desire (mis)alignment will have different impacts on people depending on their endorsement of implicit sexual growth or destiny beliefs.

Overview of Thesis

Sexual arousal and sexual desire both play an important role in preparing us for, and motivating us to engage in sexual intimacy (e.g., Laan & Both, 2008; Levine, 2003; Pfaus et al., 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006), but researchers have rarely examined the associations between them (Blumenstock et al., 2024). Previous research suggests that some people may experience differences in the alignment between their arousal and desire, in that people may experience arousal, without the same level of desire, and vice versa (Blumenstock et al., 2024; Sarin et al., 2013). As arousal and desire are both independently integral in driving satisfaction and wellbeing within relationships (Brezsnyak

& Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022; Regan, 2000), the alignment between arousal and desire might have important implications. As alignment between mind and body states can help people experience greater certainty about their interpretation of a situation (and in turn positively impacts wellbeing; Biddell et al., 2024; Brown et al., 2020), we expect greater arousal-desire alignment to have positive outcomes. Such positive outcomes might include greater sexual satisfaction and wellbeing, which also lead to further satisfaction with the wider relationship, greater increases in sexual frequency, and greater wellbeing overall. Conversely, having less arousal-desire alignment might have negative consequences, as negative psychological states can occur when there is dissonance between the mind and body (Festinger, 1962; Harmon-Jones & Harmon-Jones, 2012).

This thesis explores the association between sexual arousal and sexual desire, and how they impact outcomes for both the individual, and their romantic relationship. Whereas previous research has only focused on the impact of arousal and desire alone (e.g., Brezsnyak & Whisman, 2004; Chao et al., 2011; Lawless et al., 2022), or conjointly (e.g., Rosen et al., 2020), the present research expands upon this by examining the impact that the interplay between arousal and desire can have. The thesis contains 5 empirical studies presented across 4 chapters. All studies were pre-registered with specific aims and hypotheses. Several research questions are addressed across these studies. These include: 1) How do arousal and desire impact a person and their romantic relationship? 2) Do some people experience differences in the alignment between their sexual arousal and desire? 3) Is greater alignment between arousal and desire associated with positive outcomes for the person, and their romantic relationship? 4) Do individual differences in sexual implicit beliefs influence the impact of arousal-desire alignment on outcomes? 5) Does arousal-desire alignment fluctuate daily? 6) Does arousal-desire alignment also impact the romantic partner? 7) What are the mechanisms behind why arousal-desire alignment is so important?

The first study, presented in Chapter 2, aimed to understand how arousal and desire, but additionally sexual frequency and whether this frequency was meeting one's needs, impacted sexual, relational, and psychological wellbeing. These facets of sexual activation are usually tested independently to one another, or in competition with one another, and so the aim of this study was to understand the different ways in which these facets can combine to influence wellbeing. In this study, we expected that we would see potential profiles that suggest that differences in arousal-desire alignment exist, however that was not the case due to several reasons that are discussed later in the thesis. However, this study still makes an important contribution in that it supports previous findings showing the importance of not only arousal and desire in our wellbeing, but the importance of considering multiple facets of sexual activation, and how it is important to consider the influence of these facets in combination with one another.

In the second and third studies, presented in Chapter 3, we aimed to examine whether people experience differences in the alignment between their arousal and desire, and how this impacts relationship and sexual satisfaction. We achieved this by using polynomial regression and response surface analysis (RSA) to model the effects of matching and mismatching across the two predictors, avoiding the statistical limitations of other analytical methods. In Chapter 3, we use the terms 'matching' and 'mismatching' when discussing arousal-desire alignment, as this is in line with the terminology often used with this analytical approach. Across both studies, matching between arousal and desire was particularly important for both relationship and sexual satisfaction, but mismatches were not harmful. We also examined whether (mis)matches would be impacted by the individual difference of implicit sexual beliefs.

Chapter 4 presents a fourth study, which expanded on Chapter 3 to assess whether daily fluctuations in arousal-desire alignment could be related to daily fluctuations in sexual

satisfaction and frequency. We assessed whether arousal-desire (mis)alignment fluctuated daily across an 8-day diary study, and whether such fluctuations influenced people's daily sexual satisfaction as well as decisions to engage in intimacy. On days when people reported greater alignment, they also reported greater sexual satisfaction following this, however they were not more likely to have engaged in sexual intimacy. However, people who experienced greater alignment across the diary period engaged in sex more frequently. We also examined the role of implicit sexual beliefs in this study, in which we saw that arousal-desire alignment was most important for those who held high sexual destiny beliefs.

In the fifth and final study, presented in Chapter 5, we tested whether arousal-desire alignment might be beneficial when navigating the stressful situation of discussing sexual wants and needs with a romantic partner. Discussions about sex require being confident about sexual needs and being mutually responsive to your partner's needs. We expected that alignment between arousal and desire could increase whether people feel like they have the resources to respond to their partner's requests, due to the consonance of mind and body states, leading to the more adaptive stress response of challenge. Conversely, we expected that less alignment could lead to a lack of perceived resources, due to the dissonance between mind and body states, leading to greater threat which is a negative form of stress. Applying the biopsychosocial model of challenge and threat (BPS-CT), we tested whether greater arousal-desire alignment would lead to greater experiences of challenge during discussions about sex with their partner, and with dissonance mediating this association. However, our hypotheses were not fully supported. However, based on our secondary aim for this study, we did find further support that arousal-desire alignment predicted greater sexual and relationship satisfaction in both men and women. Additionally, we found that women's alignment was important for men's relationship satisfaction, extending our knowledge of the potential effects of arousal-desire alignment for the partner.

Overall, this thesis offers a novel exploration of how sexual arousal and desire can impact a range of personal and relational wellbeing outcomes. In particular, by exploring the association between arousal and desire, and how their alignment can have positive implications, it offers a new approach to researching arousal and desire and calls for a shift in the theoretical approach for examining the two. Moreover, it provides support for, and evidence that, applying relationship psychology theories and methods to study sexuality is beneficial for both fields. Finally, this thesis offers potential practical implications with suggestions for future research and interventions that could help people bolster the benefits that we gain from having good sex in our relationships.

Chapter 2 - Taking a "Person-Centered" Approach in the Bedroom: Constellations of Sexual Activation, and their Association with Typologies of Sexual, Relational, and Psychological Wellbeing

Author's Note

This chapter details Study 1, in which we tested whether different facets of sexual activation combine to influence sexual, relational, and psychological wellbeing.

When using latent profile analysis to look at different profiles of sexual activation, we expected we would see profiles wherein people had reported high levels of both arousal and desire, or low levels of both. However, we also anticipated potentially finding profiles with high desire and low arousal, and low desire with high arousal. Unfortunately, we did not find these expected profiles, and all profiles only included aligned arousal and desire, whether this was high or low. Therefore, this chapter is different from the other chapters presented in this thesis as it the only one to not discuss the alignment between arousal and desire. Nevertheless, it still makes valuable contributions to the field by demonstrating that different profiles of sexual activation are differentially associated with wellbeing outcomes.

The pre-registered hypotheses and analysis plans can be found at the following link: https://osf.io/g3w5f/overview?view_only=404eab71a07a4739be71799086027f46.

This chapter will be submitted for publication:

Tasker, C., & Lamarche, V.M., Taking a "Person-Centered" Approach in the Bedroom: Constellations of Sexual Fulfilment, and their Association with Typologies of Sexual, Relationship, and Psychological Wellbeing.

Abstract

The links between sex and wellbeing are well documented. However, despite people's experiences with sex being multifaceted, the facets that underlie people's evaluations of their sex lives—such as their arousal and desire, how frequently they have sex, or whether or not they are having sex as often as they would ideally like—have historically been tested independently or in competition with each other. Consequently, the different ways in which these facets can combine to influence sexual, relational and psychological wellbeing have been ignored. The current study (n = 705) of adults in committed relationships aimed to take a person-centered, rather than variable-centered, approach to understanding the different constellations of sexual activation and how they related to different typologies of relational, sexual, and psychological wellbeing. Latent profile analysis suggested four profiles of sexual activation (disengaged, apathetic, unsatiated, satiated), in addition to three typologies for each domain of wellbeing. Using loglinear modelling, we tested the likelihood of constellation membership predicting typologies membership. These findings suggest different profiles of sexual activation were differentially associated with wellbeing typologies. For example, profiles with marked deficits in arousal and desire, but who were still having frequent sex that met their needs, showed deficits in their relational wellbeing. However, the same was not true for profiles with deficits in sexual frequency, where people thrived in their relational wellbeing, but experienced deficits in their sexual wellbeing. Overall, our findings point to unique vulnerabilities and experiences with sexual activation and highlight the value of conceptualizing sexual activation as a multifaceted construct.

Introduction

Sex is a fundamental part of human life (Satcher, 2001). It promotes bonding and intimacy, fulfils social and personal needs, and is connected to our physical and mental health (Bancroft, 2002; Satcher, 2001, 2013). The activation of our sexual systems can be monitored in several ways, be it psychological through desire and whether our sexual needs are being met, physiological through arousal, or behavioral through frequency. Research has frequently documented how each of these facets of sexual activation are independently associated with sexual, relational, and psychological wellbeing. For example, people who have experience more desire or arousal are happier with their sex lives and their relationships (Brezsnyak & Whisman, 2004; Chao et al., 2011; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; Mark & Lasslo, 2018)**.** Similarly having sex more often is associated with greater sexual, relational, and psychological wellbeing (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Cheng & Smyth, 2015; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016), especially when that frequency meets ideals and needs (Santtila et al., 2007).

However, due to data-centered approaches which test these facets independently, or in models which put them in competition to account for the most variance above and beyond their counterparts, there is limited understanding of how these facets of sexual activation work in combination to influence wellbeing. This is an important limitation because people do not always experience the different facets of sexual activation in isolation from each other. For example, desire and arousal sometimes precede each other, or can co-occur (Basson, 2000; Both et al., 2007; Goldey & van Anders, 2012; Graham et al., 2004; Laan & Both, 2008; Lief, 1977; Masters & Johnson, 1966). People may equally engage in sex without feeling arousal or desire, but instead to achieve other benefits such as increased intimacy and

closeness in their relationships (Impett et al., 2015; Impett et al., 2019; Leigh, 1989; Meston & Buss, 2007; Muise & Impett, 2016; Watson et al., 2017).

By contrast, person-centered approaches such as latent profile analysis (LPA) allow us to identify distinct patterns of a combination of responses, unlike variable-centered approaches which do not allow for identification of associations that exist in combination (Mathew & Doorenbos, 2022). Furthermore, this approach makes it possible to examine whether membership in certain combinations of facets predict membership in others. Consequently, this approach allowed us to first test whether there are different constellations of sexual activation, and subsequently whether these constellations are more likely to be represented among different typologies across the domains of sexual, relational, and psychological wellbeing.

Facets of Sexual Activation

The activation of people's sexual systems can be monitored in several ways: from the psychological and physiological drives which motivate sexual behavior, to the frequency with which people engage in sexual acts, and the evaluations of whether this is in alignment with expectations. These facets of sexual activation can be experienced in a combination of meaningful ways. Desire captures the psychological motivations behind sexual behavior (Laan & Both, 2008; Levine, 2003; Regan & Berscheid, 1999). By contrast, subjective sexual arousal captures a person's awareness of the physiological changes in their body in response to stimuli (Laan & Both, 2008; Toledano & Pfaus, 2006). Whilst arousal and desire are often co-occur (Brotto et al., 2010; Brotto et al., 2009), they are distinct components of sexual activation. Clinical evidence shows that arousal and desire dysfunctions are differentiated in terms of their symptomology (Sarin et al., 2013). For example, someone can experience dysfunctions in genital arousal, despite still reporting normal desire. Likewise, people who report problems with desire do not always suffer with genital arousal dysfunction.

Furthermore, the strength of the association between arousal and desire is context-dependent and varies based on factors including the quality of the relationship with the partner (Blumenstock et al., 2024). These findings support longstanding models of sexual response that conceptualize arousal and desire as separate processes (e.g., Basson, 2000; Kaplan, 1974; Laan & Both, 2008; Lief, 1977).

Similarly, being aroused or feeling desire, does not guarantee that sex will occur. On average, couples in established romantic relationship report having sex once a week (Blanchflower & Oswald, 2004; Call et al., 1995). However, there is considerable variability across couples, with some couples having sex a lot more or a lot less than the once-per-week average (Blanchflower & Oswald, 2004). For some, this variability is a function of personal preferences. For others, it is due to compounding factors due to age (Call et al., 1995; Karraker et al., 2011), relationship length (Call et al., 1995; McNulty et al., 2016), competing demands (Ahlborg et al., 2005; Jawed-Wessel & Sevick, 2017), and health (Basson, 2010; Bodenmann et al., 2010; Shen, 2019). And while some people may be having sex less often than preferred, others may be engaging in sex on days where they experience low desire and arousal in order to meet their partners' needs (Impett et al., 2015; Impett et al., 2019). Consequently, ideal preferences, actual behavior, and internal desires and arousal may not always align. Thus, limiting our understanding to these different representations of sexual activation to which individual facet is most strongly associated with wellbeing presents an incomplete picture of a person's sex life.

Sexual Activation and Wellbeing

There is extensive research demonstrating arousal, desire, sexual frequency, and ideals' independent associations with sexual, relational, and psychological wellbeing. Firstly, people who have greater desire for their partners are more satisfied with their relationships (Brezsnyak & Whisman, 2004; Impett et al., 2015; Mark & Lasslo, 2018), and their sex lives

(Chao et al., 2011; Heiman, Long, et al., 2011), and are less likely to consider infidelity or consider ending their relationship (Regan, 2000). Independently, sexual arousal is also associated with greater relationship and sexual wellbeing, specifically when the partner is the target of arousal (Heiman, Long, et al., 2011; Lawless et al., 2022). Greater arousal and desire are also associated with better psychological health (Dosch et al., 2016; Vasconcelos et al., 2024).

Greater sexual frequency is associated with greater relationship satisfaction (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Muise, Schimmack, et al., 2016), greater sexual satisfaction (Frederick et al., 2017; McNulty et al., 2016), and greater happiness and life satisfaction (Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Muise, Schimmack, et al., 2016). However, more frequent sex is not always better. Associations between frequency and satisfaction plateau when sexual frequency is above one a week on average (Loewenstein et al., 2015; Muise, Schimmack, et al., 2016), and increasing sexual frequency is not always beneficial (Loewenstein et al., 2015). This suggests frequency alone is not an absolute determinant of wellbeing.

The relationship between one's ideal and actual sexual frequency is also important for determining wellbeing. As a partner's ideals also determine the frequency of sex within the relationship, and people in happy and satisfying relationships often report occasions in which they have had consensual sex, without desire, in order to meet their partner's sexual needs (Impett et al., 2015; Impett et al., 2019; Muise & Impett, 2016), there are often times when actual and desired sexual frequency is discrepant. A lack of discrepancy between desired and actual sexual frequency leads to greater relationship satisfaction (Santtila et al., 2007). Thus, it is equally important for different domains of wellbeing that sexual frequency aligns with personal ideals and expectations as it is for couples to be having "averagely" frequent sex.

Furthermore, different patterns of sexual activation may be associated with different *patterns* of wellbeing. Just as sexual activation is multifaceted, so too is wellbeing (Halleröd & Seldén, 2013; Merwin & Rosen, 2020; Ryff, 1989; Ryff & Keyes, 1995). Wellbeing in each domain is often correlated. Experiencing positive relationships can lead to greater psychological wellbeing (Gómez-López et al., 2019; Londero-Santos et al., 2021; Røsand et al., 2012; Ross, 1995; Stack & Eshleman, 1998; Till et al., 2016), positive psychological wellbeing and being free from stress and depression is associated with sexual wellbeing (Arcos-Romero & Calvillo, 2023; Lapping-Carr et al., 2023; Tavares et al., 2019), and people who are happier in their sex lives are also happier in their relationships (Fallis et al., 2016; Park et al., 2023; Sprecher, 2002). However, the latent factors contributing to differences in wellbeing also differ depending on the domain (Merwin & Rosen, 2020). For example, both sexual satisfaction and relationship satisfaction can be predicted by different variables. An example is that declines in sexual satisfaction can be predicted by age (Buczak-Stec et al., 2021; Quinn-Nilas, 2020), but relationship satisfaction is not (Bühler et al., 2021; Quinn-Nilas, 2020). People can also report being sexually satisfied but not necessarily satisfied in their relationships (Impett et al., 2014; McNulty et al., 2016; Montesi et al., 2011). Similarly, someone may be really dissatisfied with their life overall, but very satisfied with their relationship (Ryff, 1989; Ryff & Keyes, 1995).

Not only does wellbeing vary across domains, but the individual facets that contribute to domain-level wellbeing are equally diverse (Impett et al., 2014; McNulty et al., 2016; Montesi et al., 2011). For instance, sexual wellbeing can include an evaluation of sexual self-efficacy, sexual confidence and self-esteem, and sexual satisfaction (Martin & Woodgate, 2020). Due to the subjectivity and variability of wellbeing, which are influenced by social and cultural contexts (Lorimer et al., 2019; Mitchell et al., 2021), these domains may differ from one another. For example, one might be satisfied with their own sexual capabilities,

however may be unsatisfied with their sex lives as a whole due to reasons relating to the sexual partner. Similarly, relational wellbeing and psychological wellbeing are similarly multi-faceted, with highs on one facet not precluding lows on another (Adler et al., 2017; Fincham & Rogge, 2010; Ryff, 1989; Ryff & Keyes, 1995). Thus, in order to understand how different experiences with sexual activation influence wellbeing, it is equally important to consider wellbeing across domains and across typologies within those domains.

Taking a 'Person-Centered' Approach

Despite the recognition that sexual activation and wellbeing are multifaceted experiences, most prior research has used variable and data-centered approaches to examine the influence of one on the other. These variable-centered approaches, which test how facets of sexual activation contribute to wellbeing above and beyond the others, by design obfuscate the facets' combined influence. This is an important limitation in our understanding of how sexual activation contributes to wellbeing because people do not experience these facets in a vacuum—rather they experience the presence or absence of each aspect of sexual activation alongside the others, and how this leads to different types of experiences of wellbeing.

Rather than relying on variable-centered approaches like regression, latent profile analysis (LPA) is a person-centered technique to examine hidden groups in the data, by finding the probability that each individual belongs to that group (Ferguson et al., 2020). It allows for the identification of distinct patterns of a combination of responses (Mathew & Doorenbos, 2022), unlike variable-centered approaches which do not allow for identification of associations that exist in combination. Thus, LPA makes it possible to test whether there are different constellations of sexual activation (e.g., a profile with high arousal, high desire, but low sexual frequency that doesn't meet one's ideals), as well as different typologies of sexual, relational and psychological wellbeing. Additionally, loglinear modelling (Asparouhov & Muthén, 2020; Hagenaars, 1993) can be used to predict whether the

belonging to a certain constellation of sexual activation leads to a higher probability of belonging to a specific wellbeing typology across domains.

Study 1 Overview

People monitor the activation of their sexual systems through subjective experiences of arousal, desire, sexual frequency, and whether this frequency is aligned with their ideal preferences. Independently, each of these facets contribute to sexual, relational, and psychological wellbeing (e.g., Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Chao et al., 2011; Cheng & Smyth, 2015; Dosch et al., 2016; Frederick et al., 2017; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007). However, this variable-centered approach is reductive and unrealistic as we know that people do not experience these dimensions of sexual activation in isolation, and they each influence one another (Basson, 2000; Both et al., 2007; Goldey & van Anders, 2012; Graham et al., 2004; Laan & Both, 2008; Lief, 1977; Masters & Johnson, 1966; Meston & Buss, 2007). Instead, person-centered analysis such as LPA allows for the identification of outcomes as a result of different combinations of sexual activation facets (Mathew & Doorenbos, 2022).

Our aim for this study was to look at four aspects of sexual activation, that are usually examined in isolation to one another, but have all been used as proxies to measure a person's sexual activation. We wanted to examine a person's internal motivations for having sex (i.e. sexual arousal and sexual desire) alongside their sexual frequency, as arousal and desire drive how frequently a person is engaging in sex. Including both arousal and desire allowed for the indexing of activation of the sexual system across both the body (i.e., subjective awareness of physiological arousal), and the mind (i.e., subjective desire). However, people may experience a presence of arousal and/or desire without the opportunity to act on such motivations, or are motivated to have sex with a partner despite low arousal and/or desire

(e.g., Impett & Peplau, 2003). Thus, including a measure of how often people have sex with their partners on average provides insight into how opportunity may meaningfully interact with experiences of arousal and desire. Finally, frequency alone may belie meaningful differences in personal ideals. Frequency is not determined only by internal motivations to engage in sex, but also by external factors, for example how often the sexual partner wishes to engage in sex. Whilst having sex more often than the population average is associated with positive outcomes (e.g., McNulty et al., 2016; Muise, Schimmack, et al., 2016), it does not speak to individual preferences. Someone who has high desire, arousal, and is having sex more often than average, and yet feels like it is less often than they prefer, may have different associations with wellbeing than those who are having sex less often than the population average, and yet as often as their ideal. Therefore, discrepancies between ideal and actual sexual frequency are also important in determining wellbeing, and are interrelated with sexual frequency, and internal motivations to engage in sex. Thus, the constellation of sexual activation allows for profiles to emerge across all possible combinations of sexual motivation from the body and mind, sexual opportunity, and sexual ideals. Furthermore, there is a limited understanding of how different constellations of sexual activation contribute to wellbeing, and whether these associations are uniform or different across wellbeing domains.

Study 1 takes a person-centered approach to understand different experiences with sexual activation, and extends beyond this to test whether sexual activation constellations are associated with different typologies of relational, sexual and psychological wellbeing. First, we tested whether the LPA could identify different constellations of sexual activation as measured by subjective arousal, desire, sexual frequency, and whether the frequency aligned with a person's ideals. These facets were selected based on the extensive literature demonstrating their independent associations with wellbeing across domains (e.g., Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995;

Chao et al., 2011; Cheng & Smyth, 2015; Dosch et al., 2016; Frederick et al., 2017; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007).

Next, we used loglinear modelling to test whether profiles of sexual activation could predict membership likelihood for typologies of relational, sexual, and psychological wellbeing. To build typologies of relational wellbeing, we included measures of relationship satisfaction, perceived partner responsiveness, relationship flourishing, and relationship strain. These measures aligned with previous arguments which state that it is important to capture both negative and positive evaluations of the relationship due to their conceptual distinctness (Fincham & Linfield, 1997; Fincham & Rogge, 2010). Consequently, the selected measures captured both positive (e.g., satisfaction; perceived partner responsiveness; flourishing) and negative experiences within the relationship (e.g., strain). These measures also differed as a function of *eudaimonic* evaluations of the relationship (i.e. flourishing; perceived partner responsiveness) which represent meaning, purpose, growth, realized potential, and feeling understood and cared for within the relationship (Fowers et al., 2016; Pancheva et al., 2021; Ryff, 1989), and *hedonic* evaluations which capture positive (vs negative) experiences (i.e. satisfaction; strain). Therefore, the four measures chosen represent both positive and negative relationship experiences, as well as eudaimonic and hedonic evaluations of these experiences, representing four conceptually distinct components that summarize relationship wellbeing. To build typologies of sexual wellbeing, we included measures of satisfaction with psychological responsiveness, harmonious sexual passion, sexual esteem, and sexual depression. This is consistent with past work which conceptualizes sexual wellbeing as more than just the absence of dysfunctions (Laumann et al., 2006; Martin & Woodgate, 2020) and includes both positive and negative evaluations of sexual experiences. Therefore, our selected measures captured both positive (e.g., sexual response

satisfaction; harmonious sexual passion; sexual esteem) and negative experiences within the sexual relationship (e.g., sexual depression). We also wanted to ensure our measure of sexual wellbeing included evaluations of one's own performance during sex, rather than just the sexual relationship as a whole. Therefore, our measure of physiological responsiveness captured how satisfied participants were with their body's performance during sex, and the sexual esteem measure captured how good one believes themselves to be as a sexual partner. Finally, to measure typologies of psychological wellbeing we included measures of life satisfaction, flourishing, anxiety and depression, and perceived stress. These measures aligned with the multidimensional nature of psychological wellbeing (Ryff, 1989; Ryff & Keyes, 1995), as well as definitions that emphasize that psychological wellbeing is more than just the absence of psychological disorders (Adler et al., 2017), and instead reflect the positive (i.e., satisfaction, flourishing) and negative (i.e., anxiety, depression, stress) experiences people encounter in their everyday lives.

Study materials, raw data, and codebooks are available on the project's OSF repository: https://osf.io/g3w5f/?view_only=404eab71a07a4739be71799086027f46.

Methods

Participants

One thousand, one hundred and thirty-six participants were originally recruited for the study. Participants were recruited through posters distributed across the lead author's university campus, through the departmental student recruitment platform, in addition to being shared on social media. Students received course credit (if eligible), and all other participants were entered into a drawing for one of four £50 Amazon vouchers. Participants had to be at least 18 years of age, in a committed relationship, sexually active within the past 12 months, and affirmed that they would give their best answers on an integrity check

question (Geisen, 2022) to be eligible to participate. Of the eligible participants, 410 participants were dropped for not completing the full survey, 7 participants were dropped for identifying as asexual[1], and 23 participants were dropped for not answering more than one question for each of the target variables for LPA analysis[2]. This left 696 participants, which is a similar sample size to that of studies using a similar analytic plan (Spurk et al., 2020), and is above the suggested minimum of 500 from a previous simulation study (Nylund et al., 2007). Participants (75% women; 22% men; 3% another gender category) were between the ages of 18 and 71 (M_{age} = 27.07, *SD* = 7.88), and the majority identified as heterosexual (68%; 21% bisexual; 5% homosexual; 4% pansexual; and less than 1% identified as queer or another unlisted sexual orientation), British (73%; 15% any other White background; 4% White and Asian; 3% White and Black African; 2% Indian; 2% White and Black Caribbean; 2% Irish; 2% any other mixed or multiple ethnic background), monogamous (94%; 6% consensually non-monogamous/polyamorous/another relationship style), and in an exclusively or committed dating relationship (71%; 18% married/in a civil union or common-law partnership; 11% engaged). The relationship length of participants spanned between 1 month and 54 years (M_{length} = 4.75years, *SD* = 6.25).

Procedure

Participants were invited to participate in an online study. Following informed consent, completed a series of pre-screening questions to assess their eligibility prior to starting the main experiment. Eligible participants (i.e., 18 years of age or older; in a romantic relationship; had sex with their partner in the past 12 months) next answered

[1] The decision to exclude asexual participants prior to analysis was made because as we decided it could have unknown effects on measures of arousal, desire, sexual frequency, and sexual wellbeing, that were not within the scope of Study 1.

[2] As a large number of participants were excluded from Study 1, analyses were conducted to compare demographic differences between retained and excluded participants to test for any potential bias. There were no significant demographic differences between participants who were retained and those who discontinued before reaching the end of the study, or were excluded from the analyses (see Appendix A1).

demographic questions (e.g., age, gender, sexual orientation, ethnicity, relationship status, relationship style, and relationship length) followed by the measures of sexual activation, and then the measures of relational, sexual and psychological wellbeing (questions were counterbalanced within domains). Participants were then debriefed, thanked for their time, and invited to enter a prize draw for one of four £20 Amazon vouchers.

Measures

Sexual Activation: We identified four measures to capture sexual activation: sexual arousal, sexual desire, sexual frequency, and sexual frequency discrepancy. These facets of sexual activation have each been independently associated with wellbeing across domains (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Frederick et al., 2017; Heiman, Long, et al., 2011; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Regan, 2000; Santtila et al., 2007), and can vary across people and situations (Basson, 2000; Both et al., 2007; Goldey & van Anders, 2012; Graham et al., 2004; Impett et al., 2015; Impett et al., 2019; Laan & Both, 2008; Lief, 1977; Masters & Johnson, 1966; Meston & Buss, 2007).

Arousal and Desire. Two subscales adapted from the Sexual Arousal and Desire Inventory (Toledano & Pfaus, 2006) were created to uniquely capture sexual arousal versus sexual desire. These subscales were psychometrically validated via confirmatory factor analysis (CFA)[3]. The arousal scale included the items: tingly all over, sensitive to touch, flushed, breathe faster/pant, quivering sensations, genitals reddish, throbs in genital area, warm all over, tingling genital area, and heart beats faster. Reliability for this scale was good (a = .89). The desire scale included the items**:** urge to satisfy, driven, enthusiastic, tempted, passionate, fantasize about sex, sensual, seductive, naughty, and horny. Reliability for this

[3] The confirmatory factor analysis and selection decisions for the items used in the subscales are described in detail in Appendix A2.

scale was good (*a* = .90). The items for each subscale were averaged, with higher scores reflecting greater arousal/desire (1 = *does not describe at all*, 5 = *completely describes*).

Sexual Frequency. Sexual frequency was measured using a single-item question (How often do you have sex with your/a partner; 1 = *never*, 7 = *more than once a day*).

Sexual Frequency Discrepancy. Sexual frequency discrepancy was measured using a single-item question (Would you say that how often you have sex with your/a partner is less than, greater than or equal to your ideal; 1 = *very much less than ideal*, 7 = *very much more than ideal*).

Relational Wellbeing: We identified four measures to operationalize relationship wellbeing: relationship satisfaction, perceived partner responsiveness, relationship flourishing, and relationship strain.

Relationship Satisfaction. Relationship satisfaction was measured using Rusbult's Relationship Satisfaction Level Subscale (Rusbult et al., 1998), a 5-item measure that aims to measure satisfaction within the relationship (e.g., 'My partner fulfils my needs for intimacy') (1 = *don't agree at all*, 4 = *agree completely*). Reliability for this measure was high (*a* = .89).

Perceived Partner Responsiveness. Perceived partner responsiveness was measured using the 12-item version of the Perceived Partner Responsiveness Scale (Reis et al., 2017) that measures what an individual's perceived responsiveness of their romantic partner is (e.g., 'My partner usually really listens to me') (1 = *not at all true*, 5 = *completely true*). Reliability for this measure was high (*a* = .95).

Relationship Flourishing. Relationship flourishing was measured using the Relationship Flourishing Scale (Fowers et al., 2016), a 12-item scale which aims to measure personal growth, relational giving, and goal sharing (e.g, 'I have more success in my important goals because of my partner's help', 'Talking with my partner helps me to see

things in new ways'; 1 = *strongly disagree/never*, 5 = *strongly agree/always*). Reliability for this measure was high (*a* = .90).

Relationship Strain. Relationship strain was measured using the Relationship Strain subscale from the Indicators of Social Support and Strain Measure (Walen & Lachman, 2000), which is a 4-item subscale which aims to measure strain in the relationship (e.g. 'How often do they criticize you?'; 1 = *often*, 4 = *never*). Reliability for this measure was high (*a* = .77).

Sexual Wellbeing: We identified four measures to operationalize sexual wellbeing: satisfaction with psychological responsiveness, harmonious sexual passion, sexual esteem, and sexual depression.

Satisfaction with Physiological Responsiveness. The Sexual Response Satisfaction measure comprised three questions to ascertain information about the participant's satisfaction with their own physiological sexual response: 'How satisfied are you with how often you feel physically aroused before or during sexual activity?', 'How satisfied are you with how your body physically responds to sex or sexual intimacy?', and 'How satisfied are you with how you physically feel during sex?'. Reliability for this measure was high (*a* = .81).

Harmonious Passion. The Harmonious Sexual Passion Scale (Philippe et al., 2017) is a 3-item scale that measures whether sex is in harmony with other things in an individual's life (e.g., 'Sex is harmony with the other things that are a part of me'; 1 = *strongly disagree*, 7 = *strongly agree*). Reliability for this measure was high (*a* = .91).

Sexual Esteem. The Sexual-Esteem Subscale is a 10-item scale from the Sexuality Scale (Snell Jr & Papini, 1989) that measures an individual's self-esteem regarding their sexual ability on a 7-point scale (e.g., 'I am a good sexual partner'; 1 = *strongly disagree*, 7 = *strongly agree*). Reliability for this measure was high (*a* = .93).

Sexual Depression. The Sexual-Depression Subscale is also a 10-item subscale from the Sexuality Scale (Snell Jr & Papini, 1989) which measures an individual's depression regarding their sexuality (e.g. 'I am depressed about the sexual aspects of my life'; 1 = *strongly disagree*, 7 = *strongly agree*). Reliability for this measure was high (a = .89).

Psychological Wellbeing: The psychological wellbeing typology consisted of four measures; life satisfaction, flourishing, anxiety and depression, and perceived stress.

Life Satisfaction. Life satisfaction was measured using the Abbreviated Satisfaction with Life Scale (Kjell & Diener, 2021), a 3-item scale that measures an individual's satisfaction with their life (e.g., 'I am satisfied with my life'; 1 = *strongly disagree*, 7 = *strongly agree*). Reliability for this measure was high (a = .87).

Flourishing. Flourishing was measured using The Flourishing Scale (Diener et al., 2009), an 8-item measure that assesses an individual's self-perceived self-esteem, purpose, and optimism (e.g., 'I lead a purposeful and meaningful life'; 1 = *strongly disagree*, 7 = *strongly agree*). Reliability for this measure was high (a = .89).

Perceived Stress. Perceived stress was measured using the Perceived Stress Scale (Cohen et al., 1983) which aims to measure a participant's perceived stress over the past month (e.g., 'In the last month, how often have you felt that you were unable to control the important things in your life?'; 0 = *never*, 4 = *very often*). Reliability for this measure was high (a = .85).

Anxiety and Depression. Anxiety and depression was measured using the anxiety and depression subscales from the DSM-5 Cross Cutting Symptom Assessment (Narrow et al., 2013) which will assess the participant's anxiety and depression symptoms (e.g., 'During the past two weeks, how much have you been bothered by the following problems... little interest or pleasure in doing things?'; 0 = *not at all*, 4 = *severely (nearly every day)*). Reliability for this measure was high (a = .86).

Results

Analytic Strategy

Before proceeding with the main data analysis, data from participants who met the exclusion criteria (those who self-identified as asexual, those who did not complete the full survey, those who did not answer more than one question for each of the target variables for LPA analysis) was removed. RStudio was used to re-code variables, and to create averages for each scale, for each participant. The main analytic plan followed that of Xia and Hudac (2023). Descriptive statistics and correlations between items are listed in Table 2.1. The analyses were conducted in MPlus version 8.10 (Muthén & Muthén, 2023) in three steps. Step 1 was to use latent profile analysis (LPA) to identify the latent profiles of sexual activation. Arousal, desire, sexual frequency, and sexual frequency discrepancy, were used as indicators to categorize the sample into separate subgroups, with the profile memberships represented as latent variables in LPA. Model estimation was checked with 7000 random sets of initial start values, with 200 iterations for each start, and the best 200 solutions were retained for final stage optimization in each tested model as recommended by Hipp and Bauer (2006). Model selection was evaluated by examining the model fit indices, profile stability, and theoretical interpretability (Yu & Park, 2014). Several model fit indices were used to evaluate each model. A significant Lo-Mendell-Rubin test (LMR; Lo et al., 2001) or a significant bootstrapped likelihood ratio test (BLRT; McLachlan & Peel, 2000) indicated that the model fit significantly better than that of a model with one less profile. Lower values in the Akaike information criterion (AIC; Akaike, 1974), Bayesian information criterion (BIC; Schwarz, 1978) and sample-size adjusted Bayesian information criterion (a-BIC; Sclove, 1987) indicated that the model had a better fit. A higher level of entropy indicated the model had better classification utility (Celeux & Soromenho, 1996). It is important to note that entropy should not be used alone to determine the optimal number of profiles (Lubke &

Table 2.1.

Descriptive Statistics and Bivariate Correlations for Sexual Arousal, Sexual Desire, Sexual Frequency, Satisfaction with Sexual Response, Harmonious Sexual Passion, Sexual Esteem, Sexual Depression, Relationship Satisfaction, Perceived Partner Responsiveness, Relationship Flourishing, Relationship Strain, Life Satisfaction, Flourishing, Perceived Stress, and Anxiety & Depression

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 Sexual Arousal	-															
2 Sexual Desire	0.68***	-														
3 Sexual Frequency	0.25***	0.32***	-													
4 Sexual Frequency Discrepancy	0.13***	0.16***	0.52***	-												
5 Satisfaction with Sexual Response	0.42***	0.53***	0.29***	0.15***	-											
6 Harmonious Sexual Passion	0.4***	0.48***	0.5***	0.34***	0.53***	-										
7 Sexual Esteem	0.26***	0.36***	0.26***	0.09*	0.38***	0.43***	-									
8 Sexual Depression	-0.36***	-0.52***	-0.43***	-0.25***	-0.66***	-0.62***	-0.47***	-								

9 Relationship Satisfaction	0.28***	0.33***	0.23***	0.21***	0.4***	0.42***	0.23***	-0.54***	-							
10 Perceived Partner Responsiveness	0.3***	0.35***	0.16***	0.14***	0.42***	0.39***	0.23***	-0.48***	0.83***	-						
11 Relationship Flourishing	0.33***	0.39***	0.17***	0.15***	0.42***	0.42***	0.24***	-0.47***	0.77***	0.8***	-					
12 Relationship Strain	-0.07*	-0.14***	-0.06	-0.03	-0.27***	-0.21***	-0.11**	0.38***	-0.53***	-0.57***	-0.43***	-				
13 Life Satisfaction	0.15***	0.21***	0.13***	0.15***	0.28***	0.36***	0.23***	-0.33***	0.4***	0.38***	0.39***	-0.23***	-			
14 Flourishing	0.26***	0.27***	0.16***	0.1**	0.34***	0.38***	0.37***	-0.4***	0.39***	0.41***	0.44***	-0.19***	0.64***	-		
15 Perceived Stress	-0.05	-0.13***	-0.13***	-0.07	-0.18***	-0.24***	-0.32***	0.27***	-0.3***	-0.25***	-0.24***	0.22***	-0.52***	-0.51***	-	
16 Anxiety & Depression	-0.01	-0.11**	-0.1**	-0.02	-0.18***	-0.16***	-0.33***	0.27***	-0.22***	-0.2***	-0.17***	0.21***	-0.4***	-0.41***	0.68***	-
Mean	3.24	3.55	4.30	-0.56	5.63	4.99	4.52	2.66	5.89	5.95	5.77	1.91	4.85	5.41	2.96	3.95
SD	0.89	0.86	1.62	1.41	1.37	1.51	1.26	1.16	1.15	1.01	0.89	0.67	1.28	0.91	0.63	1.45

Note. *$p < .05$, **$p < .01$, ***$p < .001$.

Muthén, 2007; Tein et al., 2013), and thus greater importance was placed on the other model fit indices. The optimal model was further chosen based on the latent profile membership probabilities of which we wanted a value of above .80, as recommended by Rost (2006), and interpreted using the mean levels of each item within the identified profile.

In Step 2, three LPAs were conducted to identify the latent profiles for the typologies of relationship wellbeing, sexual wellbeing, and psychological wellbeing. For relationship wellbeing, the four indicators were relationship satisfaction, perceived partner responsiveness, relationship flourishing, and relationship strain. For sexual wellbeing, the four indicators of sexual passion, sexual esteem, sexual depression, and satisfaction with sexual activation were used to categorize the sample into latent profiles. For psychological wellbeing, the four indicators were life satisfaction, sense of purpose, anxiety and depression, and perceived stress. The analyses were conducted in the same manner as Step 1, with the same model identification procedure, model fit criteria, and the same parameters for optimal model interpretation.

In Step 3, the association between sexual activation profiles and wellbeing profiles was tested using loglinear modelling with latent variables (Hagenaars, 1993). This method provides us with the probabilities of wellbeing profile membership, conditional on the sexual activation profile membership, which allows us to better understand the connection between the sexual activation constellations and the wellbeing typologies for each type of wellbeing. Latent profile memberships were saved as Bolck-Croon-Hagenaars (BCH) weights in each optimal model, as recommended by Bakk and Vermunt (2016) to reduce bias when analyzing latent categorical variables. The saved BCH weights from the optimal sexual activation model and each wellbeing model were combined to provide training data for the loglinear model, where the wellbeing profiles were regression on the sexual activation profiles (Asparouhov & Muthén, 2020). The probabilities of being in each wellbeing profile,

conditional on each sexual activation profile were presented. Pairwise significance tests were conducted to examine the difference in conditional probabilities within each wellbeing profile. Odds ratios were calculated for significant pairwise comparisons to help describe the differences (Bray et al., 2010).

Latent Profile Analyses: Identifying the Constellations of Sexual Activation and Wellbeing Typologies

In Steps 1 and 2, we used latent profile analysis to identify constellations of sexual activation, and the typologies of relational, sexual, and psychological wellbeing. These analyses suggested a 4-profile solution for sexual activation, and 3-profile solutions for relationship wellbeing, sexual wellbeing, and psychological wellbeing.

Constellations of Sexual Activation. Profiles of sexual activation cluster participants according to whether they are above, below or at mean the sample means on each facet in the constellation. However, it was decided that the point of comparison for mean frequency ideals would be the scale midpoint (3.50 = ideal sexual frequency, vs. 1 = much less than ideal or 7 = much more than ideal), rather than the sample mean (M = 3.93), as it had greater theoretical interpretability.

When considering models for model selection, we checked that there were no model identification errors, that the lowest log-likelihood values was replicated, and that each profile contains above N = 25 as recommended by Lubke and Neale (2006). Among the LPA models of sexual activation, models with 1- to 5- profiles were well-identified and considered for model selection. Models with more than 5 profiles contained profiles that had less than the recommended sample size of 25. Table 2.2 presents the model fit information for sexual activation, with entropy ranging from 0.718 (3-profile model) to 0.836 (5-profile model). LMR was significant in models with 2- to 4- profiles, and BLRT was significant in models with 2- to 5- profiles. Of models where the LMR was significant, the AIC, BIC, and a-BIC

were lowest in the 4-profile model. In the 4-profile model, all identified profiles were theoretically distinct from each other, and thus the 4-profile model was selected as the optimal model for further interpretation and analysis[4].

Table 2.2.
Model Fit Information for Sexual Activation

No. of Profiles	One-Profile Model	Two-Profile Model	Three-Profile Model	Four-Profile Model	Five-Profile Model
Free Parameters	8	13	18	23	28
Log-Likelihood	-4338.459	-4113.616	-4056.968	-3998.025	-3958.053
AIC	8692.919	8253.232	8149.936	8042.051	7972.105
BIC	8729.282	8312.321	8231.752	8146.594	8099.375
a-BIC	8703.880	8271.044	8174.599	8073.565	8010.470
Entropy	-	0.752	0.718	0.746	0.836
LMR	-	$p < .001$	$p < .010$	$p = .012$	$p = .261$
BLRT	-	$p < .001$	$p < .001$	$p < .001$	$p < .001$
Profile Counts (Fit Probabilities)					
P1	-	229 (.91)	126 (.88)	115 (.89)	77 (.91)
P2	-	467 (.94)	307 (.85)	146 (.80)	334 (.91)
P3	-	-	263 (.89)	232 (.89)	149 (.87)
P4	-	-	-	203 (.86)	59 (.98)
P5	-	-	-	-	77 (.83)

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test; P = profile number. Dashes indicate criterion is not applicable; gray column indicates selected model.

Table 2.3 presents the factor means for each profile in the 4-profile model of sexual activation. The first constellation, the *disengaged,* represented 17% of the sample. The disengaged were characterized by arousal and desire that was below the sample mean. They were having sex less often than the sample mean, and they also felt this was less often than their ideal sexual frequency. The second constellation, the *apathetic,* represented 21% of the

[4] As the rest of the thesis is primarily concerned with arousal-desire alignment, and not the amount of sex people are having and whether this is meeting our needs, we ran a latent profile analysis with just arousal and desire to see if similar profiles would exist. The 3-profile model was selected as the optimal model. More details can be found in Appendix A3.

Table 2.3.
Parameter Estimates for the Four Profile Model of Sexual Activation

Latent Profile Size (Membership Probability)		P1 Disengaged	P2 Apathetic	P3 Satiated	P4 Unsatiated
		N = 115 17%	*N* = 146 21%	*N* = 232 33%	*N* = 203 29%
	Overall Sample Means (SD)	Profile Specific Item Means			
Sexual Arousal	3.243 (0.891)	2.193[b]	2.695[b]	3.868[a]	3.551[a]
Sexual Desire	3.547 (0.862)	2.393[b]	3.072[b]	4.199[a]	3.827[a]
Sexual Frequency	4.302 (1.616)	2.688[b]	5.044[a]	5.748[a]	2.984[b]
Sexual Frequency Discrepancy	-0.559 (1.408)	-1.598[b]	-0.134	0.175[a]	-1.135[b]

Note. P1 ~ P4 = Profile 1 ~ Profile 4 of Sexual Activation.
[a] Value is statistically significantly higher than the overall sample mean value at $p < .05$.Other than for sexual frequency discrepancy, wherein [a] represents that the value is statistically significantly higher than the scale midpoint of 3.5, which represents an individual's ideal sexual frequency.
[b] Value is statistically significantly lower than the overall sample mean value at $p < .05$. Other than for sexual frequency discrepancy, wherein [b] represents that the value is statistically significantly higher than the scale midpoint of 3.5, which represents an individual's ideal sexual frequency.

sample. The apathetic were characterized by arousal and desire that was below the sample mean. However, these people were having sex regularly (i.e., as often as the sample mean) and felt this was their ideal sexual frequency. The third constellation, the *satiated,* represented 33% of the sample. This satiated were characterized with above average arousal and desire. They were having sex more often than the sample mean and felt this was slightly more than their ideal sexual frequency. The fourth constellation, the *unsatiated*, represented 29% of the sample. This unsatiated were also characterized by arousal and desire above the

sample mean. However, the unsatiated were having sex less often than the sample mean, which was also less often than their ideal sexual frequency. Profiles did not significantly differ by age or gender[5].

Typologies of Relationship Wellbeing. Among the LPA models of relationship wellbeing, models with 2- to 4- profiles were well-identified and considered for model selection. Models with more than 4 profiles contained profiles that had less than the recommended size of 25. Table 2.4 presents the model fit information for relationship wellbeing, with entropy ranging from 0.852 (4-profile model) to 0.933 (2-profile model). LMR was significant in 2- and 3-profile models, and BLRT was significant in models with 2- to 4- profiles. Of models where the LMR was significant, the AIC, BIC, and a-BIC were lowest in the 3-profile model. Thus, the 3-profile solution was considered as optimal.

Table 2.4.
Model Fit Information for Relationship Wellbeing

No. of Profiles	One-Profile Model	Two-Profile Model	Three-Profile Model	Four-Profile Model
Free Parameters	8	13	18	23
Log-Likelihood	-3692.260	-3021.769	-2761.771	-2663.936
AIC	7400.520	6069.538	5559.541	5373.872
BIC	7436.883	6128.627	5641.358	5478.415
a-BIC	7411.481	6087.350	5584.204	5405.386
Entropy	-	0.933	0.892	0.852
LMR	-	$p < .001$	$p < .001$	$p = .095$
BLRT	-	$p < .001$	$p < .001$	$p < .001$
Profile Counts (Fit Probabilities)				
P1	-	144 (.96)	68 (.98)	50 (.98)
P2	-	552 (.99)	209 (.92)	319 (.93)
P3	-	-	419 (.96)	224 (.88)
P4	-	-	-	103 (.92)

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test; P = profile number. Dashes indicate criterion is not applicable; gray column indicates selected model.

[5] Full analysis of gender and age distributions can be found in Appendix A4.

Table 2.5.
Parameter Estimates for the Three Profile Model of Relationship Wellbeing

Latent Profile Size (Membership Probability)		P1 Distressed	P2 Stagnating	P3 Thriving
		N = 68	*N* = 209	*N* = 419
		10%	30%	60%
	Overall Sample Means (SD)	Profile Specific Item Means		
Relationship Satisfaction	5.890 (0.892)	3.365[b]	5.381[b]	6.558[a]
Perceived Partner Responsiveness	5.950 (0.862)	3.719[b]	5.462[b]	6.559[a]
Relationship Flourishing	5.775 (1.617)	4.122[b]	5.264[b]	6.301[a]
Relationship Strain	1.910 (1.407)	2.719[a]	2.198[a]	1.633[b]

Note. P1 ~ P3 = Profile 1 ~ Profile 3 of Relationship Wellbeing.
[a] Value is statistically significantly higher than the overall sample mean value at $p < .05$.
[b] Value is statistically significantly lower than the overall sample mean value at $p < .05$.

Table 2.5 presents the profile-specific item means for the 3-profile solution of relationship wellbeing. The first typology, the *distressed,* represented 10% of the sample. The distressed were characterized by their very low (-2SD below the sample mean) relationship satisfaction and perceived partner responsiveness. This typology were also experiencing more strain and were flourishing in their relationships less than the sample means. The second typology, the *stagnating,* represented 30% of the sample. The stagnating were characterized by relationship satisfaction and perceived partner responsiveness that was below the sample mean. They were also experiencing more strain and were flourishing less than the sample means. Although the distressed and stagnating profiles have a similar pattern of relationship dysfunction, it is notable that the distressed are experiencing extreme dysfunction in their relationships relative to the stagnating who are hovering closer to sample means (albeit

significantly). The third typology, the *thriving*, represented the majority of the sample at 60%. The thriving were characterized by relationship satisfaction, perceived partner responsiveness, and flourishing that was above the sample mean. They also reported less strain than the sample mean. Profiles did not significantly differ by age or gender (see Appendix A4).

Typologies of Sexual Wellbeing. Among the LPA models of sexual wellbeing, models with 1- to 3- profiles were well-identified and considered for model selection. Models with more than 3 profiles contained profiles with less than the recommended size of 25. Table 2.6 presents the model fit information for sexual wellbeing, with entropy ranging from 0.810 (3-profile model) to 0.844 (2-profile model). LMR and BLRT was significant in 2- to 3-profile models. The 3-profile model of psychological wellbeing, which had the lowest AIC, BIC, and a-BIC values, was considered as optimal for further interpretation and analysis.

Table 2.6.
Model Fit Information for Sexual Wellbeing

No. of Profiles	One-Profile Model	Two-Profile Model	Three-Profile Model
Free Parameters	8	13	18
Log-Likelihood	-4660.172	-4250.595	-4130.343
AIC	9336.343	8527.190	8296.685
BIC	9372.706	8586.279	8378.502
a-BIC	9347.305	8545.002	8321.348
Entropy	-	0.844	0.810
LMR	-	$p < .001$	$p < .001$
BLRT	-	$p < .001$	$p < .001$
Profile Counts (Fit Probabilities)			
P1	-	192 (.95)	92 (.91)
P2	-	504 (.96)	240 (.87)
P3	-	-	364 (.94)
P4	-	-	-

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test; P = profile number. Dashes indicate criterion is not applicable; gray column indicates selected model.

Table 2.7.
Parameter Estimates for the Three Profile Model of Sexual Wellbeing

Latent Profile Size (Membership Probability)		P1 Struggling	P2 Disassociated	P3 Actualized
		N = 92	*N* = 240	*N* = 364
		13%	34%	52%
	Overall Sample Means (SD)	Profile Specific Item Means		
Satisfaction with Physiological Responses	5.627 (1.265)	3.251[b]	5.410	6.367[a]
Harmonious Passion	4.990 (1.508)	2.979[b]	4.418[b]	5.871[a]
Sexual Self-Esteem	4.519 (1.258)	3.546[b]	4.026[b]	5.087[a]
Sexual Depression	2.656 (1.156)	4.360[a]	3.286[a]	1.813[b]

Note. P1 ~ P3 = Profile 1 ~ Profile 3 of Sexual Wellbeing.
[a] Value is statistically significantly higher than the overall sample mean value at $p < .05$.
[b] Value is statistically significantly lower than the overall sample mean value at $p < .05$.

Table 2.7 presents the profile-specific item means for the 3-profile solution of sexual wellbeing. The first typology, the *struggling*, represented 13% of the sample. The struggling were characterized by dissatisfaction with how their bodies respond physiologically during sex, as well as having poor self-esteem about their abilities as a sexual partner and feeling like their passion was out of harmony with other parts of their life. The struggling also felt depressed about their sex life. The second typology, the *disassociated*, represented 34% of the sample. The disassociated were characterized by low sexual self-esteem, feeling like their passion was out of harmony, and greater feelings of sexual depression. However, the disassociated experienced average satisfaction with how their bodies responded physiologically during sex, suggesting a potential disconnection between their psychological

experiences with sex and their physical experiences. The third typology, the *actualized*, represented 52% of the sample. The actualized were characterized by reporting satisfaction with how their bodies responded physiologically during sex that was above the mean, as well as self-esteem as a sexual partner, and feeling that their passion was in harmony with other parts of their life, that was above the sample mean. They also reported sexual depression that was below the sample mean. Profiles did not significantly differ by age or gender (see Appendix A4).

Typologies of Psychological Wellbeing. Among the LPA models of psychological wellbeing, models with 1- to 6- profiles were well-identified and considered for model

Table 2.8.
Model Fit Information for Psychological Wellbeing

No. of Profiles	One-Profile Model	Two-Profile Model	Three-Profile Model	Four-Profile Model	Five-Profile Model	Six-Profile Model
Free Parameters	8	13	18	23	28	33
Log-Likelihood	-3994.446	-3660.274	-3516.729	-3479.774	-3438.790	-3411.517
AIC	8004.892	7346.548	7069.459	7005.548	6933.580	6889.035
BIC	8041.255	7405.637	7151.275	7110.091	7060.850	7039.031
a-BIC	8015.853	7364.360	7094.122	7037.062	6971.945	6934.250
Entropy	-	0.742	0.772	0.735	0.767	0.740
LMR	-	$p = .081$	$p < .001$	$p = .437$	$p = .016$	$p = .076$
BLRT	-	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p < .001$
Profile Counts (Fit Probabilities)						
P1	-	362 (.92)	104 (.90)	152 (.79)	51 (.82)	45 (.89)
P2	-	334 (.93)	360 (.88)	236 (.91)	59 (.88)	32 (.80)
P3	-	-	232 (.91)	50 (.88)	243 (.83)	239 (.80)
P4	-	-	-	258 (.82)	250 (.87)	107 (.86)
P5	-	-	-	-	93 (.84)	174 (.80)
P6	-	-	-	-	-	99 (.75)

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test; P = profile number. Dashes indicate criterion is not applicable; gray column indicates selected model.

selection. Models with more than 6 profiles produced errors of model nonidentification due to a profile containing only 1 individual. Table 2.8 presents the model fit information for psychological wellbeing, with entropy ranging from 0.735 (6-profile model) to 0.772 (3-profile model). LMR was significant in 3- and 5-profile models, and BLRT was significant in models with 2- to 6-profiles. Of the models where the LMR was significant, the AIC, BIC, and a-BIC were lowest in the 5-profile model, however the 5-profile contained profiles that were theoretically indistinguishable and had latent profile membership probabilities on the main diagonal that were not above .80, as discussed by Rost (2006). Therefore, the 3-profile model of psychological wellbeing was considered as cautiously optimal for further interpretation and analysis.

Table 2.9.
Parameter Estimates for the Three Profile Model of Psychological Wellbeing

Latent Profile Size (Membership Probability)		P1 Unfulfilled	P2 Burdened	P3 Euthymic
		N = 104	*N* = 360	*N* = 232
		15%	52%	33%
	Overall Sample Means (SD)	Profile Specific Item Means		
Life Satisfaction	4.853 (1.270)	3.029[b]	4.819	5.746[a]
Flourishing	5.405 (1.512)	3.977[b]	5.414	6.053[a]
Perceived Stress	2.963 (1.254)	3.608[a]	3.164[a]	2.370[b]
Anxiety & Depression	3.954 (1.154)	5.155[a]	4.510[a]	2.585[b]

Note. P1 ~ P3 = Profile 1 ~ Profile 3 of Psychological Wellbeing.
[a] Value is statistically significantly higher than the overall sample mean value at $p < .05$.
[b] Value is statistically significantly lower than the overall sample mean value at $p < .05$.

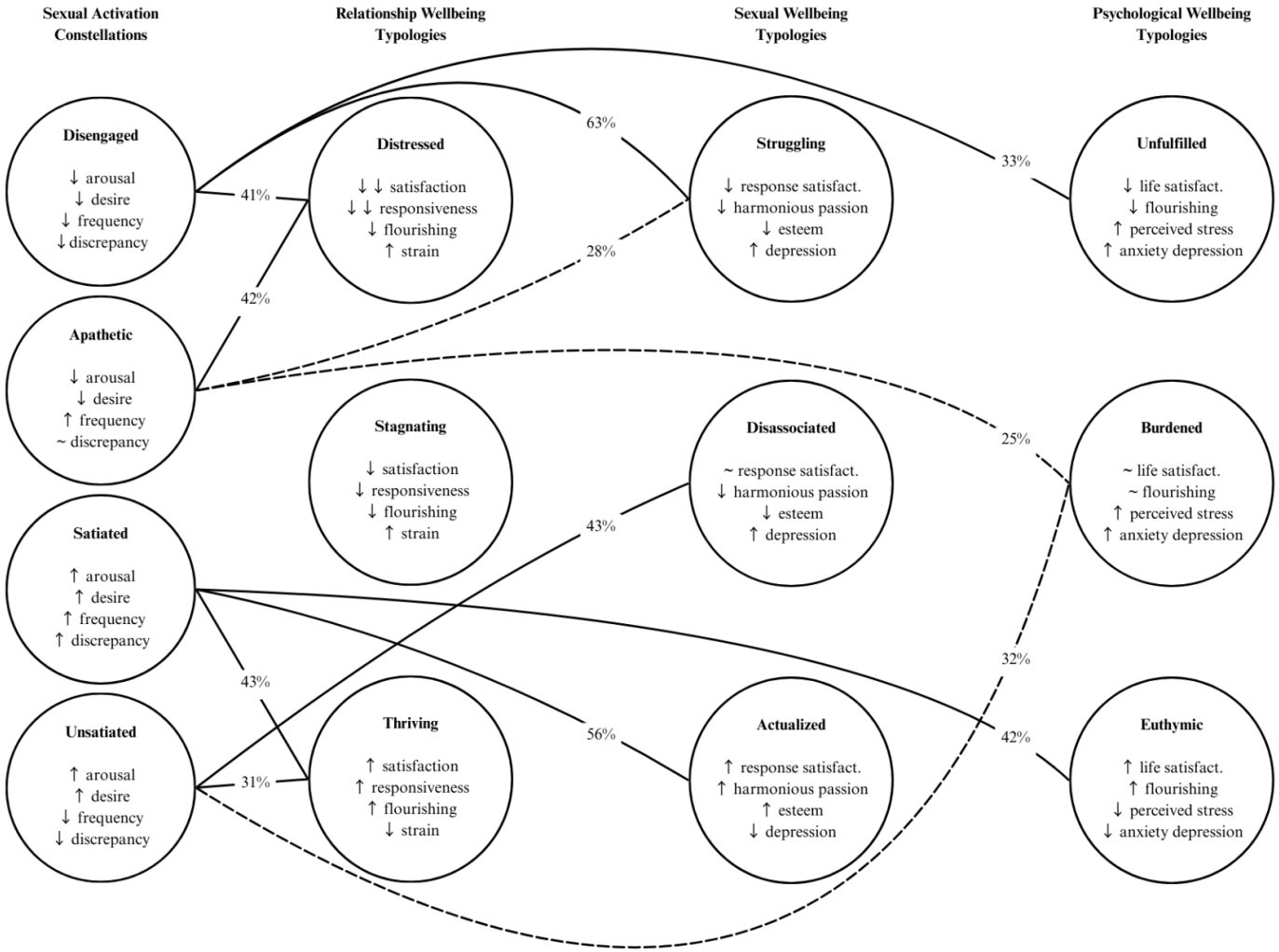
Table 2.9 presents the profile-specific item means for the 3-profile solution of psychological wellbeing. The first typology, the *unfulfilled,* represented 15% of the sample. The unfulfilled were characterized by being less satisfied with their lives and feeling a lack of flourishing in their lives. The unfulfilled also reported more stress and more anxiety and depression than the sample mean. The second typology, the *burdened,* represented 52% of the sample. The burdened were characterized by life satisfaction and flourishing that was above the sample mean. However, they also reported being more stressed, and anxious and depressed than the sample mean. The third typology, the *euthymic,* represented 33% of the sample. The euthymic were characterized by feeling more satisfied in life and like they were flourishing in their lives. They also experienced less stress, and anxiety and depression than the sample men. Profiles did not significantly differ by age or gender (see Appendix A4).

Loglinear Probabilities of Constellations' Typographic Membership

In Step 3 we used loglinear modelling with latent variables (Hagenaars, 1993) to test the probability of each constellation of sexual activation's membership in each typology of relationship, sexual and psychological wellbeing. This allowed us to investigate whether different profiles of sexual activation are differentially associated with different profiles of wellbeing across domains.

Constellation Membership in Relationship Wellbeing Typologies. Table 2.10 presents the probabilities for relationship wellbeing profile membership condition on sexual activation profile membership. Entries sum to 1 in each row (each sexual activation constellation). Table 2.10 depicts the highest conditional probabilities of each wellbeing typology in bold. The last row in Table 2.10 summarizes the findings of pairwise significance tests conducted on the difference in conditional probabilities on each sexual activation constellation (also depicted in Figure 2.1). These results are further illustrated in odds ratios (calculation procedures refer to Bray et al., 2010), which are also depicted in Table 2.10.

Figure 2.1.
Greatest probability associations between sexual activation constellations and wellbeing typologies.



Note. Within each latent profile, ↓↓ = two standard deviations lower than its sample mean; ↓ = lower than its sample mean; ↑ = higher than its sample mean; ~ = not significantly different from its sample mean. Only the highest conditional probabilities on each wellbeing typology are listed in this figure; full information of conditional probabilities are listed in Tables 2.10, 2.11, and 2.12. Dashed lines show that despite being the highest likelihood membership, it was not significantly different than membership in the other typologies.

Table 2.10.
Probabilities for Relationship Wellbeing Typology Membership Conditional on Sexual Activation Constellation Membership

Constellations of Sexual Activation	Relationship Wellbeing Typologies			
	Distressed (RW1)	Stagnating (RW2)	Thriving (RW3)	Pairwise Comparison
Disengaged (SA1)	**0.41**	0.21	0.11	RW1 > RW2, RW3; RW2 > RW3
Apathetic (SA2)	**0.42**	0.27	0.16	RW1 > RW3; RW2 > RW3
Satiated (SA3)	0.02	0.24	**0.43**	RW2 > RW1; RW3 > RW1, RW2
Unsatiated (SA4)	0.15	0.28	**0.31**	RW3 > RW1

Note. Table entries are row conditional, they sum to 1.0 across columns. RW1 ~ RW3 = three well-being profiles, SA1 ~ SA4 = four sexual activation profiles. The highest conditional probabilities of typology membership for each constellation are bold.

Odds ratio information (of success) for each relationship wellbeing typology is listed below:
(SA1) RW1 = 2.74 times RW2, 5.84 times RW3. RW2 = 2.13 times RW3.
(SA2) RW1 = 3.89 times RW3. RW2 = 2.02 times RW3.
(SA3) RW2 = 19.53 times RW1. RW3 = 46.39 times RW1, 2.38 times RW2.
(SA4) RW3 = 2.48 times RW1.

Forty-one percent of people belonging to the *disengaged* sexual activation constellation also belonged to the *distressed* relationship wellbeing typology; 2.74 times more likely than *stagnating*, and 5.84 times more likely than *thriving*. Similarly, 42% of those in the *apathetic* sexual activation constellation were also *distressed*; 3.89 times more likely than *thriving*. However, the likelihood of being *distressed* or *stagnating* relationship wellbeing did not differ for those who were *apathetic* in their sexual activation. People in the *satiated* constellation had a very clear pattern of membership across the relationship wellbeing typologies. They were 2.38 times more likely to be *thriving* (43%) than *stagnating*

(24%), and 46.39 times more likely to be *thriving* than *distressed* (2%). Finally, people belonging to the *unsatiated* constellation were 2.48 times more likely to belong to the *thriving* (31%) than *distressed* (15%), but the likelihood of belonging to *thriving* was not more than belonging to *stagnating* (28%).

Constellation Membership in Sexual Wellbeing Typologies. Table 2.11 presents the probabilities for sexual wellbeing profile membership conditional on sexual activation profile membership. The table depicts the highest conditional probabilities of each sexual wellbeing typology in bold (also presented in Figure 2.1), and pairwise significance tests and odds ratios in the last row.

Table 2.11.
Probabilities for Sexual Wellbeing Typology Membership Conditional on Sexual Activation Constellation Membership

Constellations of Sexual Activation	Sexual Wellbeing Typologies			
	Struggling (SW1)	Disassociated (SW2)	Actualized (SW3)	Pairwise Comparison
Disengaged (SA1)	**0.63**	0.21	0.02	SW1 > SW2, SW3; SW2 > SW3
Apathetic (SA2)	**0.28**	0.24	0.19	No differences
Satiated (SA3)	0.00	0.13	**0.56**	SW2 > SW1; SW3 > SW1, SW2
Unsatiated (SA4)	0.08	**0.43**	0.24	SW2 > SW1, SW3; SW3 > SW1

Note. Table entries are row conditional, they sum to 1.0 across columns. SW1 ~ SW3 = three well-being profiles, SA1 ~ SA4 = four sexual activation profiles. The highest conditional probabilities of typology membership for each constellation are bold.

Odds ratio information (of success) for each relationship wellbeing typology is listed below:
(SA1) SW1 = 6.46 times SW2, 99.31 times SW3. SW2 = 15.37 times SW3.
(SA3) SW2 = ∞ times SW1. SW3 = ∞ times SW1, 8.71 times SW2.
(SA4) SW2 = 8.20 times SW1, 2.38 times SW3. SW3 = 3.45 times SW1.

The majority (63%) of people belonging to the *disengaged* sexual activation constellation also belonged to the *struggling* sexual wellbeing typology; 6.46 times more likely than *disassociated*, and 99.31 times more likely than *actualized*. Those in the *apathetic* sexual activation constellation were most likely to be *struggling* (28%), although this was not significantly more likely than belonging to the other sexual wellbeing typologies. Once again, those in the *satiated* constellation had a very clear pattern of membership across the sexual wellbeing typologies. They were infinitely greater odds more likely to be *actualized* (56%) than *struggling* (0%) because no one appeared in the struggling typology from this constellation and were also 8.71 times more likely to be *actualized* than *disassociated* (13%). People belonging to the *unsatiated* constellation were 8.20 times more likely to belong to the *disassociated* (43%) than *struggling* (8%), and 2.38 times more likely than *actualized* (24%).

Constellation Membership in Psychological Wellbeing Typologies. Table 2.12 presents the probabilities for psychological wellbeing profile membership condition on sexual activation profile membership. The table depicts the highest conditional probabilities of each psychological wellbeing typology in bold (also presented in Figure 2.1), and pairwise significance tests and odds ratios in the last row.

The majority (33%) of people belonging to the *disengaged* sexual activation constellation belonged to the *unfulfilled* psychological wellbeing typology; 3.66 times more likely than *burdened*, and 2.56 times more likely than *euthymic*. Those in the *apathetic* sexual activation constellation were most likely to be *burdened* (25%), although this was not significantly more likely than belonging to the other psychological wellbeing typologies. Those in the *satiated* constellation were 2.90 times more likely to be *euthymic* (42%) than *unfulfilled* (20%) but were not more likely to be *euthymic* than *burdened* (31%). People belonging to the *unsatiated* constellation were most likely to have an *unfulfilled* (31%)

psychological wellbeing typology, although this was not significantly more likely than belonging to the other psychological wellbeing typologies.

Table 2.12.
Probabilities for Psychological Wellbeing Typology Membership Conditional on Sexual Activation Constellation Membership

Constellations of Sexual Activation	Psychological Wellbeing Typologies			
	Unfulfilled (PW1)	Burdened (PW2)	Euthymic (PW3)	Pairwise Comparison
Disengaged (SA1)	**0.33**	0.12	0.16	PW1 > PW2, PW3
Apathetic (SA2)	0.16	**0.25**	0.20	No differences
Satiated (SA3)	0.20	0.31	**0.42**	PW3 > PW1
Unsatiated (SA4)	0.31	**0.32**	0.22	No differences

Note. Table entries are row conditional, they sum to 1.0 across columns. PW1 ~ PW3 = three well-being profiles, SA1 ~ SA4 = four sexual activation profiles. The highest conditional probabilities of typology membership for each constellation are bold.

Odds ratio information (of success) for each relationship wellbeing typology is listed below:
(SA1) PW1 = 3.66 times PW2, 2.56 times PW3.
(SA3) PW3 = 2.90 times PW1.

General Discussion

Sexual intimacy has many different personal and interpersonal benefits (Bancroft, 2002; Brody, 2010; Diamond & Huebner, 2012; Mollaioli et al., 2021; Satcher, 2001, 2013). The activation of the sexual system is similarly multifaceted. Consequently, people monitor their sexual activation through different mechanisms, including feelings of subjective arousal and desire, how often one has sex, and the extent to which that frequency is discrepant from one's ideal frequency. Previous research has shown how each of these facets of sexual

activation independently contribute to wellbeing (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Chao et al., 2011; Cheng & Smyth, 2015; Frederick et al., 2017; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007). However, each element of sexual activation is seldom experienced in isolation (Basson, 2000; Both et al., 2007; Goldey & van Anders, 2012; Graham et al., 2004; Laan & Both, 2008; Lief, 1977; Masters & Johnson, 1966; Meston & Buss, 2007). Nonetheless, reliance on traditional variable-centered modelling has meant that the ways in which different combinations of the facets of sexual activation have been overlooked, as have their associations with experiences of sexual, relational and psychological wellbeing. This study took a novel person-centered approach to testing this question through latent profile analysis (LPA). This approach not only provided important insight into the ways in which different facets of a person's sexual experiences can combine in unique and meaningful ways, but it also allowed us to examine how these different constellations of sexual activation are associated with different typologies of wellbeing across domains. By identifying four distinct constellations of sexual activation, we move beyond traditional variable-centered approaches to reveal how combinations of sexual activation facets can interact in meaningful ways that are not apparent when these facets are considered in isolation. Our study offers a timely and novel perspective on the complex interplay of sexual experiences, revealing distinct patterns of activation that hold meaningful implications for understanding and promoting sexual, relational, and psychological wellbeing.

The Constellations of Sexual Activation & Associations with Wellbeing Typologies

The LPA identified four constellations of sexual activation. Over two-thirds (62%) of our sample belonged to the two profiles characterized by above average arousal and desire. This is unsurprising given the low prevalence rates of arousal and desire disorders (estimated

between 5-39%; Laumann et al., 1999; Rosen et al., 2009). However, while the largest proportion (33%) of the sample belonged to the *satiated* constellation, who's above average frequency of sex exceeded their ideals, those in the *unsatiated* constellation (29%) were having not only less sex on average, but also sex less often than they would prefer. The remaining participants belonged to *apathetic* (21%) and *disengaged* (17%) constellations. Both of these constellations were characterized by below average arousal and desire, but again were differentiated by their frequency and how this met their expectations. Notably, despite low arousal and desire, those in the *apathetic* profile were having sex often than average, but actually felt this met this was consistent with their ideal preferences. By contrast, the *disengaged* were having sex less often than average, and less than their ideals.

To understand the implications of these differentiated experiences of sexual activation, we again used LPA to identify typologies of sexual, relational, and psychological wellbeing, and then used loglinear modelling to examine whether being in one constellation of sexual activation was associated with membership in a typology. These analyses provided important insights. First, a third of our sample belonged to the *satiated* sexual activation constellation (33%), and the majority of these people and found themselves in wellbeing typologies associated with more positive outcomes (43% *thriving* relationally; 42% *actualized* sexually; 56% *euthymic* psychologically). This inclusion in the positive typologies was often by orders of magnitude greater odds when compared to the less positive wellbeing typologies (2.38 - ∞ times higher likelihoods). A noteworthy finding is that ***none*** of the people in the *satiated* sexual activation constellation belonged to the *struggling* sexual wellbeing typology. Thus, people who were characterized by high levels of arousal and desire, and frequent sex that exceeded their ideals, were perhaps unsurprisingly unrepresented among those who had dysfunctional sexual wellbeing. Similarly, while the *disengaged* sexual activation constellation represented a minority of people across constellations (17%), they

were most likely to belong to typologies associated with more dysfunction (41% *distressed* relationally; 63% *struggling* sexually; 33% *unfulfilled* psychologically). Notably, being *disengaged* was 99 times more likely to be *struggling* sexually than *actualized*. Again, those who were experiencing low desire and arousal, having sex infrequently despite a preference to have it more often, were less likely to be feel as though their wellbeing was thriving across domains. These patterns are consistent with past work which shows that, independently, greater arousal and desire, having sex at least once-per-week, and having sex at a frequency that is not discrepant from what is personally ideal, is associated with better relational, sexual, and psychological wellbeing (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Chao et al., 2011; Cheng & Smyth, 2015; Frederick et al., 2017; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007).

However, the other two sexual activation constellations – *unsatiated* and *disassociated* – provide more nuanced understandings of how sexual activation is associated with wellbeing across domains. For instance, those belonging to the *unsatiated* sexual activation constellation were most likely to belong to the *thriving* relational wellbeing typology (31%) compared to the other relational wellbeing typologies, which may capture the importance of arousal and desire for relational outcomes in particular (Brezsnyak & Whisman, 2004; Chao et al., 2011; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; Mark & Lasslo, 2018). However, the picture for their sexual wellbeing was not as rosy. People who were *unsatiated* were significantly more likely to belong to the *disassociated* sexual wellbeing typology (43%), which was marked by particularly low passion and sexual self-esteem, and higher rates of depression. As engagement in consensual sexual intimacy requires both members of the relationship to wish to engage, a partners' ideal sexual frequency will also determine the frequency of sex in the relationship, which can often

cause discrepancies in how frequently each person wishes to engage in sex (Girard, 2019; Mark, 2015). Thus, consistent with past research, having sex less often than average and less than ideal preferences appears particularly harmful for sexual wellbeing (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Cheng & Smyth, 2015; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007). Psychologically, they were equally represented across typologies, suggesting a weaker link between being *unsatiated* in your sexual activation and psychological outcomes.

By contrast, people who were *apathetic* in the sexual activation constellation showed specific deficits in their relationship wellbeing as they were most likely to be *distressed* (42%), but showed no differences in likelihood membership across sexual and psychological wellbeing typologies. This constellation represents people who have a lack of arousal and desire, but are continuing to have sex at an above average frequency that was not discrepant from their ideals. In past research, having low desire/arousal sex is associated with positive relational outcomes if the underlying motivation is to meet a partners' sexual needs (Impett et al., 2015; Impett et al., 2019; Muise & Impett, 2016), increase emotional connection and positive affect within the relationship (Leigh, 1989; Meston & Buss, 2007), or to boost one's self-esteem (Meston & Buss, 2007; Watson et al., 2017). However, the opposite pattern was observed here. Thus, the *apathetic* constellation may represent individuals who are engaging in sex for avoidance motivations, including avoiding disappointing a partner, which can lead to reduced relationship satisfaction (Muise et al., 2017; Muise et al., 2013).

Implications

Building on past work, the current findings provide compelling support for the benefits of an active sex life (i.e., *satiated* constellation) and the costs of an inhibited one (i.e., *disengaged* constellation). These findings mirror those the studies which show that—when measured on their own—strong feelings of arousal and desire, having the opportunities

to be intimate, and engaging in sex at a frequency that meets ideals, are associated with wellbeing (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Chao et al., 2011; Cheng & Smyth, 2015; Frederick et al., 2017; Heiman, Long, et al., 2011; Impett et al., 2015; Lawless et al., 2022; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Santtila et al., 2007). Equally, it supports research which highlights how deficits across aspects of a person's sex life can be detrimental (McCabe, 1997; Rosen et al., 2019; Stephenson & Meston, 2015b; Stephenson et al., 2018; Willoughby et al., 2014). Nonetheless, our findings also underscore the value of conceptualizing sexual activation as a multifaceted construct. For example, despite past work evidencing the benefits of frequent sexual activity (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Cheng & Smyth, 2015; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016), our findings highlight that its positive influences are predicated on other factors in a person's sex life, such as their arousal, desire and preferences (e.g., see *apathetic* constellation). Thus, this work highlights the value and need to engage in more person-centered approaches to investigating the nuanced and complex interplay between sex and wellbeing.

The findings of this research also have important implications for practitioners and therapists interested in sexual health and wellbeing. Our findings suggest that targeting certain facets of sexual activation may be more important for improving some wellbeing deficits than others. For example, asking couples to have sex more often in an attempt to boost feelings of intimacy and closeness may be effective for improving their relationship wellbeing, but may not address deficits in their sexual wellbeing. Similarly, improving a couple's arousal and desire may counterproductively harm a patient's sexual wellbeing if it is not accompanied by increases in frequency (see for example the association between the *unsatiated* constellation and *disassociated* sexual wellbeing typology). Considering the four

facets of sexual activation in this study would help practitioners understand in which ways an individual may be struggling. Moreover, identifying the profile of a client could be useful for identifying more targeted treatments. For example, as those who fit the profile of *unsatiated* report high arousal and desire but a below average sexual frequency that is less than they prefer, they may benefit from interventions aimed at increasing sexual frequency. However, this may not work for somebody who fits the profile of *disengaged* as interventions would also need to factor in their low arousal and desire. Additionally, those who fit the profile of *apathetic* may require treatments aimed to increase low arousal and desire, including mindfulness and cognitive behavioral therapies (Brotto, 2017; Mize, 2015).

Limitations and Future Directions

Despite the strengths of Study 1, it is not without limitations. First, despite the importance of identifying the likelihood associations between constellations of sexual activation and typologies of wellbeing, we cannot make any causal claims about the findings. The current findings therefore cannot speak to whether it is a person's sexual activation constellation that drives wellbeing, or vice versa, or whether their associations become reciprocal over time. For example, previous research has shown that a lack of sexual arousal and desire is a symptom of depression and anxiety (Mathew & Weinman, 1982; Meisler & Carey, 1991), suggesting that poorer psychological wellbeing may lead to deficits in arousal and desire. Similarly, marital happiness has been found to be an important predictor of the frequency of sexual intimacy (Call et al., 1995). By contrast, other work has shown that engaging in sex more regularly contributes to sexual and relational satisfaction (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Muise, Schimmack, et al., 2016), and people who feel more arousal and desire experience better psychological health (Dosch et al., 2016; Vasconcelos et al., 2024). Our findings do not help identify the latent causes of either sexual

activation or wellbeing. Thus, future research should consider the longitudinal patterns and changes over time to better pinpoint causal directionality.

A further potential limitation of this study is that the LPA-derived profiles may not be replicable, and this study did not attempt to replicate the findings across different samples. As recommended by Spurk et al. (2020), the entropy values for all analyses were in an appropriate range (between 0.6 and 0.8), suggesting reasonable accuracy that participants were classified into their true profile. However, not all values met the cut-off of 0.8 recommended by Clark & Muthén (2009). Therefore, these profiles may not be suitably robust. Moreover, we chose not to conduct LPA on split samples as there would not be enough power to accurately predict profiles as there would be less than the suggested minimum of 500 participants in each split sample (Nylund et al., 2007). Thus, future research should cross-validate these findings to assess whether the same profiles emerge in a new sample, and make use of replication in split samples to further validate findings.

Third, this research relied on retrospective reflections of arousal and desire during a recent intimate experience with their partner, as well as retrospective self-reports of their sexual frequency. This approach was taken due to practical barriers to monitoring actual sexual behavior and experiences. However, despite the evidence that evaluations of sexual experiences can be biased (Birnbaum et al., 2016; Dewitte et al., 2018), retrospective assessments of subjective arousal and desire are quite common (Cartagena-Ramos et al., 2018; Toledano & Pfaus, 2006) and research also suggests that self-reported sexual frequency is often quite accurate (Call et al., 1995; Ochs & Binik, 1999). Nonetheless, future research would benefit from measuring arousal, desire, and sexual frequency closer to the point of actual sexual intimacy using methods such as experience sampling paradigms or daily diaries.

Furthermore, sexual intimacy in relationships is inherently dyadic. Interpretations of this research are therefore constrained by being restricted to only one partner's reports of

sexual activation and wellbeing. For example, consider the people in the unsatiated sexual activation constellation who express high desire and arousal for their partner. The reason they may be having sex less often than average and less often than their ideal may therefore lie in their partner's interest in being intimate (e.g., they have partners who fall into the disengaged or apathetic constellations who experience low desire and arousal). It could therefore be this mismatch between the partners' arousal and desire which is affecting their relationship satisfaction (Mark, 2015). Future research should therefore investigate how strongly correlated partners' sexual activation constellations are, and the potential implications for each partner's wellbeing.

Finally, another limitation of our research is a lack of equal gender representation. A large proportion of our participants self-identified as women, despite efforts to recruit both men and women. It is a common issue for sex and relationship research that men are harder to recruit (Senn & Desmarais, 2001). Thus, a limitation of our research is that potential sexual activation and wellbeing profiles that are unique to men may have not been revealed upon conducting the LPAs. Men typically report greater and more frequent sexual desire and arousal than women (Baumeister et al., 2001; Chivers et al., 2004; Regan & Atkins, 2006), which may have changed the modelling of the sexual activation constellations. As LPA is a data-driven approach, the underrepresentation of men may have suppressed profiles that reflect more male-typical experiences or cause them to merge with profiles that reflect more female-typical experiences. Thus, men could be disproportionately represented in certain constellations (e.g., *satiated* or *unsatiated* which are characterized by high arousal and desire), or may fit into a different constellation of sexual activation that is captured in the current sample because we had insufficient participants for the profile to robustly emerge. Future research should aim to replicate the current findings with greater gender diversity to

examine whether the constellations change with an increased proportion of men in the sample.

Conclusion

Despite people's experiences with sexual activation being multifaceted, data-centered approaches have made it impossible to understand the unique ways in which aspects of sexual activation contribute to wellbeing. The current findings suggest that people experience sexual activation differently, and that different constellations of sexual activation are associated with typologies of relational, sexual, and psychological wellbeing in meaningfully different ways. Furthermore, some constellations were more strongly associated with domains of wellbeing than others. These findings highlight the value of conceptualizing sexual activation as a multifaceted construct and show that we can learn more about how sexual experiences are associated with wellbeing across different domains when we consider the influence of these facets in conjunction with one another.

Chapter 3 - A Match Made in Heaven? The Impact of Sexual Arousal-Desire (Mis)Matches on Relationship and Sexual Satisfaction

Author's Note

This chapter details Studies 2 and 3, in which we tested whether alignment between arousal and desire was associated with sexual and relationship satisfaction, both through modelling the effects of matches and mismatches in self-reported arousal and desire, but additionally via a measure of perceived self-reported 'overlap' between arousal and desire. In this chapter only, we use the terms 'matching' and 'mismatching' to discuss (mis)alignment between arousal and desire. This change was made to suit terminology more frequently used in research reporting response surface analyses (RSA), which is how we tested for alignment within this chapter.

The pre-registered hypotheses and analysis plans can be found here: https://aspredicted.org/ey9qh6.pdf and here: https://aspredicted.org/k8h9nv.pdf.

This chapter will be submitted for publication:

Tasker, C., & Lamarche, V.M., A Match Made in Heaven? The Impact of Arousal-Desire (Mis)Matches on Relationship & Sexual Satisfaction.

Abstract

Arousal and desire represent the "body" and "mind" motivations to engage in intimacy. However, while their individual contributions to relational wellbeing are well documented, the ways in which they work together—specifically when they align or misalign—to shape intimacy in established romantic relationships are poorly understood. This is partly due to inconsistencies in how arousal and desire are conceptualized across the literature, as well as statistical limitations in the linear models which have been extensively used in the past. The current research directly tested whether (mis)matching self-reported arousal and desire was associated with sexual and relational satisfaction using polynomial regression with response surface analysis which are better suited for modelling the effects of similarities and differences across predictors compared to other analytic methods (e.g., linear regression; difference scores). Across two studies (n_{total} = 1146) with adults in established relationships, matching at higher, relative to lower, levels of subjective arousal and desire was more strongly associated with both sexual and relational satisfaction. However, contrary to expectations, mismatching was not. Furthermore, we found no evidence that the association between (mis)matching and satisfaction was moderated by implicit beliefs around sexual compatibility. Thus, *matching* when arousal and desire are high is particularly important for how people feel about their intimate partnerships, but that *mismatching* may be less informative, irrespective of an individual's underlying beliefs about their sexual relationship.

Introduction

Sex plays an important role in many romantic relationships. Healthy and responsive sex lives are associated with greater general wellbeing and are mutually satisfying for both partners (Anderson, 2013; Muise et al., 2023). However, not everyone experiences the same motivational cues to engage in intimacy. There are different ways in which people can assess their readiness and interest in pursuing intimacy in their relationships. These include arousal (i.e., the physiological or bodily response to a sexual stimulus; Toledano & Pfaus, 2006), and desire (i.e., the psychological response to a sexual stimulus; Levine, 2003; Regan & Berscheid, 1999). Despite often co-occurring in intimate contexts (Blumenstock et al., 2024; Sarin et al., 2013), arousal and desire are distinct, yet both equally integral, components of the human sexual response that typically precipitate consensual sexual intimacy (Basson, 2000; Masters & Johnson, 1966).

Individually, there is extensive research highlighting how arousal and desire independently benefit relational and sexual satisfaction (e.g., Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022; Regan, 2000). However, the ways in which they work together to shape satisfaction is less clear. This is partly due to inconsistencies in how subjective arousal and desire are conceptualized across the literature, as well as statistical limitations in the linear models which have been extensively used in the past.

First, despite the seminal models of sexual response clearly differentiating between arousal and desire (e.g., Basson, 2000; Kaplan, 1974; Laan & Both, 2008; Lief, 1977), researchers have more recently used these constructs interchangeably (Handy et al., 2018), or assumed they co-occur (Blumenstock et al., 2024; Goldey & van Anders, 2012). However, experimental and clinical research, including research on sexual disorders, point to the possibility for arousal and desire to at times differ (Blumenstock et al., 2024; Sarin et al.,

2013). Additionally, evidence suggests that misalignment of the body and mind can lead to emotional distress, increased anxiety and anger, and relational difficulties (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003; Stein et al., 1997). However, it is not known whether the same is true for mismatching arousal and desire, whether the presence of one can subvert the negative consequences of the missing other, or whether people benefit from a combined presence of both.

Second, the use of traditional linear modelling and difference scores in past research would have made it challenging to model the outcome of (mis)matching arousal and desire. For example, the linear modelling of arousal and desire cannot speak to whether "matching" when arousal and desire are both very high is experientially similar to "matching" when both are low. Similarly, difference scores have limited interpretability as collapsing two values into a single index can lose information about the individual predictors (Shanock et al., 2010). By contrast, polynomial regression models with response surface analysis specifically models how the (mis)matching of two predictors relate to the outcome whilst avoiding potentially confounding the effects of the predictors (Barranti et al., 2017).

Notably, some people are more sensitive to the need for sexual compatibility in their relationships (e.g., high sexual destiny beliefs) whereas others see struggles as opportunities for the relationship to improve (e.g., high sexual growth beliefs; Maxwell et al., 2017). It is therefore possible that the impact of (mis)matching arousal and desire on relationship/sexual satisfaction may manifest differently depending on whether such (mis)matches are interpreted as something that can be overcome or something that spells doom for the relationship. The aim of the current research was to examine whether greater matching or mismatching between a person's subjective sexual arousal and their desire is associated with sexual and relationship satisfaction, and whether these associations differed as a function of expectations of sexual compatibility.

Sexual and Relational Harmony: How Sexual Intimacy Shapes Satisfaction

Sexual intimacy is often considered a defining feature of what differentiates romantic partnerships from aromantic relationships (Connolly et al., 1999; McKeever, 2016). It fosters closeness and affection between partners (Debrot et al., 2017), and is very strongly associated with both sexual satisfaction (McNulty et al., 2016; Roels & Janssen, 2020; Smith et al., 2011; Sprecher et al., 2004), and relationship satisfaction (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Muise, Schimmack, et al., 2016). Sexual and relationship satisfaction are closely intertwined. Those who are the most satisfied with their sex lives are also most satisfied in their romantic relationships (Byers, 2005; Fallis et al., 2016; McNulty et al., 2016; Muise et al., 2013; Muise, Kim, et al., 2016; Sprecher & Regan, 2002). People who pursue sex as a means to enhance intimacy and meet a partner's needs are the most likely to experience greater sexual and relationship satisfaction (Impett et al., 2015; Impett et al., 2008; Muise et al., 2013). Sexual satisfaction is therefore important to the maintenance of relationships, and satisfying romantic relationships inform our overall wellbeing and satisfaction with life (Bucher et al., 2019; Diamond & Huebner, 2012; Pateraki & Roussi, 2012; Shek, 1995).

Arousal and desire are commonly cited as motivators for sexual intimacy (Meston & Buss, 2007), and have each been independently associated with greater relationship satisfaction (Brezsnyak & Whisman, 2004; Lawless et al., 2022; Regan, 2000), as well as sexual satisfaction (Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022). This is particularly true in established romantic partnerships (Lawless et al., 2022). The consequences of dyadic discrepancies in sexual interest have been well documented (e.g., Davies et al., 1999; Mark & Murray, 2012; Rosen et al., 2018; Santtila et al., 2007; Zilbergeld, 1980), with couples often reporting lower relational and sexual satisfaction when they experience large discrepancies in their sexual interest. However, this focus on dyadic

discrepancies ignores variability *within* each partner, and how it shapes their own feelings about their relationship. Experiences with sexual desire and arousal disorders is commonly associated with lower relationship and sexual satisfaction for both partners (Rosen et al., 2020; Schwenck et al., 2025). However, the associations between high/low desire and arousal, and relational and sexual satisfaction have typically been considered separately (Blumenstock et al., 2024), or conjointly (e.g., Rosen et al., 2020). Consequently, limited understanding of the interplay between arousal and desire in shaping relational and sexual satisfaction. More specifically, it is unclear whether in non-clinical samples, low arousal or desire undermines or is bolstered by high levels of its counterpart, or whether there is a combined benefit to having high arousal *and* high desire.

Arousal and Desire: Apples to Apples, or Apples to Oranges?

Humans have two ways of tracking their reaction to, or intention to pursue, sexual intimacy. The first is through arousal, which is the physiological response to a sexual stimulus, and includes parasympathetic changes such as increased blood flow to the genitals and increased heart and breathing rate, as well as neural preparedness to respond to sexual stimuli (Toledano & Pfaus, 2006). Subjective sexual arousal represents the awareness of these bodily changes (Laan & Both, 2008; Toledano & Pfaus, 2006). People do differ in their ability to perceive such internal changes (Craig, 2002). Subjective awareness of bodily signals shape experiences with mood and emotions (Poerio et al., 2024; Seth, 2013), as well sexual functioning, including orgasm satisfaction and genital arousal (Dixon et al., 2024; Handy & Meston, 2016). The second way of tracking responses and intentions is through desire. Whereas arousal focuses on physiological and biological experiences (i.e., the body) of sexual stimulation, desire reflects the psychological and reflective experiences (i.e., the mind). Sexual desire is the goal-driven motivational force that pushes people toward sexual behaviors (Laan & Both, 2008; Levine, 2003; Regan & Berscheid, 1999). Perhaps because it

is easier to measure than arousal, desire has traditionally received more empirical attention (Levine, 2002). Consequently, the ways in which they work in tandem to shape experiences with satisfaction have been often overlooked. Because of their high co-occurrence (Brotto et al., 2010; Brotto et al., 2009), people often report experiencing physiological stimulation following the desire to being intimate with a partner, or for their physiological arousal to move them to a state of desire (Blumenstock et al., 2024; Goldey & van Anders, 2012). The strength of this association is often dependent on who people are thinking about (e.g., a partner versus a stranger), and the quality of the relationship with that person (Blumenstock et al., 2024). Nonetheless, building from seminal models of sexual response (e.g., Basson, 2000; Kaplan, 1974; Laan & Both, 2008; Lief, 1977), there is evidence to support that arousal and desire are clearly distinct, despite often occurring concurrently. Arousal and desire difficulties are differentiated in terms of symptomology (Sarin et al., 2013), for example those who experienced genital arousal dysfunction in the study reported normal levels of sexual desire, whereas those who experienced low sexual desire did not necessarily suffer with difficulties with genital arousal.

Due to other work suggesting that broadly speaking, mismatches between experiences embedded in both the "body" and "mind" are associated with anxiety, anger, emotional distress and relational difficulties (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003; Stein et al., 1997), it is likely that people would experience negative consequences when their arousal and desire diverge. Similarly, there is evidence to suggest that people benefit from their arousal and desire being in alignment. Notably, many interventions aimed at improving sexual wellbeing often specifically focus on increase mind-body awareness that allow people to bring mind and body experiences into alignment (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). Thus, experimental and clinical evidence suggests that not only are arousal and desire distinct, and

uniquely impact sexual and relationship satisfaction (Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022; Regan, 2000), but the extent to which they (mis)match should also inform satisfaction.

Reconsidering the Modelling of Arousal-Desire (Mis)Matching

Another barrier to understanding how (mis)matching arousal and desire influence satisfaction in relationships is due to how people have historically modelled similarities and differences between constructs. Traditional linear modelling and difference scores would have made it challenging to model the outcomes of arousal-desire (mis)matches. These traditional approaches have several important limitations. Linear regression analysis can signal whether predictors are significant above and beyond other predictors, but it is not able to capture whether similarity across those predictors matters (Barranti et al., 2017). Furthermore, linear models assume linear associations, which means that it is not possible to test whether (mis)matching at different levels of predictors produce different outcomes (Shanock et al., 2010). The use of difference scores to address these limitations present similar challenges. First, by collapsing two values into a single index, information about the individual predictors is lost (Shanock et al., 2010). For example, using difference scores would make it challenging to interpret whether arousal or desire is more important for satisfaction, or whether they are equally influential. Due to these limitations, including reduced reliability, combining two constructs into a single score, and confounding the effects of these constructs, current statistical conventions advise against using difference scores (for review, see Edwards, 2002).

Polynomial regression with response surface analysis (RSA) provides an alternative statistical approach to understanding how the matching or mismatching of two predictors relate to an outcome, whilst avoiding many of the statistical limitations of more traditional approaches (i.e., difference scores) used to interpret (mis)matches (Barranti et al., 2017). As

Table 3.1.
The Response Surface Analysis Coefficients and What They Represent

Line of Congruence – How Do Matches Matter?			
a_1 Slope of the Line of Congruence		a_2 Curvature of the Line of Congruence	
Positive a_1	Negative a_1	Positive a_2	Negative a_2
The outcome is high when X and Y match at higher levels than at lower levels.	The outcome is high when X and Y match at lower levels than at higher levels.	The outcome is higher when X and Y match at more extreme levels than at midrange levels.	The outcome is higher when X and Y match at midrange levels than at more extreme levels.
e.g., satisfaction is high when arousal and desire match at higher than lower levels.	e.g., satisfaction is high when arousal and desire match at lower than higher levels.	e.g., satisfaction is higher when arousal and desire match at more extreme than midrange levels.	e.g., satisfaction is higher when arousal and desire match at midrange than extreme levels.
Line of Incongruence – How Do Mismatches Matter?			
a_3 Slope of the Line of Incongruence		a_4 Curvature of the Line of Incongruence	
Positive a_3	Negative a_2	Positive a_4	Negative a_4
The outcome is higher when X is higher than Y than when Y is higher than X.	The outcome is higher when Y is higher than X than when X is higher than Y.	The outcome is higher the more that X and Y deviate from one another.	The outcome is higher the more that X and Y match one another.
e.g., satisfaction is higher when desire is higher than arousal, than when arousal is higher than desire.	e.g., satisfaction is higher when arousal is higher than desire, than when desire is higher than arousal.	e.g., satisfaction is higher the more arousal and desire deviate from one another.	e.g., satisfaction is higher the more arousal and desire match one another.

Note. "X" and "Y" represent two independent predictors in the RSA model. The coefficients ($a_1 – a_4$) are based on the polynomial regression's unstandardized coefficients; $a_1 = b_1 + b_2$, $a_2 = b_3 + b_4$, $a_3 = b_1 – b_2$, $a_4 = b_3 – b_4 + b_5$. Table adapted from Barranti et al., 2017.

illustrated in Table 3.1, response surface analysis produces four coefficients based on the coefficients from a polynomial regression, and relate to the line of congruence, which reflects when X and Y match perfectly at any level (i.e., how do 'matches' matter), and the line of incongruence, which reflects when values of X are the opposite of Y (i.e., how do 'mismatches' matter). Thus, unlike difference scores which mask whether changes in outcomes are due to the intensity of matching between two predictors or the intensity of their

mismatching, RSA is able to answer whether one type of (mis)match is better for the outcome than another. Moreover, RSA can answer whether matched predictors have different outcomes at different levels.

In the context of the arousal and desire, using RSA makes it possible to directly test whether sexual and relational satisfaction are more strongly associated with matching between arousal and desire, or mismatching. We predict that mismatching will have negative implications for sexual and relationship satisfaction due to past research highlighting the negative impacts that mismatches between the mind and body can have on the self and relationships (Dorahy et al., 2013; Simeon et al., 2003), and the independent influence of arousal and desire for sexual and relationship satisfaction (Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Rosen et al., 2019). The RSA will also be able to inform us whether mismatches are worse than matching at low levels, and which type of mismatches (i.e., when arousal is greater than desire, or when desire is greater than arousal) have a more negative impact.

Implicit Sexual Beliefs: Destined to (Mis)Match or An Opportunity for Growth?

The impact of (mis)matching arousal and desire may not be uniformly experienced for all people. Individual differences in implicit sexual beliefs may be one factor which may influence how people interpret (mis)matching between “mind” and “body” experiences of sexual intimacy. Somebody high in implicit sexual destiny beliefs believe their sexual compatibility with a partner to be the key to sexual satisfaction, whereas an individual high in implicit sexual growth beliefs would believe that working with their partner to overcome incompatibilities leads to sexual satisfaction (Maxwell et al., 2017). These beliefs influence how people cope with sexual struggles and maintain their relationship. Because people high in growth beliefs believe that sexual satisfaction takes effort, they are more likely to respond to a sexual struggle with a positive mindset and intention to work through things to improve

the relationship (Bőthe et al., 2017; Maxwell et al., 2017). By contrast, because people high in destiny beliefs expect compatibility from the outset, they find sexual struggles more distressing (Maxwell et al., 2017; Rossi et al., 2022). Thus, experiences of (mis)matches between arousal and desire may have a different impact on sexual and relationship satisfaction depending on whether an individual is more likely to endorse sexual destiny compared to growth beliefs. Specifically, matches should be more important—and mismatches more harmful—for people who believe that struggles in a sexual relationship are a sign the sexual relationship will fail (i.e., high destiny beliefs). On the other hand, the extent to which subjective experiences of arousal and desire diverge should have less of an impact on people with high growth beliefs given that they already anticipate the need to work to bring their experiences in line with their expectations.

Overview of Studies 2 and 3

Relationship and sexual satisfaction are heavily influenced by experiences with sexual intimacy in people's romantic partnerships (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Roels & Janssen, 2020; Smith et al., 2011; Sprecher et al., 2004). Arousal and desire are important precursors to human sexual responsiveness and intimacy (Basson, 2000; Kaplan, 1974; Meston & Buss, 2007). However, due to inconsistencies in how they have been measured and conceptualized across the literature, in addition to limitations with traditional statistical modelling, there remains a limited understanding of how (mis)matching between arousal and desire influence relational and sexual satisfaction above and beyond their individual contributions. Consequently, existing models of arousal and desire cannot speak to whether "matching" when arousal and desire are both very high is experientially similar to "matching" when both are low. Equally, existing modelling makes it difficult to understand whether relative differences (i.e., higher arousal than desire, or higher desire than arousal) more strongly

influence satisfaction, or whether it is the extent to which they deviate which is more important.

The aim of the current research was to address this gap in the literature by using response surface analysis (RSA) to test how matches and mismatches between subjective arousal and desire were associated with self-reported relational and sexual satisfaction for people in established relationships. Given empirical evidence that suggests mind-body mismatches are associated with distress (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003; Stein et al., 1997), we predicted that relational and sexual satisfaction would be particularly impacted by mismatches between arousal and desire (i.e., a curvature in the line of incongruence). We also further explored these associations in two key ways. First, we tested whether (mis)matching between arousal and desire using the RSA was associated with direct self-reported evaluations of perceived arousal and desire overlap, as well as whether an overlap on this measure was associated with satisfaction. This provided us with additional insights into what less intensive measurement of (mis)matching may be capturing. Second, we examined whether (mis)matching between arousal and desire were more consequential for some people than others by testing for moderation by sexual growth and destiny beliefs. We predicted that people who prioritize sexual compatibility in their relationships (i.e., sexual destiny beliefs; Maxwell et al., 2017) may be more susceptible to information suggesting that something in their sex life may not be functioning as it should be (e.g., that their mind is telling them one thing, and their body another). By contrast, we predicted that people who believe that sexual struggles are something to overcome (i.e., sexual growth beliefs) should be less impacted by mismatches between arousal and desire.

Across our two studies, we hypothesized that:

Hypothesis 1. Arousal-desire mismatching would be negatively associated with a) relationship satisfaction and b) sexual satisfaction (i.e., a negative curvature of the line of incongruence between arousal and desire).

Hypothesis 2. That this pattern will be replicated using self-reported arousal-desire matching, such that less arousal-desire overlap would be negatively associated with a) relationship satisfaction and b) sexual satisfaction.

Hypothesis 3. Implicit sexual beliefs would moderate the effect of arousal-desire (mis)matching in the RSA (**Hypothesis 3a**) and of the overlap measure (**Hypothesis 3b**) on a) relationship and b) sexual satisfaction, such that the negative consequences of mismatching would be greater for those relatively higher in implicit sexual destiny beliefs than for those relatively higher in implicit sexual growth beliefs (Study 2) and for those in the destiny condition relative to the growth condition (Study 3).

The study materials, anonymized aggregate data, and analysis codebooks are available on the project's repository on the Open Science Framework (https://osf.io/nk92r/?view_only=2ece6de18b334b98bfa21ffd4f89cec6).

Study 2

Methods

Participants

One-thousand and thirty-six participants were recruited through posters distributed across the lead author's university campus, through the departmental student recruitment platform, in addition to being shared on social media. Students received course credit (if eligible), and all others were volunteers. Participants had to be at least 18 years of age, in a committed relationship, sexually active within the past 6 months, and affirmed that they would give their best answers on an integrity check question in order to be eligible to

participate (see Geisen, 2022). Of the 1036 participants who started the survey, 600 completed the study and met the eligibility criteria. Of those, 8 were dropped because they subsequently indicated they were single or casually dating, and 3 were excluded for self-identifying as asexual[6], leaving a final sample of 589 participants[7]. This sample size met the minimum sample size we preregistered. As determined via a power analysis conducted in R, 443 participants would have provided 80% power to detect a small to medium effect size (f^2 = .035) at <.05 significance. Due to the nature of response surface analyses, it was important for there

Table 3.2.

Descriptive Statistics and Bivariate Correlations for Sexual Arousal, Sexual Desire, a Arousal-Desire Overlap, Relationship Satisfaction, Sexual Satisfaction, Sexual Destiny Beliefs and Sexual Growth Beliefs in Study 2.

	Mean	SD	1	2	3	4	5	6	7
1 Sexual Arousal	3.32	0.73	-						
2 Sexual Desire	3.56	0.76	0.55***	-					
3 Arousal-Desire Overlap	4.67	1.31	0.27***	0.39***	-				
4 Relationship Satisfaction	6.04	0.98	0.28***	0.30***	0.23***	-			
5 Sexual Satisfaction	6.07	0.97	0.35***	0.45***	0.32**	0.58***	-		
6 Sexual Destiny	2.92	0.96	0.12**	0.26***	0.14***	-0.03	0.09*	-	
7 Sexual Growth	5.83	0.55	0.11*	0.11**	0.01	0.16***	0.07	-0.17***	-

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

[6] The decision to exclude asexual participants prior to analysis was made a priori because asexual experiences with arousal and desire, as well as intimacy in relationships vary substantively compared to allosexuals. Without adequate sample sizes to draw meaningful inferences, we wanted to avoid variance associated with differences in experience.

[7] As a large number of participants were excluded from Study 2, analyses were conducted to compare demographic differences (see Appendix B1).

to be an adequate dispersion of cases across variables, and so we aimed for a minimum of 500 participants to sufficiently power for the regressions and the response surface analysis.

Participants (94% women; 4% men; 2% another gender category) were between the ages of 18 and 56 (M_{age} = 25.07, *SD* = 4.06), and the majority identified as heterosexual (66%; 25% bisexual; 4% pansexual; 2% homosexual; 2% queer), white (85%; 6% Asian; 4% mixed or multiple ethnic backgrounds), monogamous (98%; 2% consensually non-monogamous/polyamorous/another relationship style), and in an exclusively or committed dating relationship (83%; 9% married/ in a civil union or common-law partnership; 8% engaged). Relationship length ranged between 1 month and 35 years (M_{length} = 3.46, *SD* = 3.36). Descriptives and bivariate correlations are presented in Table 3.2.

Materials and Procedures

Following informed consent and the eligibility questions, participants answered demographic questions (e.g., age, gender, relationship status). Next, they completed the measures of arousal and desire (counterbalanced), followed by the measure of arousal-desire overlap, relationship and sexual satisfaction (counterbalanced), and implicit sexual and relationship beliefs (counterbalanced). Upon completion of the study, participants were debriefed.

Arousal and Desire. Arousal and desire were measured via two scales developed from Toledano and Pfaus' (2006) Sexual Arousal and Desire Inventory (for more information, see Chapter 1). The arousal scale included 10 items (*a* = .81) which represented the physical sensations people may experience during sex: flushed, tingling in genital area, throbs in genital area, genitals reddish, tingly all over, warm all over, breathe faster/pant, heart beats faster, quivering sensations, and sensitive. The desire scale included 10 items (*a* = .87) which represented the psychological experiences people may have during sex: driven, urge to satisfy/be satisfied, enthusiastic, tempted, passionate, fantasize about sex, sensual,

naughty, horny and seductive. Participants were provided with a definition for both arousal and desire before answering the questions, and were reminded of the relevant definition before each subscale was presented. Participants were asked to rate the extent to which each word described their sexual arousal or sexual desire (dependent on the subscale) the last time they were physically intimate or had sex with their partner (1 = *does not describe at all*, 5 = *describes perfectly*). Higher scores on each subscale reflected greater experienced arousal and greater experienced desire respectively.

Arousal-Desire Overlap. Participants also completed a measure of arousal-desire overlap as a self-assessment of their how (mis)matched their experiences typically are (adapted from Aron et al., 1992). This measure consists of one question where participants are presented with seven increasingly overlapping circles, each of which represents their arousal and desire (from 1 = no overlap in arousal and desire, as represented by two circles next to one another, to 7 = complete overlap in arousal and desire, as represented by a complete overlap of both circles). Thus, higher scores reflect greater arousal-desire overlap.

Relationship Satisfaction. Participants completed a 5-item measure (a = .90) of relationship satisfaction measured using a 7-point Likert scale (e.g., My partner fulfils my needs for intimacy'; 1 = *strongly disagree*, 7 = *strongly agree*; Rusbult et al., 1998). Higher scores reflect greater relationship satisfaction.

Sexual Satisfaction. The Global Measure of Sexual Satisfaction (GMSEX; Lawrance et al., 1998) was used to measure sexual satisfaction. This is a 5-item measure (a = .88) that asks people to rate their sexual relationship on 7-point bipolar scales (e.g., good-bad, pleasant-unpleasant). Higher scores reflect greater sexual satisfaction.

Implicit Sexual Beliefs. Implicit sexual beliefs were measured using a 24-item scale which assessed the participant's endorsement of implicit sexual destiny beliefs or implicit sexual growth beliefs on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*;

Maxwell et al., 2017). Eleven items were part of the sexual destiny subscale (*a* = .88; e.g., 'An unsatisfying sex life suggests that the relationship was never meant to be') and 13 were part of the sexual growth subscale (*a* = .80; e.g., 'Successful sexual relationships require regular maintenance'). Higher scores on each subscale represented greater endorsement of sexual destiny beliefs and greater endorsement of sexual growth beliefs respectively.

Implicit Relationship Beliefs. Implicit relationship beliefs were measured using the 8-item Implicit Theories of Relationships scale (Knee & Canevello, 2006) that assessed how much participants endorsed relationship destiny or relationship growth beliefs, on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Items belonged to either the destiny (*a* = .76; e.g., 'A successful relationship is mostly a matter of finding a compatible partner right from the start') or growth (*a* = .60; e.g., 'A successful relationship evolves through hard work and resolution of incompatibilities') subscales, and higher scores on each subscale represented greater endorsement of relationship destiny beliefs and greater endorsement of relationship growth beliefs respectively.

Results

Hypotheses 1 and 3 were tested using polynomial regression and response surface analysis using the R package 'RSA' (version 0.10.6; Schönbrodt & Humberg, 2023). Hypotheses 2 and 4 were tested using linear regression. All analyses were done in R Version 4.1.2 (R Core Team, 2021). Arousal and desire were grand mean-centered, and all other predictors were mean-centered (Schönbrodt et al., 2018).

(Mis)Matches Predicting Satisfaction (Hypotheses 1 and 2)

First, descriptive statistics suggest that mismatching arousal and desire are not uncommon experiences. In our sample, 38% participants experienced matching arousal and

desire, and 62% had mismatching arousal and desire. [8] Of those, 19% experienced mismatches as greater arousal than desire, and 43% experienced mismatches as greater desire than arousal.

Next, we ran polynomial regression models to test how (mis)matching between arousal and desire were associated with relationship satisfaction and with sexual satisfaction, controlling for age and gender. We tested the following models:

$$Relationship\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Gender + Age.$$

$$Sexual\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Gender + Age.$$

The omnibus tests for each model were significant (relationship satisfaction: $F(7, 581) = 10.69$, $p < .001$; sexual satisfaction: $F(7, 581) = 25.45$, $p < .001$), thus allowing us to progress to plotting and interpreting the response surface analyses for each model. Table 3.3 presents the model coefficients for the polynomial regression and for the RSAs. Figure 3.1 presents the three-dimensional response surface plots for relationship satisfaction and sexual satisfaction.

Contrary to our hypothesis, neither the curvature of the line of incongruence predicting relationship satisfaction ($a_4 = -0.045$, $p = .808$) or sexual satisfaction ($a_4 = 0.056$, $p = .731$) were significant. However, the slope of the line of congruence predicting relationship satisfaction was significant and positive ($a_1 = 0.455$, $p < .001$) such that relationship satisfaction was greater when sexual arousal and desire <u>*matched*</u> at *higher* levels than at lower levels. This pattern was mirrored for sexual satisfaction ($a_1 = 0.639$, $p < .001$). Thus, although mismatching did not appear to negatively influence sexual and relationship satisfaction, when

[8] The percentage of concordant and discordant observations across the data based on whether X and Y are within half a z-score unit (Barranti et al., 2017).

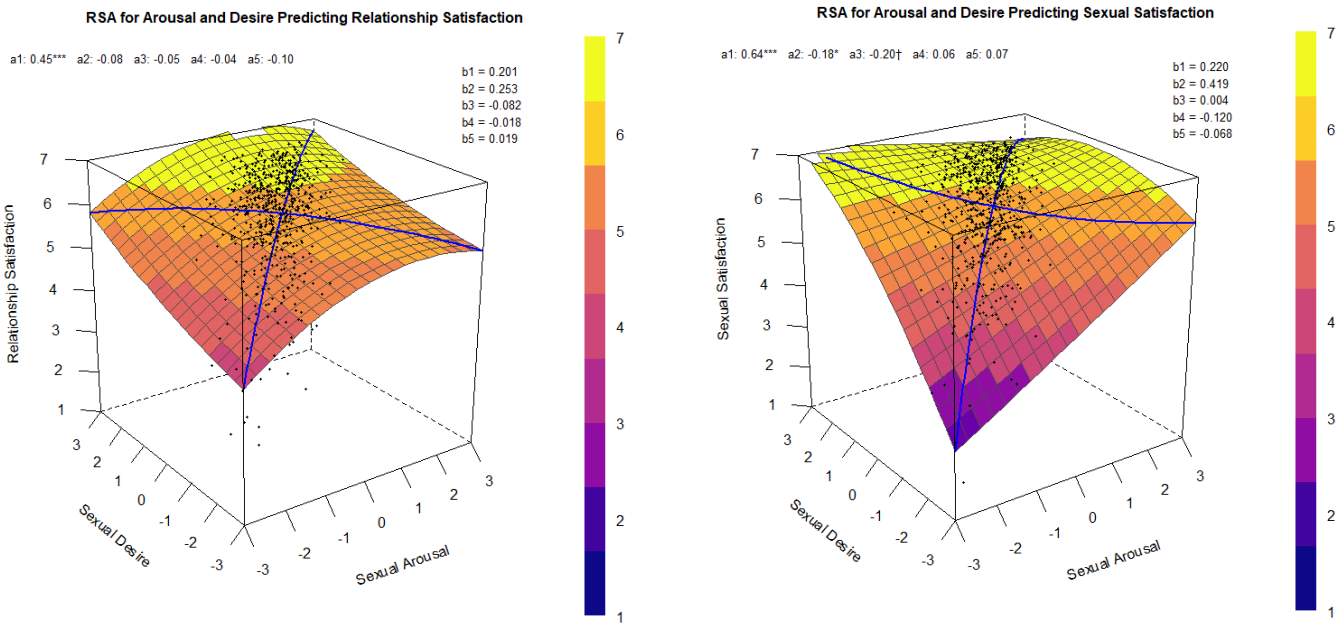
arousal and desire were both high, matching appeared to be particularly important. Additionally, the curvature of the line of congruence was also significant in this sample for sexual satisfaction (a_2 = -0.184, p = .018). This suggests that satisfaction was greater when arousal and desire matched at midrange levels rather than at more extreme levels, although this pattern was not predicted a priori it should be interpreted with caution.

Table 3.3.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 2.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.210**	.220***
Desire (b_2)	.253***	.419***
Arousal^2 (b_3)	-.082	.004
Arousal x Desire (b_4)	-.018	-.120
Desire^2 (b_5)	.019	-.068
Gender	.086	.077
Age	-.007	-.003
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.455***	.639***
Curvature of the line of congruence (a_2)	-.080	-.184*
Slope of the line of incongruence (a_3)	-.052	-.200
Curvature of the line of incongruence (a_4)	-.045	.056
Model statistics: R^2	.114***	.235***

Note. *p < .05, **p < .01, ***p < .001.

Figure 3.1.
Three-dimensional response surface plots of the combined effect of sexual arousal and desire on the relationship satisfaction (left) and sexual satisfaction (right) of participants, whilst controlling for participant age and gender.



Next, we assessed whether (mis)matching as measured by the self-reported measure of arousal-desire overlap (mean-centered) was associated with a) relationship satisfaction and b) sexual satisfaction using linear regression, controlling for gender and age. As hypothesized, both relationship satisfaction (b = .166, $t(585)$ = 5.462, p < .001) and sexual

Table 3.4.
Arousal-Desire Overlap Predicting Participants' Relationship and Sexual Satisfaction in Study 2, Whilst Controlling for Gender and Age.

	Relationship Satisfaction	Sexual Satisfaction
Regression coefficients		
Overlap	.166***	.234***
Gender	.050	.019
Age	-.016	-.018
Model statistics: R^2	.051***	.106***

Note. *p < .05, **p < .01, ***p < .001.

satisfaction (b = .234, t(585) = 8.067, p < .001), were associated with self-reported arousal-desire overlap. Thus, consistent with the findings from the RSA, subjective assessments of congruence between arousal and desire also positively predicted satisfaction. Table 3.4 presents the model coefficients for the regression.

The Moderating Effects of Implicit Sexual Beliefs (Hypotheses 3a and 3b)

Next, we tested the hypothesis that implicit sexual beliefs would moderate the polynomial association between arousal-desire and a) relationship and b) sexual satisfaction. The main effects of sexual growth and sexual destiny beliefs, and their interactions with arousal and desire were added to Models 1 and 2, along with the main effects of relationship growth and destiny beliefs as covariates. The regression models were as follows:

$$Relationship\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Sexual\ Growth\ Beliefs + Sexual\ Destiny\ Beliefs + Relationship\ Growth\ Beliefs + Relationship\ Destiny\ Beliefs + Gender + Age.$$

$$Sexual\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Sexual\ Growth\ Beliefs + Sexual\ Destiny\ Beliefs + Relationship\ Growth\ Beliefs + Relationship\ Destiny\ Beliefs + Gender + Age.$$

The omnibus test for both models were significant (relationship satisfaction: F(21,567) = 5.491, p < .001; sexual satisfaction: F(21,567) = 8.863, p < .001). Next, we tested for the conditional shape of the RSA when growth/destiny beliefs were high (+1SD) and low (-1SD; Aiken et al., 1991).

Sexual Destiny Beliefs. Despite the significant omnibus effect, when sexual destiny beliefs were high, neither the curvature of the line of incongruence predicting relationship satisfaction (a_4 = -0.476, p = .089) or sexual satisfaction (a_4 = -0.081, p = .789) were significant. However, the slope of the line of congruence predicting relationship satisfaction was significant and positive (a_1 = 0.570, p < .001) such that relationship satisfaction was

greater when sexual arousal and desire matched at higher levels than at lower levels for those high in sexual destiny beliefs. This pattern was mirrored for sexual satisfaction ($a_1 = 0.673$, $p < .001$). Table 3.5 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs when implicit sexual destiny beliefs were high.

The same pattern emerged when sexual destiny beliefs were low. Neither the curvature of the line of incongruence predicting relationship satisfaction ($a_4 = 0.359$, $p = .205$) or sexual satisfaction ($a_4 = 0.310$, $p = .377$) were significant. However, the slope of the line of congruence predicting relationship satisfaction was significant and positive ($a_1 = 0.360$, $p < .001$) such that relationship satisfaction was greater when sexual arousal and desire matched at higher levels than at lower levels for those low in sexual destiny beliefs. This pattern was mirrored for sexual satisfaction ($a_1 = 0.584$, $p < .001$). For sexual satisfaction only, the curvature of the line of congruence was also significant and negative for sexual satisfaction ($a_2 = -0.202$, $p = .025$) suggesting that sexual satisfaction was greater when arousal and desire matched at midrange levels rather than at more extreme levels when destiny beliefs were low. Table 3.6 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs when implicit sexual destiny beliefs were low. Figure 3.2 shows the three-dimensional surface plot of the combined effect of sexual arousal and desire on the relationship and sexual satisfaction when sexual destiny beliefs were high and low.

Contrary to our hypotheses, there were no differences in the pattern of the results across RSAs at high and low growth or destiny beliefs. In all four models, the line of congruence (a_1) remained significant, and the line of incongruence (a_4) remained non-significant. Overall, these conditional effects mirror the unconditioned effects from Models 1 and 2, and thus do not support our moderation hypothesis.

Table 3.5.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 2 When Implicit Sexual Destiny Beliefs were High.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.080	.227
Desire (b_2)	.489***	.447***
Arousal^2 (b_3)	-.088	.005
Arousal x Desire (b_4)	.183	-.044
Desire^2 (b_5)	-.205*	-.130
Sexual Growth Beliefs	.162	.113
Sexual Destiny Beliefs	-.057	.048
Relationship Growth Beliefs	.095	-.010
Relationship Destiny Beliefs	.012	-.057
Gender	-.010	.060
Age	-.008	-.005
Arousal x Sexual Growth Beliefs	-.057	-.002
Desire x Sexual Growth Beliefs	-.071	-.108
Arousal x Sexual Destiny Beliefs	-.084	.036
Desire x Sexual Destiny Beliefs	.193**	.011
Arousal^2 x Sexual Growth Beliefs	-.102	-.115
Desire^2 x Sexual Growth Beliefs	-.085	-.046
Arousal^2 x Sexual Destiny Beliefs	-.050	-.015
Desire^2 x Sexual Destiny Beliefs	-.178**	-.078
Arousal x Desire x Sexual Growth	.209	.153
Arousal x Desire x Sexual Destiny	.207	.111
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.570***	.673***
Curvature of the line of congruence (a_2)	-.110	-.169
Slope of the line of incongruence (a_3)	-.409	-.220
Curvature of the line of incongruence (a_4)	-.476	-.081
Model statistics: R^2	.084***	.104***

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 3.6.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 2 When Implicit Sexual Destiny Beliefs Were Low.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.242**	.158
Desire (b_2)	.118	.426***
Arousal^2 (b_3)	.007	.034
Arousal x Desire (b_4)	-.215	-.256
Desire^2 (b_5)	-.137	.020
Sexual Growth Beliefs	.162	.113
Sexual Destiny Beliefs	-.057	.048
Relationship Growth Beliefs	.095	-.010
Relationship Destiny Beliefs	.012	-.057
Gender	-.010	.060
Age	-.008	-.005
Arousal x Sexual Growth Beliefs	-.046	-.002
Desire x Sexual Growth Beliefs	-.071	-.108
Arousal x Sexual Destiny Beliefs	-.084	.036
Desire x Sexual Destiny Beliefs	.193**	.011
Arousal^2 x Sexual Growth Beliefs	-.102	-.115
Desire^2 x Sexual Growth Beliefs	-.085	-.046
Arousal^2 x Sexual Destiny Beliefs	-.050	-.015
Desire^2 x Sexual Destiny Beliefs	-.178**	-.078
Arousal x Desire x Sexual Growth	.209	.153
Arousal x Desire x Sexual Destiny	.207	.111
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.360***	.584***
Curvature of the line of congruence (a_2)	-.071	-.202*
Slope of the line of incongruence (a_3)	.123	-.268
Curvature of the line of incongruence (a_4)	.359	.310
Model statistics: R^2	.169***	.247**

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 3.2.

Three-dimensional response surface plot of the combined effect of sexual arousal and desire on the relationship satisfaction (top), and sexual satisfaction (bottom) of participants, whilst controlling for participant age and gender, and participants' implicit relationship beliefs whilst implicit sexual destiny beliefs are high (+1SD; right), and when implicit sexual destiny beliefs are low (-1SD; left).

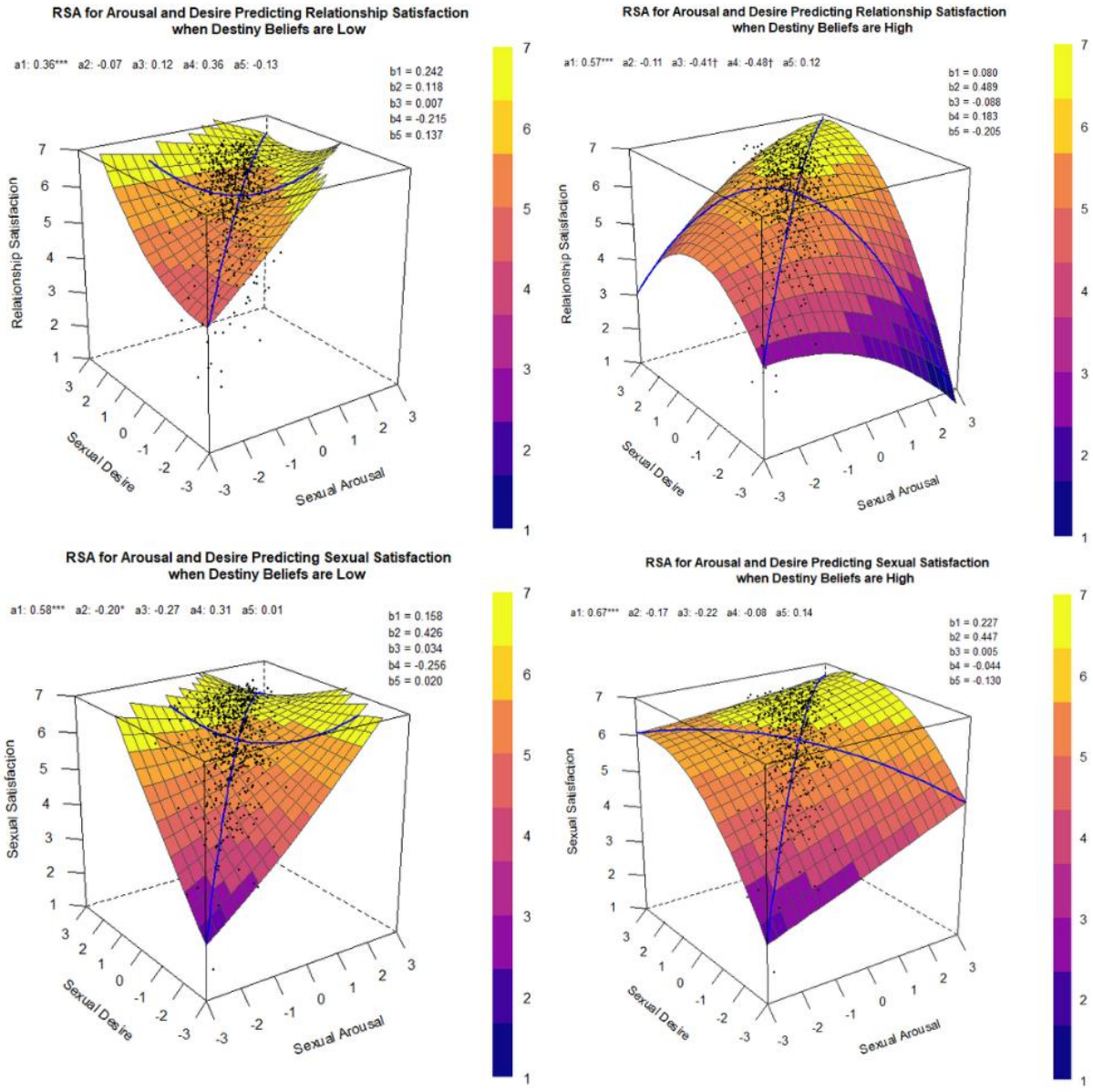
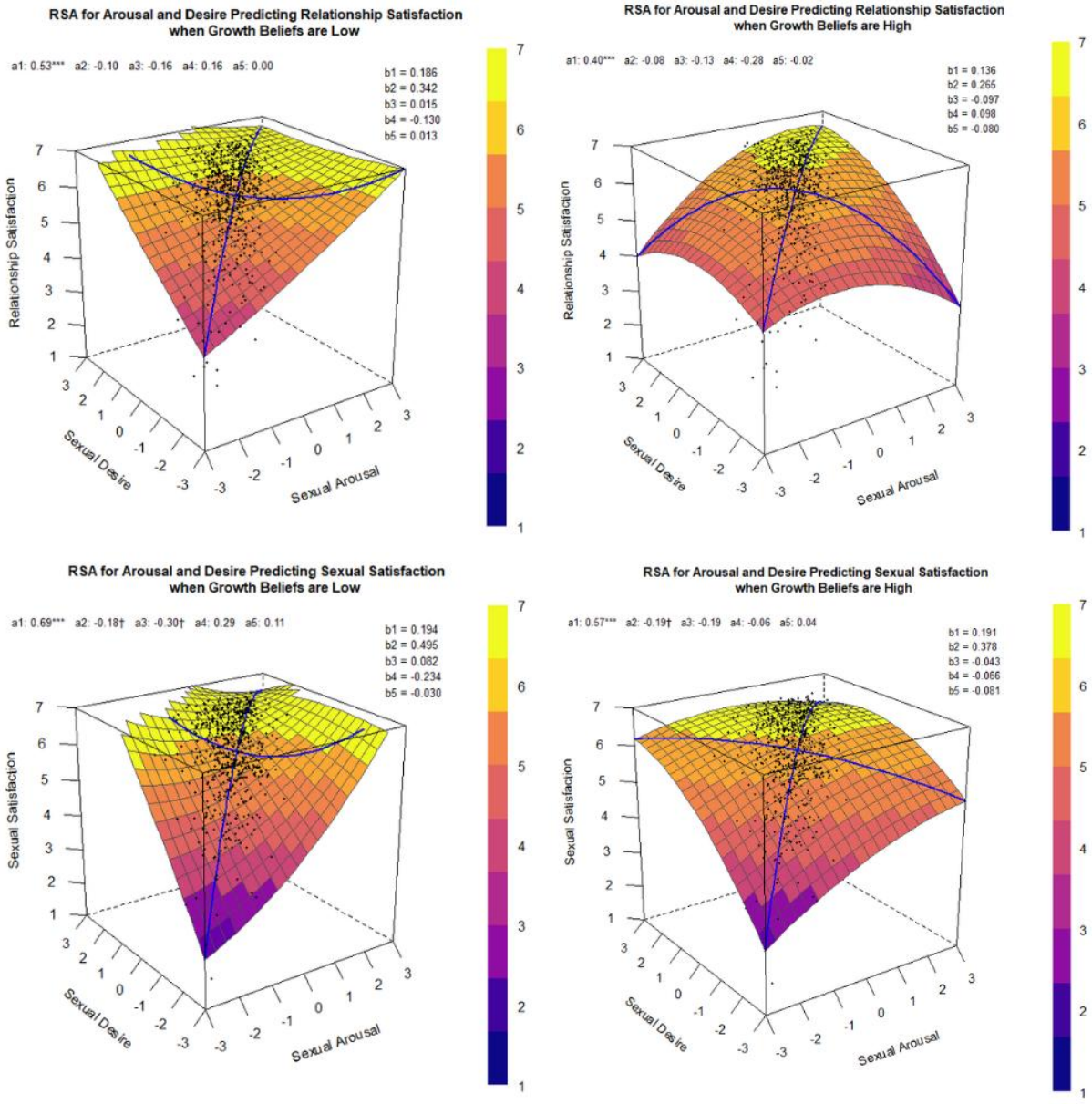


Figure 3.3.

Three-dimensional response surface plot of the combined effect of sexual arousal and desire on the relationship satisfaction (top), and sexual satisfaction (bottom) of participants, whilst controlling for participant age and gender, and participants' implicit relationship beliefs whilst implicit sexual growth beliefs are high (+1SD; right), and when implicit sexual growth beliefs are low (-1SD; left).



Sexual Growth Beliefs. Mirroring the conditional effects for high and low sexual destiny beliefs, neither the curvature of the line of incongruence predicting relationship satisfaction (a_4 = -0.275, p = .301) or sexual satisfaction (a_4 = -0.057, p = .820) were significant for those high in growth beliefs. However, as with sexual destiny beliefs, the slope of the line of congruence predicting relationship satisfaction was significant and positive (a_1 = 0.401, p < .001) such that relationship satisfaction was greater when sexual arousal and desire matched at higher levels than at lower levels when people were high in growth beliefs. This pattern was mirrored for sexual satisfaction (a_1 = 0.569, p < .001). Table 3.7 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs when implicit sexual growth beliefs were high.

When implicit sexual growth beliefs were low, neither the curvature of the line of incongruence predicting relationship satisfaction (a_4 = 0.158, p = .549) or sexual satisfaction (a_4 = 0.287, p = .339) were significant for those low in growth beliefs. However, the slope of the line of congruence was significant and positive for both relationship (a_1 = 0.401, p < .001) and sexual satisfaction (a_1 = 0.689, p < .001), such that satisfaction was greater when sexual arousal and desire matched at higher levels than at lower levels when people were low in growth beliefs. Table 3.8 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs when implicit sexual growth beliefs were low. Figure 3.3 shows the three-dimensional surface plot of the combined effect of sexual arousal and desire on the relationship and sexual satisfaction when sexual growth beliefs were high and low.

Overall, these conditional effects mirror the unconditioned effects from Models 1 and 2, and thus do not support our moderation hypothesis.

Table 3.7.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 2 When Implicit Sexual Growth Beliefs Were High.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.136	.191
Desire (b_2)	.265**	.378***
Arousal^2 (b_3)	-.097	-.043
Arousal x Desire (b_4)	.098	-.066
Desire^2 (b_5)	-.080	-.081
Sexual Growth Beliefs	.162	.113
Sexual Destiny Beliefs	-.057	.048
Relationship Growth Beliefs	.095	-.010
Relationship Destiny Beliefs	.012	-.057
Gender	-.010	.060
Age	-.008	-.005
Arousal x Sexual Growth Beliefs	-.046	-.002
Desire x Sexual Growth Beliefs	-.071	-.108
Arousal x Sexual Destiny Beliefs	-.084	.036
Desire x Sexual Destiny Beliefs	.193**	.011
Arousal^2 x Sexual Growth Beliefs	-.102	-.115
Desire^2 x Sexual Growth Beliefs	-.085	-.046
Arousal^2 x Sexual Destiny Beliefs	-.050	-.015
Desire^2 x Sexual Destiny Beliefs	-.178**	-.078
Arousal x Desire x Sexual Growth	.209	.153
Arousal x Desire x Sexual Destiny	-.036	.111
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.401**	.569***
Curvature of the line of congruence (a_2)	-.079	-.190
Slope of the line of incongruence (a_3)	-.130	-.186
Curvature of the line of incongruence (a_4)	-.275	-.057
Model statistics: R^2	.034***	.068***

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 3.8.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 2 When Implicit Sexual Growth Beliefs Were Low.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.186	.194*
Desire (b_2)	.342***	.495***
Arousal^2 (b_3)	.015	.082
Arousal x Desire (b_4)	-.130	-.234
Desire^2 (b_5)	.013	-.030
Sexual Growth Beliefs	.162	.113
Sexual Destiny Beliefs	-.057	.048
Relationship Growth Beliefs	.095	-.010
Relationship Destiny Beliefs	.012	-.057
Gender	-.010	.060
Age	-.008	-.005
Arousal x Sexual Growth Beliefs	-.046	-.002
Desire x Sexual Growth Beliefs	-.071	-.108
Arousal x Sexual Destiny Beliefs	-.084	.036
Desire x Sexual Destiny Beliefs	.193**	.011
Arousal^2 x Sexual Growth Beliefs	-.102	-.115
Desire^2 x Sexual Growth Beliefs	-.085	-.046
Arousal^2 x Sexual Destiny Beliefs	-.050	-.015
Desire^2 x Sexual Destiny Beliefs	-.178**	-.078
Arousal x Desire x Sexual Growth	.209	.153
Arousal x Desire x Sexual Destiny	-.036	.111
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.529***	.689***
Curvature of the line of congruence (a_2)	-.102	-.181
Slope of the line of incongruence (a_3)	-.156	-.301
Curvature of the line of incongruence (a_4)	.158	.287
Model statistics: R^2	.169***	.247***

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Conditional Self-Reported Arousal-Desire Effects

Next, we tested whether the association between self-reported arousal-desire overlap and satisfaction was moderated by sexual growth and destiny beliefs when controlling for implicit relationship beliefs more broadly. However, the interaction between arousal-desire overlap and sexual growth beliefs was not significant for relationship satisfaction, $b = .013$, $t(579) = .263$, $p = .793$, or for sexual satisfaction, $b = -.080$, $t(579) = -1.653$, $p = .099$. The interaction between arousal-desire overlap and sexual destiny was also not significant for relationship satisfaction, $b = .006$, $t(579) = .229$, $p = .819$, or for sexual satisfaction, $b = -.037$, $t(579) = -1.401$, $p = .162$. Table 3.9 presents the model coefficients for the regression. Thus, we once again found no support for our hypothesized moderation effects.

Table 3.9.
Arousal-Desire Overlap Predicting Participants' Relationship and Sexual Satisfaction in Study 2, Including the Moderation of Sexual Growth and Sexual Destiny Beliefs, Whilst Controlling for Implicit Relationship Beliefs.

	Relationship Satisfaction	Sexual Satisfaction
Regression coefficients		
Overlap	.165***	.231***
Sexual Growth Beliefs	.124	.554*
Sexual Destiny Beliefs	-.083	.268*
Overlap x Growth Beliefs	.013	-.080
Overlap x Destiny Beliefs	.006	-.037
Relationship Growth Beliefs	.120*	.001
Relationship Destiny Beliefs	.005	-.071*
Gender	.011	.055
Age	-.013	-.019
Model statistics: R^2	.076***	.117***

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Study 3

The aim of Study 3 was to replicate the results of the RSA analyses from Study 2 in a novel sample. Although Study 2 did not provide evidence to support our hypotheses that the importance of (mis)matching may be moderated by implicit sexual beliefs, it is worth noting that most of the sample in Study 2 were in long-term, established relationships. Past research suggests that relationship length may influence the impact of implicit sexual beliefs on relationship outcomes (Maxwell et al., 2016). Thus, in Study 3, we attempted to manipulate implicit sexual growth destiny beliefs in order to help address the limitation of measuring trait beliefs in established partnerships of different lengths, and also to more directly test causal claims about the role of implicit sexual beliefs in moderating the association between arousal-desire mismatching and sexual/relationship satisfaction.

Methods

Participants

For Study 3, 1056 participants were recruited using the same approach as Study 2, of whom 599 completed the full survey. Although the pre-screen for the study terminated the study for all participants who selected 'single' or 'casualty dating' as their relationship status, 8 participants selected these options in the main study and were therefore excluded from the data. Additionally, participants who self-identified as asexual were excluded from the data, which was the case for 4 participants. A further 38 participants were excluded for not passing the manipulation check that aimed to assess whether the participants had paid attention to the priming article. This left 549 participants, which met the minimum sample size we preregistered[9]. As determined via a power analysis conducted in R , 443 participants would

[9] As a large number of participants were excluded from Study 3, analyses were conducted to compare demographic differences (see Appendix B2).

have provided 80% power to detect a small to medium effect size (f^2 = .035) at <.05 significance. Due to the nature of response surface analyses, it was important for there to be an adequate dispersion of cases across variables, and so we aimed for a minimum of 500 participants to sufficiently power for the regressions and the response surface analysis.

Participants (92% women, 6% men, 2% another gender category) were between the ages of 18 and 73 (M_{age} = 26.12, *SD* = 5.68), and identified as heterosexual (63%), bisexual (30%), homosexual (2%), pansexual (4%), queer (< 1%), and those who did not use a label, or identified with another sexual orientation (1%). The majority of participants identified as white (87%), with mixed or multiple ethnic backgrounds (5%), or Asian (3%). Participants identified as exclusively dating, or in a committed dating relationship (78%), engaged (11%), or married, in a civil union, or common-law partnership (11%). Almost all participants reported that they practice monogamy (97%), however a small proportion of participants reported that they engage in consensual non-monogamy/polyamory (3%), or a different type of relationship style (< 1%). The relationship length of the participants spanned between 1

Table 3.10.
Descriptive Statistics and Bivariate Correlations for Sexual Arousal, Sexual Desire, Arousal-Desire Overlap, Relationship Satisfaction, and Sexual Satisfaction in Study 3.

	Mean	SD	1	2	3	4	5
1 Sexual Arousal	3.31	0.73	-				
2 Sexual Desire	3.53	0.78	0.55***	-			
3 Arousal-Desire Overlap	4.66	1.30	0.23***	0.39***	-		
4 Relationship Satisfaction	5.92	1.04	0.28***	0.33***	0.19***	-	
5 Sexual Satisfaction	6.04	0.99	0.40***	0.49***	0.33***	0.63***	-

Note. *p < .05, **p < .01, ***p < .001.

month and 50 years (M_{length} = 4.32, *SD* = 4.60). Descriptive statistics and bivariate correlations are reported in Table 3.10.

Materials and Procedure

The procedure followed that of Study 2. After completing measures of sexual arousal, sexual desire, and arousal-desire overlap, participants were randomly assigned to one of the two conditions wherein they read either the article designed to increase endorsement of implicit sexual destiny beliefs, or the article designed to increase endorsement of implicit sexual growth beliefs. Participants were required to spend a minimum of 3 minutes reading the article before they could continue to ensure participants were reading diligently. After reading the articles, participants completed the relationship and sexual satisfaction measures.

The measures used were almost identical to those used in Study 2 and included measures of sexual arousal (*a* = .81) and desire (*a* = .88), arousal-desire overlap, relationship satisfaction (*a* = .90), and sexual satisfaction (*a* = .89). However, rather than measuring individual differences in implicit sexual beliefs, participants were randomly assigned to one of two priming articles.

Implicit Sexual Belief Priming Articles. Two implicit belief priming articles were used in the study which have previously been shown to successfully manipulate participants to have greater endorsement of sexual destiny or sexual growth beliefs (Maxwell et al., 2017). The article designed to increase endorsement of sexual destiny beliefs was titled ‘Secrets to an Amazing Sex Life: It’s in That Initial Spark’ and focused on how sexual satisfaction relies on being a good sexual match with your partner from the start of the relationship. The article designed to increase endorsement of sexual growth beliefs was titled ‘Secrets to an Amazing Sex Life: You May Need to Work at It’ and focused on how sexual satisfaction relies on both partners putting in effort and working together. Both articles contained fabricated research and were designed to look like real magazine articles.

A manipulation check was used to assess whether participants who read the growth or destiny priming article did more strongly endorse growth or destiny beliefs respectively. Participants were asked 'Based on the article you just read, which statement do you most strongly agree with?'. Participants chose from the following statements: 'It is important that a sexual relationship starts off well' (destiny beliefs), 'One can work to improve their sex life' (growth beliefs), or 'It is likely to experience financial difficulties as a couple' (filler item not associated with sexual destiny or sexual growth beliefs). Participants who did not select the statement that is aligned with the study condition assigned to them were excluded from data analysis.

Results

(Mis)Matches Predicting Satisfaction (Hypotheses 1 and 2)

Descriptively, Study 3 showed a similar pattern of (mis)matching arousal and desire: 36% of this new sample of participants experienced matching arousal and desire, and 64% of participants experienced mismatching arousal and desire. Of those, 21% experienced mismatches as greater arousal than desire, and 43% experienced mismatches as greater desire than arousal.

Next, we used the same analytic strategy as Study 2. We tested the same models as in Study 2:

$$Relationship\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Gender + Age.$$

$$Sexual\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal*Desire + b_5\,Desire^2 + Gender + Age.$$

Table 3.11 presents the model coefficients for the polynomial regression and the RSAs. Figure 3.4 presents the three-dimensional response surface plots for relationship

satisfaction and sexual satisfaction. The omnibus test for both polynomial models were significant (relationship satisfaction: $F(7, 541) = 13.69$, $p < .001$; sexual satisfaction: $F(7, 541) = 31.26$, $p < .001$).

Replicating Study 2, the curvature of the line of incongruence was not significant in either model (relationship satisfaction: $a_4 = 0.171$, $p = .385$; sexual satisfaction: $a_4 = 0.067$, $p = .799$). However, the slopes of the line of congruence predicting relationship satisfaction ($a_1 = 0.490$, $p < .001$) and sexual satisfaction ($a_1 = 0.716$, $p < .001$) were again both positive and significant, consistent with Study 2. Additionally, the curvature of the line of congruence was also significant in this sample for relationship ($a_2 = -0.268$, $p < .001$) and sexual satisfaction ($a_2 = -0.214$, $p < .001$). This suggests that satisfaction was greater when arousal and desire matched at midrange levels rather than at more extreme levels, although this pattern was not predicted a priori, and since it did not emerge in Study 2 for relationship satisfaction, it should be interpreted with caution.

Figure 3.4.
Three-dimensional response surface plots of the combined effect of sexual arousal and desire on the relationship satisfaction (left) and sexual satisfaction (right) of participants, whilst controlling for participant age and gender.

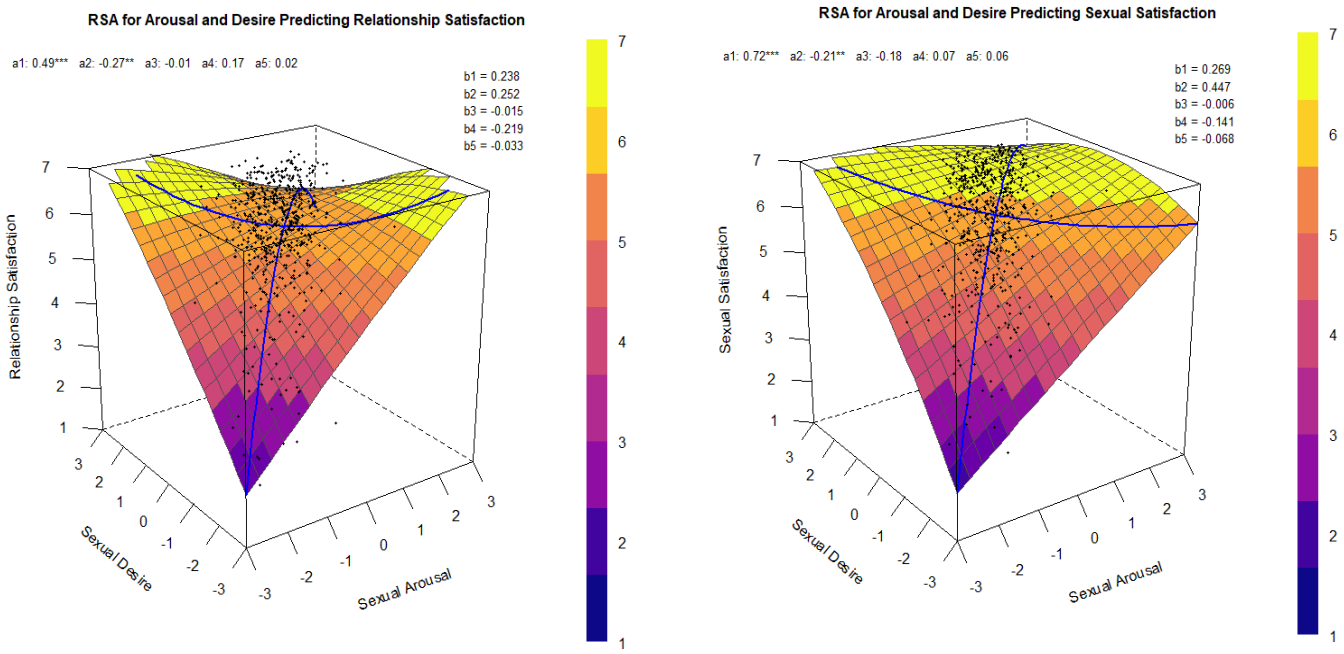


Table 3.11.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 3.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.238***	.269***
Desire (b_2)	.252***	.447***
Arousal^2 (b_3)	-.015	-.006
Arousal x Desire (b_4)	-.219*	-.141
Desire^2 (b_5)	-.033	-.068
Gender	-.047	.002
Age	-.007	-.003
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.490***	.716***
Curvature of the line of congruence (a_2)	-.268**	-.214**
Slope of the line of incongruence (a_3)	-.014	-.179
Curvature of the line of incongruence (a_4)	.171	.067
Model statistics: R^2	.145***	.284**

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Next, we assessed whether concordance as measured by the pictorial measure of arousal-desire overlap was associated with a) relationship satisfaction and b) sexual satisfaction using linear regression, controlling for gender and age. As hypothesized, arousal-desire overlap was associated with both relationship satisfaction ($b = .150$, $t(545) = 4.350$, $p < .001$) and sexual satisfaction ($b = 0.249$, $t(545) = 8.063$, $p < .001$). See Table 3.12 for the regression coefficients. Thus, consistent with the findings from the RSA and our findings

from Study 2, subjective assessments of congruence between arousal and desire also positively predicted satisfaction.

Table 3.12.
Arousal-Desire Overlap Predicting Participants' Relationship and Sexual Satisfaction in Study 3, Whilst Controlling for Gender and Age.

	Relationship Satisfaction	Sexual Satisfaction
Regression coefficients		
Overlap	.150***	.249***
Gender	-.021	.048
Age	-.014	-.010
Model statistics: R^2	.035***	.105***

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The Moderating Effects of Implicit Sexual Beliefs (Hypotheses 3a and 3b)

Finally, we tested the hypothesis that the implicit sexual belief manipulation condition would moderate the polynomial association between arousal-desire and a) relationship and b) sexual satisfaction. The regression models were as follows:

$$Relationship\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal{*}Desire + b_5\,Desire^2 + Sexual\ Belief\ Condition + Gender + Age.$$

$$Sexual\ Satisfaction = b_0 + b_1\,Arousal + b_2\,Desire + b_3\,Arousal^2 + b_4\,Arousal{*}Desire + b_5\,Desire^2 + Sexual\ Belief\ Condition + Gender + Age.$$

The omnibus tests were significant for both relationship satisfaction, $F(11, 537) = 9.408$, $p < .001$, and sexual satisfaction: $F(11, 537) = 20.44$, $p < .001$).

Sexual Destiny Condition. When participants were in the sexual destiny condition, neither the curvature of the line of incongruence predicting relationship satisfaction ($a_4 = -0.120$, $p = .763$) or sexual satisfaction ($a_4 = -0.559$, $p = .199$) were significant. However, the slope of the line of congruence predicting relationship satisfaction was significant and

positive (a1 = 0.587, p < .001) such that relationship satisfaction was greater when sexual arousal and desire matched at higher levels than at lower levels. This pattern was mirrored for sexual satisfaction (a1 = 0.750, p < .001).

For sexual satisfaction only, the curvature of the line of congruence was also significant and negative for sexual satisfaction (a_2 = -0.266, p = .012) suggesting that when people were in the sexual destiny condition, sexual satisfaction was greater when arousal and desire matched at midrange levels rather than at more extreme levels. Furthermore, the slope of the line of incongruence was also significant and negative (a_3 = -0.387, p = .013) suggesting that sexual satisfaction was greater when desire was greater than arousal, than when arousal was greater than desire for those primed with sexual destiny beliefs. Table 3.13 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs for the implicit sexual destiny beliefs condition. Figure 3.5 presents the three-dimensional response surface plots.

Sexual Growth Condition. Next, two RSAs were conducted to assess the association between greater arousal-desire matching and relationship and sexual satisfaction for those in the sexual growth beliefs condition. Neither the curvature of the line of incongruence predicting relationship satisfaction (a_4 = 0.255, p = .226) or sexual satisfaction (a_4 = 0.355, p = .099) was significant. However, as with those in the sexual destiny beliefs condition, the slope of the line of congruence predicting relationship satisfaction was significant and positive (a_1 = 0.415. p < .001) such that relationship satisfaction was greater when sexual arousal and desire matched at higher levels than at lower levels. This pattern was mirrored for sexual satisfaction (a_1 = 0.683. p < .001). For relationship satisfaction only, the curvature of the line of congruence was also significant and negative for sexual satisfaction (a_2 = -0.328, p = .008) suggesting that relationship satisfaction was greater when arousal and desire matched at midrange levels rather than at more extreme levels for participants in the growth condition.

Table 3.14 presents the model coefficients for the polynomial regression and the model coefficients for the RSAs for participants in the implicit sexual growth beliefs condition. Figure 3.5 presents the three-dimensional response surface plots.

Overall, these conditional effects mirror the unconditioned effects from Models 1 and 2, and thus do not support our moderation hypothesis.

Figure 3.5.
Three-dimensional response surface plots of the combined effect of sexual arousal and desire on the relationship satisfaction (top), and sexual satisfaction (bottom) of participants, whilst controlling for participant age and gender, for those in the sexual growth beliefs condition are manipulated to be high (right), and those in the implicit sexual destiny beliefs condition (left).

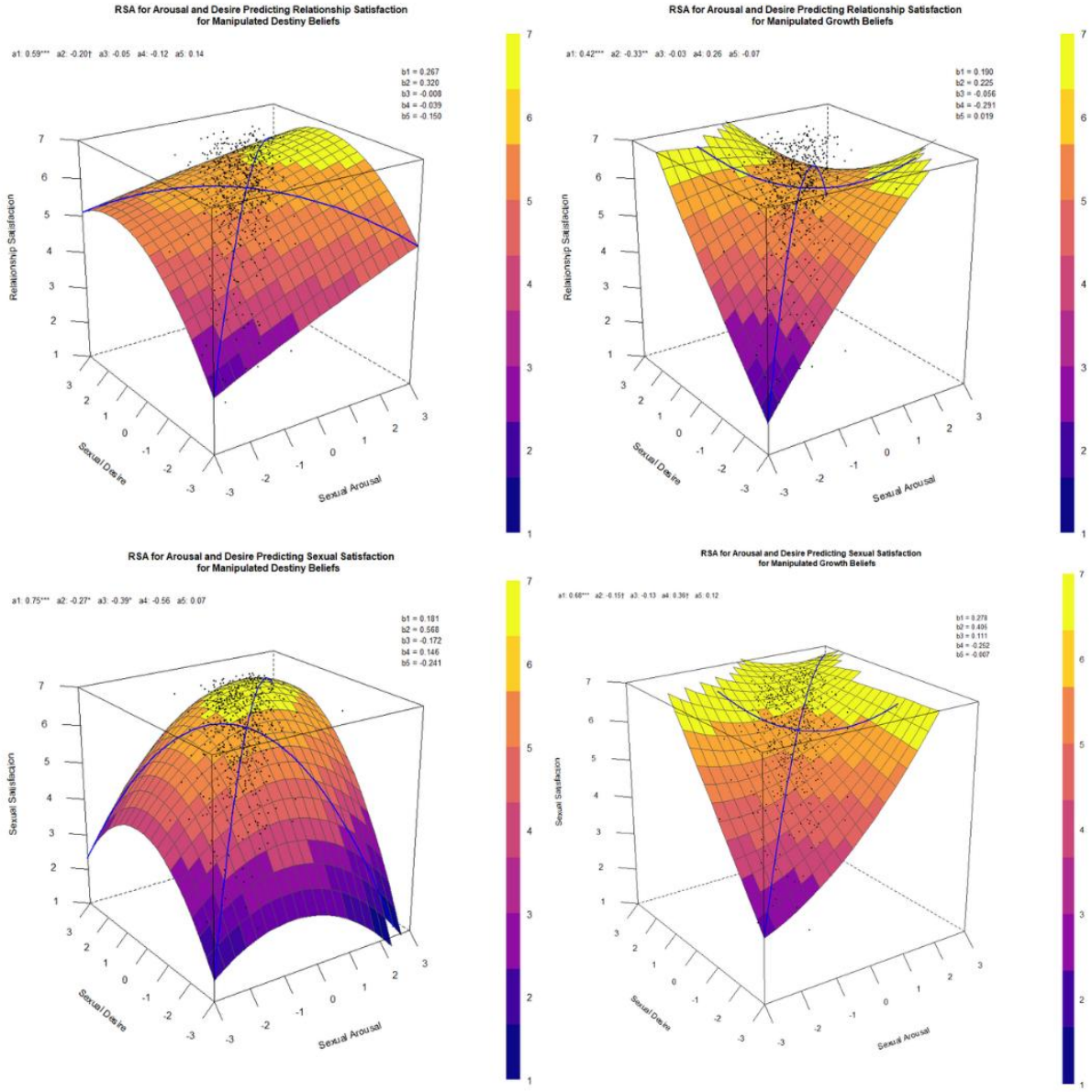


Table 3.13.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 3 for the Implicit Sexual Destiny Beliefs Condition.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.267**	.181
Desire (b_2)	.320***	.568***
Arousal^2 (b_3)	-.008	-.172
Arousal x Desire (b_4)	-.039	.146
Desire^2 (b_5)	-.150	-.241
Gender	-.057	-.008
Age	-.005	.003
Destiny Condition	-.081	-.117*
Arousal x Destiny Condition	-.038	.048
Desire x Destiny Condition	-.048	-.082
Arousal^2 x Destiny Condition	-.024	.141
Desire^2 x Destiny Condition	.085	.117
Arousal x Desire x Destiny Condition	-.126	-.199
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.587***	.750***
Curvature of the line of congruence (a_2)	-.198	-.263*
Slope of the line of incongruence (a_3)	-.053	-.388*
Curvature of the line of incongruence (a_4)	-.120	-.559
Model statistics: R^2	.163***	.331***

Note. *$p < .05$, **$p < .01$, ***$p < .001$.

Table 3.14.
Arousal-Desire Matching and Mismatching as Predictors of Participants' Relationship and Sexual Satisfaction in Study 3 for Implicit Sexual Growth Beliefs Condition.

	Relationship Satisfaction	Sexual Satisfaction
Polynomial regression coefficients		
Arousal (b_1)	.190	.278***
Desire (b_2)	.225**	.405***
Arousal^2 (b_3)	-.056	.111
Arousal x Desire (b_4)	-.291**	-.252*
Desire^2 (b_5)	.019	-.007
Gender	-.005	-.008
Age	-.005	.003
Growth Condition	-.081	-.117*
Arousal x Growth Condition	-.038	.048
Desire x Growth Condition	-.048	-.082
Arousal^2 x Growth Condition	-.024	.141
Desire^2 x Growth Condition	.085	.117
Arousal x Desire x Growth Condition	-.126	-.199
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.415***	.683***
Curvature of the line of congruence (a_2)	-.328**	-.148
Slope of the line of incongruence (a_3)	-.035	-.127
Curvature of the line of incongruence (a_4)	.255	.355
Model statistics: R^2	.163***	.301***

Note. $^*p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Conditional Self-Reported Arousal-Desire Overlap Effects

We further tested whether the association self-reported arousal-desire overlap and a satisfaction was moderated by sexual beliefs condition (1 = growth condition, -1 = destiny condition), using linear regression. The interaction between arousal-desire overlap and implicit sexual belief condition was not significant for relationship satisfaction, b = -.048, $t(543)$ = -1.416, p = .157, or for sexual satisfaction, b = -.033, $t(543)$ = -1.055, p = .292. Table 3.15 presents the model coefficients for the regression. Thus, we once again found no support for our hypothesized moderation effects.

Table 3.15.
Arousal-Desire Overlap Predicting Participants' Relationship and Sexual Satisfaction in Study 3, Including the Moderation of Sexual Belief Condition.

	Relationship Satisfaction	Sexual Satisfaction
Regression coefficients		
Overlap	.150***	.250***
Sexual Belief Condition	.170	.148
Overlap x Sexual Belief Condition	-.048	-.031
Gender	-.019	.051
Age	-.015	-.011
Model statistics: R^2	.038***	.104***

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

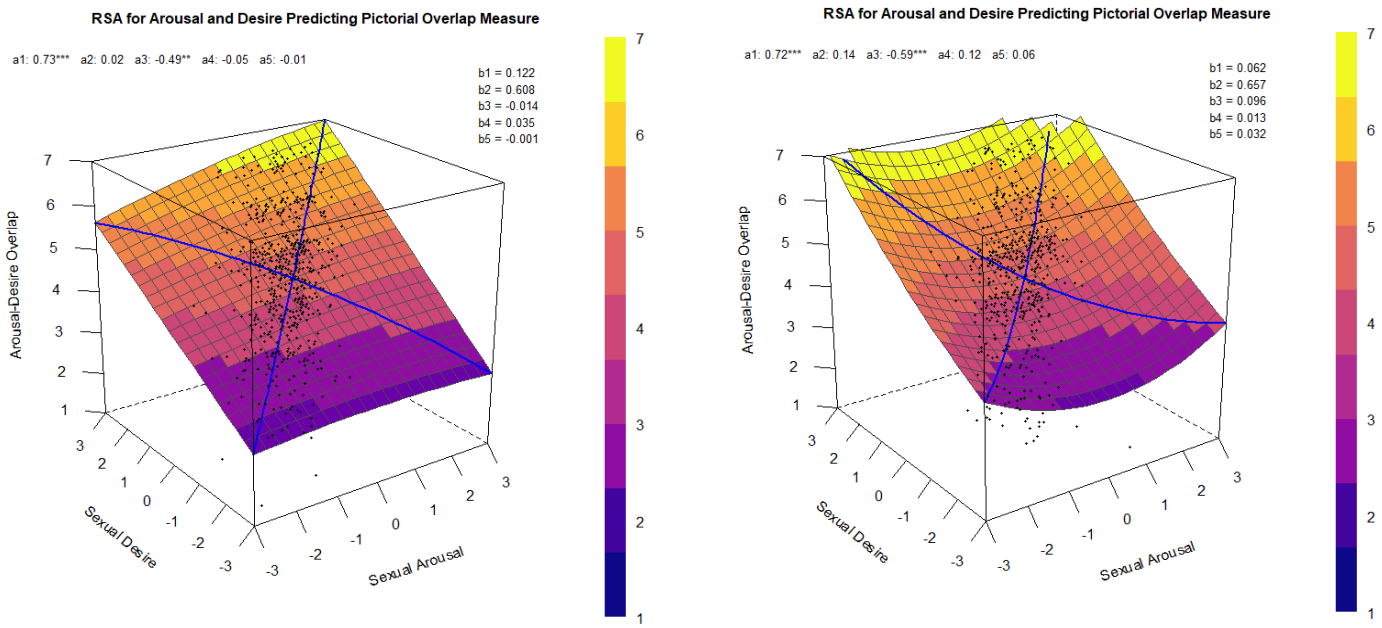
Arousal-Desire (Mis)Matching and Overlap Studies 1 & 2

To further our understanding of how polynomial regression and RSA capture similar or novel dynamics from other measurement approaches, we were interested in testing how the self-reported measure of arousal-desire overlap corresponded to (mis)matching arousal and

desire as modelled by the RSA. We therefore conducted an exploratory RSA in each study predicting overlap from polynomial effect of arousal and desire.

In both studies, the omnibus tests were significant (Study 2: $F(5, 583) = 21.25$, $p < .001$; Study 3: $F(5, 543) = 20.81$, $p < .001$). See Appendix B3 for the model coefficients for the RSAs (Table S3.3). Figure 3.6 presents the three-dimensional response surface plots.

Figure 3.6.
Three-dimensional response surface plots of the combined effect of sexual arousal and desire on the perceived arousal-desire overlap of participants in Study 2 (left) and Study 3 (right).



The slope of the line of congruence predicting arousal-desire overlap was significant and positive for both studies (Study 2: $a_1 = 0.731$, $p < .001$; Study 3: $a_1 = 0.719$, $p < .001$) such that arousal-desire overlap was greater when sexual arousal and desire matched at higher levels than at lower levels. This suggests that self-reported overlap can be best interpreted as capturing congruence between high arousal and desire rather than interpreted as capturing low congruence at lower levels of overlap.

The slope of the line of incongruence predicting arousal-desire overlap was also significant and negative (Study 2: $a_3 = -0.487$, $p = .004$; Study 3: $a_3 = -0.595$, $p < .001$), such

that participants reported more arousal-desire overlap when desire was greater than arousal, than when arousal was greater than desire. This suggests that on self-reported measures which ask participants to interpret their experiences of arousal relative to desire, people who experience more desire than arousal may be more likely to report congruence between these two constructs than people who experience more arousal than desire.

General Discussion

Sexual intimacy in romantic relationships is important and has the potential to shape people's lives and relationships (Anderson, 2013). As a satisfying sex life is important to the maintenance of satisfying romantic relationships (Byers, 2005; Fallis et al., 2016; McNulty et al., 2016; Muise et al., 2013; Muise, Kim, et al., 2016; Sprecher & Regan, 2002), it is important to understand how to foster a satisfying sexual relationship. At the core of sexual intimacy is the arousal and desire people experience towards their sexual partners which propels them towards intimate acts (Basson, 2000; Kaplan, 1974; Meston & Buss, 2007). Independently, arousal and desire have been shown to have an important impact on how satisfied they are with their romantic partnerships and their sex lives (e.g., Brezsnyak & Whisman, 2004; Chao et al., 2011; Dosch et al., 2016; Lawless et al., 2022; Regan, 2000). However, inconsistencies in how arousal and desire have been measured and conceptualized (Handy et al., 2018; Heiman, Rupp, et al., 2011; Janssen, 2011; Sarin et al., 2013), in addition to limitations with traditional statistical modelling making it challenging to model arousal-desire (mis)matches (Barranti et al., 2017; Edwards, 2002; Shanock et al., 2010), mean that there is limited understanding of how (mis)matching arousal and desire influence relational and sexual satisfaction.

The aim of the current research was to directly test how matches and mismatches between subjective arousal and desire were associated with relationship and sexual

satisfaction for people in established romantic relationships, using polynomial regression with response surface analysis which are well suited for modelling the effects of similarities and differences across predictors. Across both studies, we found consistent evidence to suggest that matching at high levels of arousal and desire was associated with both greater relationship and sexual satisfaction. By contrast, we found no evidence to suggest that mismatching negatively influenced satisfaction, despite our original hypotheses and past research suggesting that inconsistencies between "mind" and "body" experiences can be harmful (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003; Stein et al., 1997). One reason why we see the benefits of matching arousal and desire, but no consequences of mismatches might be the context in which a person is experiencing mismatches. Arousal-desire mismatching might not be inherently harmful as a person may perceive this to be the norm for them, however it might be more consequential within a person if they experience more mismatching compared to usual. Moreover, our research did not include people with clinically low levels of arousal and desire. It might be the case that mismatching is more harmful if arousal or desire is at clinically low levels. Additionally, across both studies we found no evidence that implicit sexual beliefs moderated the association between arousal-desire (mis)matches and satisfaction. Instead, our results show that arousal-desire matching at high levels is important for satisfaction, irrespective of individuals' underlying beliefs about their sexual relationship. Again, it may be the case that whilst sexual lay beliefs did not matter, sexual beliefs might be important when there are within-person fluctuations in arousal-desire matching. For example, if a person experiences a mismatch in arousal and desire, when they usually experience high matching between the two, a person high in sexual destiny beliefs may find this much more distressing and make them question their sexual compatibility with their partner much more than somebody high in sexual growth beliefs.

Whilst it may seem like Study 2 and 3, which suggest that people can experience differences in the alignment between their arousal and desire, might appear to contradict the findings of Study 1, which found no profiles containing arousal-desire misalignment, there is nuance in interpreting the findings of these studies. Firstly, the aim of Study 1 was not to evaluate whether people experienced differences in arousal-desire alignment, but to test whether there were meaningful profiles of matching and/or mismatching in conjunction with the other facets of sexual activation. Moreover, a 'misaligned' profile in Study 1 would require the value of one to be significantly above the mean of the sample, and the other to be significantly below the mean of the sample, whereas in Studies 2 and 3, a mismatch was based on whether arousal and desire were within half a z-score unit (Barranti et al., 2017). Consequently, scores of arousal at a 4, and desire at 5, for example, in Studies 2 and 3, may reflect some misalignment, whilst the same scores in Study 1 would simply reflect high levels of both relative to the sample mean. Therefore, we cannot consider the results from Study 1 to be equivalent to 'matching' arousal and desire, as we only know whether they were above or below the sample mean for arousal and desire, not whether their arousal and desire was discrepant.

Our findings provide support for proponents who advocate for conceptualizing these as distinct and separate constructs, rather than interchangeable ones (Blumenstock et al., 2024). Importantly, this research is novel as it highlights that not only are arousal and desire important predictors of satisfaction when measured on their own, but that their combined effect when experienced at high levels together are associated with important interpersonal experiences. Thus, conceptualizing arousal and desire separately will not only help those interested in arousal-desire dysfunctions which manifest differently (Sarin et al., 2013), but also for those interested in bolstering sexual functioning in otherwise non-clinical samples. For example, our findings support previous interventions aimed at increasing sexual

wellbeing by increasing the alignment between bodily and mental sexual response (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). Future research could therefore examine whether interventions aimed at increasing and bringing arousal and desire into alignment could not only benefit sexual wellbeing, but also benefit relationship wellbeing at the same time.

Our findings are also important for understanding how sex influences our relationships. Sexual intimacy is strongly related to maintaining satisfying romantic relationships (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Muise, Schimmack, et al., 2016), and our relationships influence our happiness and wellbeing (Bucher et al., 2019; Diamond & Huebner, 2012; Pateraki & Roussi, 2012; Shek, 1995). Our findings show that whilst both arousal and desire are independently important, arousal-desire matches at high levels are particularly important for relationship and sexual satisfaction. Matches may also have other positive outcomes for relationships, for example matches might indirectly increase relationship commitment, reduce conflict, and enhance sexual self-esteem. Moreover, arousal-desire matches might have positive outcomes for the partner. For example, a partner of somebody who had high alignment in their arousal and desire might perceive their partner to be more responsive and committed. Alternatively, a partner of somebody with low arousal-desire matching could experience more tension or conflict. Future research could research the dyadic impact of arousal-desire (mis)matches.

The current research also provides novel insights into what self-reported measures of (mis)matching between arousal and desire may be capturing. In both studies, our self-reported measure of arousal-desire overlap was also positively associated with relationship and sexual satisfaction. Historically, one could be reduced to interpreting these associations based on linear assumptions such that higher scores = good/matching, and lower scores= bad/mismatching. However, the findings from our RSA temper such interpretations, instead

suggesting that the self-reported overlap better taps into when people experience matching at high (relative to low) levels of arousal and desire. Thus, while a single-item measure such as ours may be more practical to administer in many contexts, the additional insights from our RSA provide a framework for researchers to limit their interpretation of any resulting findings to narratives around *matching when both are strong*, and avoid narratives that speak to *mismatching*.

Limitations & Future Directions

Despite the strengths of our studies, they are not without limitations. First, the current studies focused on subjective awareness of arousal, rather than objectively measuring arousal through physiological changes (e.g., genital vasocongestion). This choice was based on past work demonstrating that subjective arousal and desire can be differentiated (e.g., Blumenstock et al., 2024; Sarin et al., 2013), and because subjective awareness of physiological changes within the body have important predictive implications for how people interpret their sexual functioning (Dixon et al., 2024; Handy & Meston, 2016). Additionally, there are practical advantages to examining subjective experiences which do not rely on intrusive measurement devices, and yet still yield valuable insights into how people experience intimacy in their relationships. Nonetheless, subjective awareness of arousal does not perfectly correlate with objective physiological changes in response to sexual stimuli (Chivers et al., 2010; Meston & Stanton, 2019). Thus, there may be important limitations to this approach which should be addressed through future research examining how (mis)matching objective arousal and desire influence sexual and relational satisfaction.

Relatedly, this research relied on retrospective reflections on the arousal and desire someone recalled experiencing during a recent intimate experience with their romantic partner. The methodological choice to ask participants to reflect on a recent sexual experience reflects practical limitations associated with assessing arousal and desire for a romantic

partner in vivo. However, self-reported arousal and desire may be influenced by perceptions of the partner and relationship (Birnbaum et al., 2016; Dewitte et al., 2018). Consequently, this research is unable to make causal determinations regarding whether congruently high arousal and desire lead to relational and sexual satisfaction, or whether high relational and sexual satisfaction bring arousal and desire into alignment. Further research with more sensitive measurement will be needed to better understand causality.

Another limitation of these studies is a lack of equal gender representation. Despite efforts to recruit self-identified men and women, nearly all of the participants across both studies were women. The over-representation of women is a common issue specifically in research that recruits for sex and relationship research (Senn & Desmarais, 2001), but also in general for research that uses volunteer sampling. There are several important gender differences to consider in relation to the implications of this research. Firstly, sexual arousal is organized differently in women experience less agreement between their subjective arousal and objectively measured genital stimulation compared to men (Chivers et al., 2010). Secondly, men experience stronger and more frequent desire than women, however this may be in part due to the way desire has been measured, which often conflates desire with sexual frequency, or focuses on spontaneous, rather than responsive, sexual desire, leading women to underreport their desire (Dawson & Chivers, 2014). The current research is also centered on cisnormative expectations of sexual functioning. This may overlook unique experiences and concerns around (mis)matching arousal and desire in populations undergoing gender transformative procedures, including taking medications, hormone replacement therapies, and surgery. Thus, despite controlling for gender in our analyses, the present results should be interpreted with caution when generalizing across gender identities.

Finally, despite implicit sexual beliefs not moderating the association between arousal-desire (mis)matches and satisfaction, there may nonetheless be other important

individual differences which inform these associations. For example, differences in attachment orientations may influence how people interpret (mis)matches between their subjective arousal and their desire for a partner. We would hypothesize that arousal-desire mismatches might be particularly distressing for anxiously attached individuals who are more prone to their relationship quality being influenced negative sexual experiences (Birnbaum et al., 2006). Individual differences in interoceptive awareness may also influence how people experience arousal-desire (mis)matches. Notably, because greater interoceptive ability is associated with greater awareness of sexual arousal (Handy & Meston, 2016, 2018), people who are more interoceptive might be more sensitized to experiences where their subjective arousal and desire match or mismatch than someone who is less attune to their how their body responds to sexual stimuli. Thus, more research is needed to help identify factors which potentially sensitize people to arousal-desire (mis)matches, and how this may alter their association with relationship and sexual wellbeing.

Conclusion

People may be driven to intimacy by experiences in their "mind" or experiences in their "body". Arousal and desire are both important aspects of a satisfying sex life and relationship. Because they are distinct experiences, it is natural for them to diverge. However, due to statistical and theoretical limitations in prior research, it has been challenging to test whether intimate relationships benefit from matches between arousal and desire, or are harmed by mismatches. The current findings suggest that, in a non-clinical sample of people in relationships, matching arousal and desire particularly benefit people's sex lives when they are *both* high, but are not particularly detrimental when they mismatch. Thus, interventions which successfully increase both arousal and desire during intimate encounters with partners may be particularly important to support sexual and relationship wellbeing between couples.

Chapter 4 - When the Stars Align: The Impact of Arousal-Desire Alignment on Daily Sexual Satisfaction and Intimacy

Author's Note

This chapter details Study 4, in which we tested whether daily changes in arousal-desire alignment might influence sexual satisfaction and decisions to engage in intimacy.

The pre-registered hypotheses and analysis plans can be found here: https://aspredicted.org/4shr-hjbg.pdf.

This chapter has been submitted for publication and is currently under review:

Tasker, C., Lamarche, V.M., & Ses, O. (submitted) When the Stars Align: The Impact of Arousal-Desire Alignment on Daily Sexual Satisfaction and Intimacy. *Sexual and Relationship Therapy.*

Abstract

People benefit from experiencing concurrently high degrees of both subjective awareness of physiological arousal and psychological desire for intimate acts with a partner. Just as people can experience high arousal and desire, these experiences can wane together or diverge over time. However, the consequences of fluctuations in the perceived alignment between subjective arousal and desire for sexual wellbeing are unknown. In an 8-day diary study of adults (n = 169) in established relationships, we tested the hypothesis that daily changes in arousal-desire alignment might influence sexual satisfaction and decisions to engage in intimacy. Consistent with hypotheses, on days when participants reported greater arousal-desire alignment, they also reported greater sexual satisfaction the next day. However, contrary to our hypothesis they were no more or less likely to have engaged in intimacy. Furthermore, consistent with hypotheses, implicit sexual beliefs moderated this association, such that arousal-desire alignment predicted satisfaction those who believe in the importance of sexual compatibility (i.e., high sexual destiny beliefs), not for those who believe in opportunities for sexual growth in relationships (i.e., high sexual growth beliefs). Overall, our findings suggest that on days following greater alignment between arousal and desire than usual, people feel more satisfied with their intimate lives, particularly when they believe sexual compatibility is essential.

Introduction

Sexual intimacy is important for our health and wellbeing and helps us to maintain closeness and intimacy in our relationships (Bancroft, 2002; Debrot et al., 2017; Satcher, 2001, 2013). It is therefore no surprise that having frequent, and good, sex is especially positive. More frequent sex is associated with greater sexual and relational satisfaction (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016), as well as overall life (Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017). Frequency is not the only metric that matters. It is equally important for relational and life satisfaction to be engaging in *satisfying* sex (Fallis et al., 2016; Litzinger & Gordon, 2005; Schmiedeberg et al., 2017). But, sexual satisfaction and sexual frequency can fluctuate day-to-day (Velten et al., 2025), and so it is important to understand what might contribute to these fluctuations to help benefit the relationship.

Arousal and desire are both involved in the preparation of the body and the mind to engage in sexual intimacy (Levine, 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006). Past work suggests that people experience the best outcomes for their relationships, sex lives, and even psychological wellbeing, when their subjective arousal and desire for a partner are *both* high (Chapter 2, Chapter 3). However, arousal and desire are known to fluctuate daily (Harris et al., 2023; Kalmbach & Pillai, 2014; Mües et al., 2025a; Ter Kuile et al., 2007). It is likely that their alignment also fluctuates daily, and thus could lead to fluctuations in sexual frequency and satisfaction within the relationship. Thus, we propose that people should be the most likely to engage in sexual intimacy and feel more satisfied with their sex lives on days where their arousal and desire are aligned, than when they are misaligned.

However, variability in the alignment between arousal and desire should also depend on beliefs about sexual relationships. For people who believe natural sexual compatibility is highly important (Maxwell et al., 2017), alignment between subjective arousal and desire might influence how they interpret the quality of their sex lives and their willingness to engage in intimacy with a partner. However, for those who believe in working with a partner to overcome sexual incompatibilities and conflicts, variability in alignment between arousal and desire may be less impactful. Study 4 therefore examined whether daily fluctuations in alignment between arousal and desire was associated with sexual satisfaction and the frequency with which people engaged in sexual acts with a partner, as well as tested whether individual differences in implicit sexual beliefs might influence these associations.

Sexual Intimacy and Satisfaction

Sexual intimacy is often considered to be a fundamental aspect of most romantic relationships (Hendrick & Hendrick, 2004; McKeever, 2016), and indeed our lives (Satcher, 2001). It allows us to nurture closeness and intimacy within the relationship and is connected to our health and wellbeing (Bancroft, 2002; Debrot et al., 2017; Satcher, 2001, 2013). Having frequent and good sex is especially beneficial to our lives. A considerable body of research suggests that having sex more frequently is associated with greater satisfaction with our sexual and romantic relationships (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Frederick et al., 2017; McNulty et al., 2016; Muise, Schimmack, et al., 2016), as well as our happiness and overall life satisfaction (Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017). However, it is worth noting that the benefits of more frequent sex plateau at about once per week (Loewenstein et al., 2015; Muise, Schimmack, et al., 2016), which also represents the average frequency reported by couples who are in established relationships (Blanchflower & Oswald, 2004; Call et al., 1995).

Being satisfied with one's sex life plays an important role in broader wellbeing. Sexual satisfaction is associated with greater relationship (Fallis et al., 2016; Litzinger & Gordon, 2005), and life satisfaction (Schmiedeberg et al., 2017) above and beyond sexual frequency alone (Schmiedeberg et al., 2017; Schoenfeld et al., 2017). Yet, sexual satisfaction can dwindle over the course of a relationship (Edwards & Booth, 1994; Liu, 2003; McNulty & Widman, 2013), with one study finding declines beginning at approximately a year into the relationship (Schmiedeberg & Schröder, 2016). Moreover, many daily diary studies find that sexual satisfaction fluctuates day-to-day (for review, see Velten et al., 2025), which could also relate to fluctuations seen in relationship satisfaction (Arriaga, 2001). Given the important role sexual satisfaction and frequency play in personal and relational wellbeing, it is crucial to understand the mechanisms behind what may cause daily variability in whether people have sex and whether they find the sex they are having satisfying.

When the Stars Align: Sexual Arousal-Desire Alignment

Part of understanding why sexual satisfaction and intimacy fluctuate daily may lie in understanding daily fluctuations in the alignment between one's arousal and desire. Sexual arousal and sexual desire are two responses which might occur in response to a sexual stimulus. Sexual arousal is the physiological response to stimuli, which involves changes in the body, including increased heart rate and increased blood flow to the genitals (Toledano & Pfaus, 2006). Awareness of such bodily responses is referred to as subjective arousal (Laan & Both, 2008; Toledano & Pfaus, 2006). On the other hand, sexual desire is the psychological response which drives people to engage in sexual behaviors (Laan & Both, 2008; Levine, 2003; Regan & Berscheid, 1999).

Although originally conceptualized as separate constructs in many models of sexual response (e.g., Basson, 2000; Kaplan, 1974; Laan & Both, 2008; Lief, 1977), more recently arousal and desire have been used interchangeably in many areas of research, due to a lack of

consensus on definitions (Heiman, Rupp, et al., 2011; Janssen, 2011; Sarin et al., 2013). In particular, desire and subjective sexual arousal are most often used interchangeably (Handy et al., 2018). Consequently, research has hardly considered that a person's arousal and desire could potentially be in alignment or in misalignment, or the consequences thereof. There is experimental and clinical research which suggests that people do experience differences in the alignment between their arousal and desire (Blumenstock et al., 2024; Sarin et al., 2013). Our own work found that 62-64% of people experienced misalignment in their arousal and desire [10] (Chapter 3), with experiences where desire was greater than arousal being more common (43%) than experiences where arousal was greater than desire (19%-21%).

Sexual arousal and desire are known to fluctuate daily, for many reasons including in response to changes in positive and negative affect (Harris et al., 2023; Kalmbach & Pillai, 2014), and stress (Harris et al., 2023; Mües et al., 2025a; Ter Kuile et al., 2007). As arousal and desire fluctuate independently, this should also lead to fluctuations in their alignment (Chapter 3). This should have important implications for how people feel about their sex lives on days when they experience more (or less) alignment. First, greater than usual alignment may signal compatibility between their mind and body. Evidence suggests that people benefit in their sexual wellbeing when mind and body experiences are brought into alignment (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018), as greater coherence between affective and physiological states allows us to feel more certain of our interpretation of a situation (Biddell et al., 2024; Brown et al., 2020). By contrast, experiencing more misalignment than usual may lead to greater stress, or a sense of dissonance due to their mind and body being out of sync (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003). People may consequently project these feelings about

[10] The percentage of aligned and misaligned observations across the data based on whether arousal and desire were within half a z-score unit of one another (Barranti et al., 2017).

changes in their alignment onto their sex life, consequently influencing their reported sexual satisfaction. Moreover, arousal and desire orients people towards engaging in sexual intimacy (Levine, 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006). Thus, on days when people feel as though both motivational states are more aligned than usual, they should experience the greatest motivational push to engage in sexual behavior. By contrast, misalignment may suggest a waning in one of the underlying motivational states, which may deter people from sexual activity. Therefore, daily fluctuations in arousal-desire alignment should influence whether or not people choose to have sex with their partners.

Implicit Sexual Beliefs

Despite the potential influence fluctuations in arousal and desire may have on sexual satisfaction and intimacy, such variability may not have the same impact on everybody. Individual differences in implicit sexual beliefs may impact how one interprets alignment or misalignment of their arousal and desire. Those who hold implicit sexual destiny beliefs tend to believe that their natural sexual compatibility with a partner is highly important to sexual satisfaction, and any struggles are a sign that the sexual relationship is sure to fail (Maxwell et al., 2017), and therefore find sexual struggles distressing (Rossi et al., 2022). On the other hand, those who hold implicit sexual growth beliefs believe that working with a partner to overcome sexual struggles will lead to sexual satisfaction, and therefore are more likely to respond to a sexual struggle with positive intentions to work on through such struggles (Bőthe et al., 2017; Maxwell et al., 2017). Consequently, arousal-desire alignment may be more important to those who are high in destiny beliefs, as they would believe that alignment is a sign of their natural compatibility with a partner, whereas misalignment would lead to greater distress for these people. For those high in growth beliefs, alignment in arousal and desire should be less important as these people anticipate a need to work on their sex lives, and that struggles in the sexual relationship are accepted as normal.

Study 4 Overview

Given the benefits of engaging in frequent, satisfying sex for personal and relational wellbeing relationships and lives (Blanchflower & Oswald, 2004; Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Cheng & Smyth, 2015; Fallis et al., 2016; Frederick et al., 2017; Litzinger & Gordon, 2005; McNulty et al., 2016; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017), it is important to identify the factors which influence more frequent intimacy and satisfying sexual relationships. One potential domain to consider is the extent to which people experience variability in the alignment between their subjective arousal and desire. Greater alignment between sexual arousal and desire is associated with increased sexual and relational satisfaction (Chapter 3). However, both arousal and desire can wane on a daily basis, sometimes leading to misalignment between them. In these instances, the consequences for sexual functioning are unknown.

The aim of the current research was to test whether daily fluctuations in alignment between arousal-desire predict sexual satisfaction and engaging in sexual acts. Given that arousal-desire alignment is associated with greater sexual satisfaction (Chapter 3), and arousal and desire prepare the body and mind to engage in sexual intimacy (Levine, 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006), we predicted that when on days where people reported greater arousal-desire alignment they would be more likely to engage in sexual intimacy and be more satisfied with their sexual relationship.

Moreover, we examined whether arousal-desire alignment would be more important for some people by testing whether individual differences in implicit sexual destiny and implicit sexual growth beliefs moderated the association between daily arousal-desire alignment and satisfaction and intimacy. We predicted that people who believed that natural sexual compatibility is highly important (i.e., high sexual destiny beliefs; Maxwell et al., 2017) would be more likely report greater satisfaction and sexual intimacy following greater

arousal-desire alignment. However, we predicted that for people who believed that sexual struggles can be worked through (i.e., high sexual growth beliefs), daily fluctuations in alignment between arousal-desire would not influence satisfaction/intimacy, as those high in growth beliefs constantly anticipate that they may need to work on their sex lives, and thus should be less sensitized to the implications of potential changes day-to-day. Our hypotheses are as follows:

Hypothesis 1. Following days where arousal-desire alignment was higher, participants would report a) relatively greater sexual satisfaction (**H1a**), and b) a relatively greater likelihood of sexual intimacy (**H1b**).

Hypothesis 2 & 3. We also hypothesize that implicit sexual destiny (**H2**) and growth beliefs (**H3**) would each moderate the association between arousal-desire alignment and sexual satisfaction and intimacy**.** Specifically, we predicted that there would be a two-way daily arousal-desire alignment by trait sexual destiny belief interaction predicting a) daily sexual satisfaction (**H2a**), and b) daily sexual intimacy (**H2b**). We predicted that the simple slopes of alignment would be significant for people relatively higher in destiny beliefs, such that following days where daily arousal-desire alignment higher, they would report greater sexual satisfaction and intimacy. However, we expected that the simple slope of alignment would no longer be significant when destiny beliefs were low.

Additionally, we predicted that there would also be a two-way daily arousal-desire alignment by trait sexual growth beliefs interaction predicting a) daily sexual satisfaction (**H3a**), and b) daily sexual intimacy (**H3b**). We hypothesized a significant simple effect of arousal-desire alignment when growth beliefs were low, such that relatively greater alignment would be associated with greater next-day sexual satisfaction/intimacy. We did not expect a significant association between alignment and sexual satisfaction/intimacy when growth beliefs were high.

The study materials, anonymized aggregate data, and analysis codebooks are available on the project's repository on the Open Science Framework (https://osf.io/an6mh/?view_only=399d41173c7f4b79bec3ebdca6ad6e2e).

Method

Participants

Two hundred and thirty-two participants were recruited on Prolific as part of a wider study. To be eligible for inclusion in this study, participants had to be at least 18 years of age, in a committed relationship, affirmed that they would give their best answers on an integrity check question (Geisen, 2022), and have had sex with their partner in the past three months. Of the eligible participants, 9 were dropped for not completing any of the daily prompts, and a further 54 were dropped from the analyses due to not meeting the eligibility requirement of having had sex within the past 3 months, leaving 169 participants for analyses[11]. Participants included in our analyses for Study 4 were part of a larger experience sampling survey, and therefore the recruitment goal was determined by the larger study. However, according to multilevel power curves (Bolger et al., 2013), this sample size should have been sufficient to detect medium effects (d = 0.5) with 80% power.

Participants in this subsample (60% women; 38% men; 1% another gender category) were between the ages of 23 and 72 (M_{age} = 40.36, SD = 10.14), and the majority identified as heterosexual (83%; 9% bisexual; 4% homosexual; 2% pansexual; 2% queer), White (85%; 1% Asian; 5% Black; less than 5% Latino/Latina or Latin-American/Hispanic, Asian, or of another unspecified ethnic group), monogamous (98%; 2% consensually non-monogamous/polyamorous/another relationship style), and mostly married/in a civil union or

[11] Participants completed 83% of the daily follow-ups on average. When we remove participants who completed <70% of the daily prompts, the pattern of results remains the same, and the effects become slightly stronger. Consequently, we decided to retain the full sample of participants who completed the daily surveys.

common-law partnership (57%; 28% in an exclusively or committed dating relationship; 15% engaged). The relationship length of participants spanned between 6 months, and 42 years (M_{length} = 12.90 years, SD = 9.02). Participants received up to £18 (£6/hour pro rata) for participating (£2 for the 20-minute preliminary survey, plus £0.20 per 2-minute prompt completed; plus £1 for each of the eight 10-minute daily surveys).

Materials and Procedures

Participants were invited to sign up for an 8-day experience sampling study via Prolific. On the first day of the study, participants completed a preliminary survey and were also instructed on how to download the ExpiWell app and log into their account which would be used to distribute the daily questionnaires. After successful installation and login, participants were instructed to go back to the preliminary survey and input a code to prove their successful completion of installation process. If participants could not prove their successful installation of the ExpiWell app using a verification code, they were immediately dropped from the study. Participants then answered demographic questions (e.g., age, gender, sexual orientation, ethnicity, relationship status, relationship style, and relationship length), and measures of implicit sexual beliefs and implicit relationship beliefs (counterbalanced), as well as questions unrelated to the present study. On each subsequent day for the next 8 days, participants received experience sampling requests at 2-hour intervals between 9am and 5pm with questions unrelated to the current study. Additionally, they received an end of day survey at 6pm which was available until 6am the next morning. The end of day surveys included, in addition to questions unrelated to this study, the focal measures of daily sexual satisfaction, daily sexual intimacy, and daily arousal-desire alignment. Upon completion of the study, participants were debriefed.

Daily Arousal-Desire Alignment. Participants completed a measure of arousal-desire alignment to assess how people view the relationship between their sexual arousal and their

sexual desire on that day (adapted from Aron et al., 1992; Chapter 3). This measure consists of one question where participants are presented with increasingly overlapping circles, each of which represents their arousal and desire (1 = no alignment in arousal and desire, as represented by two circles next to one another, 7 = complete alignment in arousal and desire, as represented by a complete overlap of both circles).

Daily Sexual Intimacy. Daily sexual intimacy was assessed using a single-item measure ("Have you been sexually intimate with your partner since yesterday's last survey?"; 1 = *Yes*, 0 = *No*). Thus, sexual intimacy, while measured the next day, captured whether or not intimacy had occurred in the evening/day following the last survey.

Daily Sexual Satisfaction. Regardless of whether or not sexual intimacy had been reported, daily satisfaction with their sexual relationship with their partner was be assessed using a single-item measure ("How much do you agree with the statement 'I felt satisfied with my sexual relationship with my partner since yesterday's last survey?'"; 1 = *strongly disagree*, 7 = *strongly agree*). Thus, sexual satisfaction measured the next day captured satisfaction with sexual relationships in the evening and day following the previous survey.

Implicit Sexual Beliefs. Trait implicit sexual beliefs were measured using a 24-item scale at baseline which assessed the participant's endorsement of implicit sexual destiny beliefs or implicit sexual growth beliefs (Maxwell et al., 2017). Eleven-items were part of the sexual destiny subscale (a = .89; e.g., 'An unsatisfying sex life suggests that the relationship was never meant to be'; 1 = *strongly disagree*, 7 = *strongly agree*) and 13 were part of the sexual growth subscale (a = .87; e.g., 'Successful sexual relationships require regular maintenance'; 1 = *strongly disagree*, 7 = *strongly agree*). Items were averaged across each subscale and higher scores represented greater endorsement of sexual destiny beliefs and greater endorsement of sexual growth beliefs for each subscale respectively.

Results

All analyses were done in R Version 4.5.1 (R Core Team, 2025). Descriptive statistics and bivariate correlations for the variables in our model are in Table 4.1.

Table 4.1.
Descriptive Statistics and Between-Person and Within-Person Correlations for Daily Arousal-Desire Alignment, Daily Sexual Satisfaction, Daily Sexual Intimacy, Sexual Destiny Beliefs, and Sexual Growth Beliefs

	Mean	SD	1	2	3	4	5
1 Daily Arousal-Desire Alignment	3.26	1.98	-	0.22**	0.31***	-0.16*	0.11
2 Daily Sexual Satisfaction	4.33	1.68	0.26***	-	0.38***	-0.10	-0.06
3 Daily Sexual Intimacy	1.16	0.37	0.46***	0.34***	-	-0.16*	0.14
4 Sexual Destiny Beliefs	2.93	1.02				-	-0.27***
5 Sexual Growth Beliefs	5.81	0.62					-

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$. Lower triangle represents within-subjects multilevel correlations. Upper triangle represents between-subjects correlations. Sexual destiny and sexual growth beliefs were not entered into the multilevel within-subjects correlation as sexual beliefs were not measured daily and only measured in the preliminary survey.

Primary Analyses

Arousal-Desire Alignment and Sexual Satisfaction/Intimacy. To analyze hypotheses 1-3 we used multilevel modelling with mixed models using the LMER function of the LME4 package in R. Daily responses were nested within individuals to account for the non-independence of the data structure. We used lagged analyses with "today's" arousal-desire alignment predicting reports of sexual satisfaction and sexual intimacy reported the next day which asked participants to reflect on any intimacy they had experienced following their last survey. Models predicting next-day intimacy were entered as binomial generalized mixed multilevel models as next-day intimacy was a binary outcome (yes/no). For each model, we

controlled a priori for gender, age, and relationship length to account for their known contributions in variability across arousal and desire, sexual satisfaction, and sexual frequency (Call et al., 1995; Chivers et al., 2010; Dawson & Chivers, 2014; Edwards & Booth, 1994; Liu, 2003; McNulty & Widman, 2013; Muise, Schimmack, et al., 2016). Control variables were grand-mean centered, as well as growth and destiny beliefs, whereas predictor variables were person-mean centered.

As expected, greater arousal-desire alignment was associated with greater next-day sexual satisfaction, $b = 0.99$, $t(750) = 2.92$, $p = .004$, *95% CI* [.03, .17]. Therefore, supporting Hypothesis 1a, following days where people reported more arousal-desire alignment than usual, they felt more satisfied with their sex lives. Conversely, we did not find support for Hypothesis 1b as daily arousal-desire alignment was not associated with next-day likelihood of sexual intimacy, $b = -0.03$, $z = -0.34$, $p = .730$, *95% CI* [-.18, .13].

Moderating Effects of Sexual Destiny Beliefs. To test for moderation by sexual implicit beliefs (H2 & H3), we included the main effect of implicit sexual destiny and implicit sexual growth beliefs, and their two-way interactions with arousal-desire alignment, in the multilevel models. As hypothesized, the effect of arousal-desire alignment on sexual satisfaction was significantly moderated by sexual destiny beliefs, $b = 0.10$, $t(749) = 2.61$, $p = .009$, 95% CI [.02, .16] (see Table 4.2). This two-way interaction was decomposed to test for the simple effect of arousal-desire alignment for those at high (+1*SD* above the mean) and low (−1 *SD* below the mean) sexual destiny beliefs. As predicted, the simple effect of arousal-desire alignment predicting next-day sexual satisfaction was significant for participants who reported high implicit sexual destiny beliefs, $b = 0.20$, $t(749) = 3.97$, $p < .001$, 95% CI [.10, .30]. The simple effect of arousal-desire alignment predicting next-day sexual satisfaction was not significant for participants who reported low implicit sexual destiny beliefs, $b = 0.01$, $t(753) = 0.262$, $p = .794$, 95% CI [-.08, .11] (Figure 4.1). Thus,

Table 4.2.
Model Coefficients for the Main Effects of Sexual Arousal-Desire Alignment on Next-Day Sexual Satisfaction and Next-Day Sexual Intimacy, and Interaction Effects of Sexual Destiny and Sexual Growth Beliefs, Controlling for Age, Gender, and Relationship Length.

Main Effects Models

	Sexual Satisfaction		**Sexual Intimacy**	
Variables	*b [95% CI]*	*t*	*b [95% CI]*	*z*
Arousal-Desire Alignment	.10 [.03, .17]	2.92**	-.03 [-.18, .13]	-0.34
Age	.01 [-.01, .04]	1.09	.03 [-.00, .05]	1.95
Gender – Women	.26 [-.17, .70]	1.17	-.14 [-.60, .32]	-0.62
Gender – Other	.64 [-1.19, 2.48]	0.68	-.08 [-2.24, 1.71]	-0.08
Relationship Length	-.03 [-.06, -.00]	-2.02*	-.04 [-.07, -.01]	-2.67**

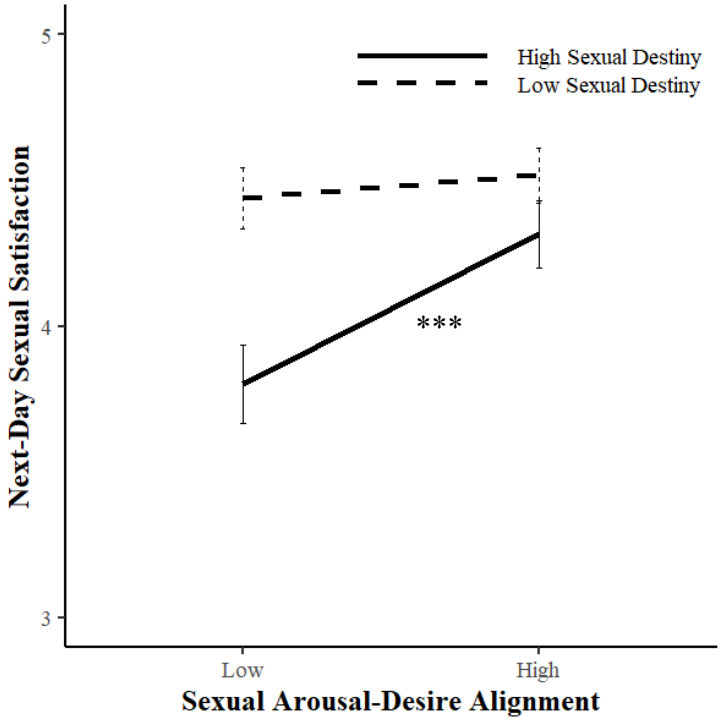
Interaction Models

	Sexual Satisfaction		**Sexual Intimacy**	
Variables	*b [95% CI]*	*t*	*b [95% CI]*	*z*
Arousal-Desire Alignment	.10 [.04, .17]	3.09**	-.03 [-.19, .13]	-0.40
Age	.01 [-.01, .04]	1.08	.03 [-.00, .05]	1.90
Gender – Women	.13 [-.32, .57]	0.55	-.11 [-.57, .35]	-0.47
Gender – Other	.44 [-1.36, 2.25]	0.47	-.01 [-1.85, 1.83]	-0.01
Relationship Length	-.03 [-.06, -.00]	-2.03*	-.04 [-.07, -.01]	0.02*
Destiny Beliefs	-.24 [-.45, -.03]	-2.16*	.07 [-.15, .30]	0.64
Growth Beliefs	-.32 [-.65, .02]	-1.82	-.34 [-.69, .01]	-1.92
A-D Alignment x Destiny Beliefs	.09 [.02, .16]	2.61**	.04 [-.12, .21]	0.54
A-D Alignment x Growth Beliefs	.02 [-.09, .13]	0.33	-.08 [-.33, .16]	-0.65

Note. Next-day sexual satisfaction was analyzed using linear mixed-effects models, whereas next-day sexual intimacy was analyzed using binomial generalized mixed-effects models. Numbers in brackets represent 95% confidence intervals. Gender effects are in reference to the coefficients for men. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

arousal-desire alignment predicted next-day satisfaction, but only for people who have relatively higher beliefs that couples are destined to be sexually compatible.

Figure 4.1.
Sexual destiny beliefs and next-day sexual satisfaction as a function of daily sexual arousal-desire alignment.



Note. Solid line represents individuals with high sexual destiny beliefs, and dashed line represents individuals with low sexual destiny beliefs. Parallel lines represent confidence intervals. High and low destiny and arousal-desire alignment determined by +1/-1 SD respectively. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

However, contrary to hypotheses, the effect of arousal-desire alignment on sexual intimacy was not moderated by sexual destiny beliefs, $b = 0.04$, $z = 0.59$, $p = .588$, 95% CI [-.12, .21].

Moderating Effects of Sexual Growth Beliefs. Contrary to hypotheses, the effect of arousal-desire alignment on next-day satisfaction was not moderated by sexual growth beliefs, $b = 0.02$, $t(785) = 0.33$, $p = .743$, 95% CI [-.09, .13], nor was next-day sexual intimacy, $b = -0.08$, $z = -0.65$, $p = .517$, 95% CI [-.33, .16] (see Table 4.2).

Exploratory Analyses

The aim of this study was to understand how daily *changes* in alignment between arousal and desire influence sexual intimacy and satisfaction. However, past work suggests that overall alignment may offer personal and relational benefits (Chapter 3). Thus, we tested whether average alignment across the diary period was associated with sexual satisfaction and sexual frequency on average over the same period. Consistent with past work, people who experienced greater relative alignment between arousal and desire on average across the diary period had sex more often, $b = 0.04$, $t(163) = 4.234$, $p < .001$, *95% CI* [.02, .06], and were more satisfied with their sex lives on average, $b = 0.19$, $t(163) = 3.079$, $p = .002$, *95% CI* [.07, .32] (see Appendix C Table S4.1 for model coefficients). Thus, although changes in arousal-desire alignment were not associated with next-day sexual intimacy, those who reported greater alignment across the dairy period engaged in sexual intimacy more frequently. However, while people with greater alignment on average also felt more satisfied with their sex lives on average, days in which they felt their arousal and desire were even *more* (or even *less*) aligned than usual were particularly beneficial (or *harmful*) to how they evaluated their relationship the next day.

Ruling Out Alternative Explanations

Do sexual satisfaction and/or intimacy predict next-day arousal-desire alignment?

Given the correlational nature of our data, we pre-registered our intention to attempt to rule out alternative explanations that daily sexual satisfaction and daily sexual intimacy predict next-day arousal-desire alignment through exploratory analyses (see Appendix C Tables S4.2-4.3 for model coefficients). Consistent with our theoretical rationale, greater sexual satisfaction was not associated with greater next-day arousal-desire alignment, $b = -0.01$, $t = -0.32$, $p = .750$, 95% CI [-.08, .06]. Sexual intimacy was also not associated with greater next-day arousal-desire alignment, $b = -0.23$, $t = -1.81$, $p = .071$, 95% CI [-.49, .02]. Furthermore,

these associations were not moderated by implicit growth beliefs and this association was not moderated by implicit destiny beliefs (satisfaction predicting alignment: $b = 0.03$, $t = 1.02$, $p = .307$, 95% CI [-.03, .10]; intimacy predicting alignment: $b = 0.12$, $t = 0.88$, $p = .381$, 95% CI [-.15, .38]), or implicit growth beliefs, (satisfaction predicting alignment: $b = 0.09$, $t = 1.36$, $p = .173$, 95% CI [-.04, .22]; intimacy predicting alignment: $b = 0.10$, $t = 0.48$, $p = .634$, 95% CI [-.32, .52]). Thus, daily experiences with sexual satisfaction and sexual intimacy do not appear to inform next-day alignment between arousal and desire.

General Discussion

Having good and frequent sex is associated with benefits for our sexual and romantic relationships (Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Fallis et al., 2016; Frederick et al., 2017; Litzinger & Gordon, 2005; McNulty et al., 2016; Muise, Schimmack, et al., 2016), as well as our wellbeing and happiness overall (Blanchflower & Oswald, 2004; Cheng & Smyth, 2015; Muise, Schimmack, et al., 2016; Schmiedeberg et al., 2017). However, the reality is that most people—whether by preference or constraints—are not intimate every day, and even satisfaction with sex lives can wax and wane (Velten et al., 2025). Daily changes in alignment between people's sexual arousal and desire may play an important role in influencing how people experience sexual satisfaction and intimacy on a daily basis. Both arousal and desire each motivate people to have sex (Meston & Buss, 2007). Arousal and desire are known to fluctuate daily independently, and not necessarily in the same direction (Harris et al., 2023; Kalmbach & Pillai, 2014; Mües et al., 2025a; Ter Kuile et al., 2007). However, while overall alignment has previously been shown to positively influence sexual and relational wellbeing (Chapter 3), the implication of *fluctuations* in alignment has not been examined.

Consistent with our hypotheses, people felt more satisfied in their sexual relationships with their partners on days following greater alignment between their subjective arousal and desire than usual. Thus, even though secondary analyses suggest that greater alignment is associated with more sexual satisfaction overall, people's evaluations of their sex lives can change for the better or worse depending on whether their physiological and psychological systems were particularly attuned or out of sync from their usual experiences. This may be due to what alignment signals from a motivational standpoint. For example, when alignment is high, it may suggest that a person's motivational systems are coherent with one another. The positive feelings of these aligned motivational states may consequently be projected onto the sexual relationship itself (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). By contrast, on days when alignment is low, people might feel ambivalence due to the opposing signals from one's mind and body (Dorahy et al., 2013; Price & Thompson, 2007; Simeon et al., 2003), leading to more negative interpretations which are projected onto the relationship. While identifying the underlying mechanisms which facilitate these effects are beyond the scope of this paper, our findings do illustrate that not only does alignment between arousal and desire contribute to sexual wellbeing broadly speaking (Chapter 3), but that people benefit from – or are harmed by – changes in their alignment from their typical baseline. Notably, this suggests that alignment carries a unique role independent from simply high or low levels of either arousal or desire, and that high levels of one at the expense of the other may have important consequences for sexual wellbeing.

Additionally, contrary to our hypotheses, daily changes in alignment were not associated with likelihood of having sex with the partner that day. This is potentially due to the very low variability in sexual activity in our sample across the 8-day survey period (M = 0.15). Alternatively, this could represent the practical disconnect that many people experience

between the motivation to engage in intimacy and the opportunity to act on those motivations. For example, couples sometimes engage in sex without feeling any arousal or desire, in order to increase intimacy and closeness in their relationships (Impett et al., 2015; Impett et al., 2019; Leigh, 1989; Meston & Buss, 2007; Watson et al., 2017). For others, barriers such as time, children, and health can prevent people in engaging in sex they would otherwise want to have (Ahlborg et al., 2005; Basson, 2010; Bodenmann et al., 2010; Jawed-Wessel & Sevick, 2017; Shen, 2019). Even a particularly good day where alignment between arousal and desire is higher than usual may be insufficient to overcome these practical hurdles. Rather, when it comes to intimate acts between partners, our secondary analyses suggest that overall alignment between arousal and desire may be more influential on whether people have sex than do daily fluctuations, perhaps reflecting the importance of having a more calibrated motivational system that feels ready to act on when the opportunity arises.

We found that on days when people were higher in arousal-desire alignment, they have greater sexual satisfaction and intimacy. However, it could have been the case that on days when people felt more satisfied and engaged in sex, they would be more likely to report greater arousal-desire alignment. Previous research has used lagged analyses to rule out casual pathways (Maxwell et al., 2017). Our findings further demonstrated that it was not the case that engaging in intimate acts with the partner, or feeling more positive about one's sex life, promoted greater alignment between arousal and desire the following day. This rules out potential alternative explanations that satisfaction and intimacy might be the cause of greater reported arousal-desire alignment. However, it is yet to be explored what can cause increases in arousal-desire alignment.

Finally, our findings suggest that daily changes in the alignment between arousal and desire are more important for some people than others. Notably, it was people who were high

in the belief that a sexual relationship should be naturally compatible (i.e., high implicit sexual destiny beliefs; Maxwell et al., 2017; Rossi et al., 2022) who benefited the most on days following higher than average alignment. Consistent with past work on destiny beliefs, our findings suggest that for these people, experiencing more alignment than average may signal that their sexual relationship is heading in the right direction, whereas experiencing less alignment than average may suggest that their compatibility is waning. People high in destiny beliefs may particularly benefit from interventions aimed at promoting greater alignment between their arousal and desire, or strategies to counteract the negative feelings they may develop on days when alignment is relatively lower than usual. By contrast, there were no moderating effects of implicit sexual growth beliefs. For those who believe that satisfying relationships take effort and grow overtime, fluctuations in their daily alignment between arousal and desire provide less of a litmus test for the success of their sexual relationship or their future as a couple.

Limitations & Future Directions

Although Study 4 has its strengths, it also has its limitations. Firstly, as noted above, the relatively short diary period may have constrained our ability to capture variability in sexual intimacy. Consistent with past research (Blanchflower & Oswald, 2004; Call et al., 1995), couples in our sample only engaged in sex an average of one time per week. While over half of the sample did have sex at least once (28%) or more than once (30%), which may have been adequate to capture variability due to alignment if the effect had been large, a very a large proportion did were not intimate at all (42%). Research using larger survey windows (e.g., 21-30 days) has had more success at capturing more instances of intimacy, increasing from an average of one time per seven days to 3-13 times over these longer periods (Impett et al., 2019; Mark, 2014; Maxwell et al., 2017; Muise et al., 2014; Vowels & Mark, 2020). Thus, future research should replicate the present study with a longer survey period or

experience sampling methods which provide more opportunities to capture low incidence behaviors such as sexual intimacy. Alternatively, the null association between changes in alignment and engagement in sexual intimacy may be a consequence of not using an approach which acknowledges the dyadic reality of sexual intimacy. If the partner is unwilling to engage in sex, then one partner's alignment alone cannot change this. Had we included a measure of intentions to engage in intimacy alongside whether or not they had, then it is possible that we would have seen that alignment increased the intentions behind sex, which may then have gone unfulfilled. We were also unable to test whether daily changes in alignment had any impact on the partner's sexual satisfaction or willingness to be intimate. Additional research with both partners would help advance our understanding of the factors which shape sexual wellbeing within established relationships.

Secondly, the present research used retrospective reports of subjective arousal and desire. While this methodological approach is commonly used (Cartagena-Ramos et al., 2018; Toledano & Pfaus, 2006), retrospective evaluations can nonetheless be biased (Birnbaum et al., 2016; Dewitte et al., 2018). For example, people who are less satisfied with their sex lives may reconstruct their sexual experiences through a more negative lens. Thus, these people might report greater misalignment between their arousal and desire. Despite these concerns, the use of lagged effects in our models help to address this by temporally separating evaluation points.

Third, while this study illustrates how changes in arousal-desire alignment can influence sexual satisfaction and intimacy, it cannot speak to the underlying mechanisms as to why sexual satisfaction would be higher on days when arousal-desire alignment is greater even if they had not had sex. As suggested earlier, it may be the case that sudden misalignment is associated with greater distress and dissonance, whereas more alignment than usual reduces ambiguity, creates a sense of cognitive-affective consistency, both of

which contribute to more positive evaluations (Biddell et al., 2024; Brown et al., 2020; Centerbar et al., 2008; Huang & Galinsky, 2011). Future research should examine these potential mechanisms which may help in the development of future interventions.

Finally, as our research suggests that for those high in implicit growth beliefs, arousal-desire alignment is less critical for satisfaction, it could be the case that interventions to increase growth belief endorsement could prevent decreases in satisfaction when arousal and desire fall out of alignment. As previous research has designed successful manipulations of sexual implicit beliefs (Maxwell et al., 2017), future research could manipulate endorsement of growth beliefs as an intervention. Moreover, previous research found that manipulating implicit beliefs about how it is normal for sexual desire fluctuates day-to-day, versus remaining stable over time, meant that women coped better with sexual desire challenges (Sutherland & Rehman, 2018). Future research could examine whether informing people that their arousal and desire are likely to fluctuate, and vary in their alignment, could prevent any decreases in satisfaction due to misalignment.

Conclusion

Alignment between arousal and desire contributes to sexual and relational wellbeing. However, little is known about how day-to-day changes alignment impact people's sex lives. The current findings suggest people feel more satisfied with their sex lives following days where the alignment between their arousal and desire is higher than usual. However, this did not influence their likelihood of actually being intimate with their partner. Notably, this was particularly the case for people who believe that couples are destined to be sexually compatible. Thus, for some, a change in how strongly aligned their "bodies" are with their "minds" may signal how well they think their sex lives are going, even when they are not having very much sex.

Chapter 5 - The Dyadic Psychological and Physiological Impacts of Arousal-Desire Alignment Following an Intimate Couple Discussion

Author's Note

This chapter details Study 5, in which we tested whether arousal-desire alignment might shape the extent to which people feel they are able to respond to sexual requests by a partner, by testing cardiovascular and self-reported challenge and threat responses whilst couples engaged in a conversation about their sex lives in the lab.

Due to difficulties in recruiting couples to participate in research that involves physiological measures, is focused on a personal topic, and requires partners to coordinate schedules to come to a lab session together, this sample size is smaller than what was pre-registered. However, sensitivity analyses detected that we had ~70% power to detect medium ($\beta = .30$) actor and partner effects.

Due to the smaller sample size than expected, we also deviated slightly from pre-registered hypotheses. Instead of testing the moderated mediation model discussed in our pre-registration, we only tested a mediation model. Additionally, we did not use response surface analysis, and structural equation modelling was used to look at actor and partner effects due to its benefits in mediation analyses. Model fit across all analyses was very poor (χ^2, $p < .001$, TLI < .95, RMSEA > .05), likely due to the smaller-than-planned sample size. SEM is typically underpowered with smaller dyadic sample sizes, whereas multilevel modelling is better able to deal with a smaller sample size (Ledermann & Kenny, 2017). If these analyses were to be redone, multilevel modelling would be chosen due to its superiority in dealing with smaller sample size. However, for the purpose of the thesis these models were still interpreted using the planned SEM analyses.

The pre-registered hypotheses and analysis plans can be found here: https://aspredicted.org/4ue7tu.pdf.

Whilst this chapter has not currently been submitted for publication, we are hoping to create a manuscript using alternative analyses from this dataset. Alongside dyadic self-

reported and physiological data, the conversation that the couple engaged in about their sex life during the study was video recorded. We plan to conduct additional analyses using the transcripts from these discussions.

Abstract

Navigating intimacy with a partner can be challenging and requires a strong understanding of what both partners want and their ability to be mutually responsive. Alignment between arousal and desire might shape the extent to which people feel they are able to respond to sexual requests by a partner. When alignment is high and their sexual motivational system is working in a synchronized manner, people may feel as though they have the personal resources to respond to these demands. However, when alignment is low, they may feel as low these resources are lacking. Using the Biopsychosocial Model of Challenge and Threat (BPS-CT), we conducted a dyadic study of couples ($n_{couples}$ = 54, n_{total} = 108) to test whether alignment was associated with more positive (relative to negative) stress responses during a conversation about intimacy with a romantic partner. We hypothesized that greater alignment between arousal and desire would be associated with greater cardiovascular and self-reported challenge (relative to threat) during the discussion. We further hypothesized that challenge and threat differences may be due to experiencing more consonance (versus dissonance) when thinking about sexual experiences, as alignment conveys an implicit sense of coordination between mind and body experiences. Contrary to the hypotheses, there were no effects of alignment predicting cardiovascular challenge/threat responses during the intimacy discussions, although men's alignment predicted their self-reported challenge following the conversation. Additionally, while women's alignment was negatively associated with dissonance, there were no indirect effects of dissonance on challenge/threat responses for either men or women. Replicating previous findings, alignment predicted greater sexual and relationship satisfaction for both men and women, and women's alignment also predicted men's relationship satisfaction. More research is needed to understand if arousal-desire alignment has benefits during discussions of sexual intimacy, and why it might be more important for men during these discussions.

Introduction

Sex has a multitude of positive implications for romantic relationships (Muise, Kim, et al., 2016), from boosting our satisfaction with our relationships (Brezsnyak & Whisman, 2004; McNulty et al., 2016; Sprecher, 2002), to promoting bonding and closeness between partners (Meltzer et al., 2017; Satcher, 2001). Typically, consensual sexual activity is preceded by the physiological state of sexual arousal, and the psychological/motivational state of sexual desire. People can experience differences in the alignment between their sexual arousal and desire (Chapter 3, Chapter 4), which can inform their satisfaction with such experiences, and can also translate into satisfaction with the wider relationship (Chapter 3). This study aimed to expand on previous findings to test whether alignment could be beneficial when discussing sexual intimacy with a romantic partner.

Discussions surrounding sex can often feel stressful (Rehman et al., 2019), because they require partners to be honest (and confident) in their own needs and wants, and rely on each other to be mutually responsiveness to these needs. The Biopsychosocial Model of Challenge and Threat (BPS-CT; Blascovich & Mendes, 2000), proposes that people make evaluations about how their personal resources can meet situational demands, with more positive evaluations leading to more adaptive stress responses. We propose that alignment between arousal and desire provide important insight into the personal resources people can draw from when partners make requests for intimacy. Consequently, we anticipate that those with greater alignment might perceive enough resources to meet situational demands and therefore would respond with greater challenge – a positive form of stress which is a motivator of action. However, experiencing less alignment could lead to a lack of perceived resources due to the disconnect between mind and body states, leading them to experience threat – a negative form of stress. Coupled sex is also by definition dyadic. A partner's arousal-desire alignment may therefore similarly influence personal stress responses by

shaping expectations of their ability/willingness to engage in intimacy. Thus, Study 5 aimed to examine the dyadic influence of alignment between arousal and desire on stress responses during a conversation about intimacy with a partner.

Feeling Challenged? The Potential Benefits of Arousal-Desire Alignment Whilst Discussing Sex with a Partner

Sexual activity is usually preceded by the physiological state of sexual arousal, which involves the bodily preparation for sex (Toledano & Pfaus, 2006), and the psychological state of sexual desire, which involves the mental motivational element behind engaging in sex (Laan & Both, 2008; Levine, 2003; Regan & Berscheid, 1999). Previous research has shown that, although arousal and desire are typically experienced concurrently (Brotto et al., 2010), individuals may experience differences in the alignment between in their arousal and desire (Chapter 3, Chapter 4). Greater alignment between arousal and desire overall has been shown to increase sexual and relational satisfaction (Chapter 3), but research has also shown that a person benefits in their sexual satisfaction on days when their arousal-desire alignment is greater than usual (Chapter 4). However, in this study we wanted to expand on our findings to test whether alignment could have other benefits.

According to the biopsychosocial model of challenge and threat (BPS-CT), how a person appraises a demanding situation depends on whether they perceive their available resources to meet or exceed the demands of the situation (Blascovich & Mendes, 2000). A situation is perceived as a challenge when the perceived resources meet or exceed demands (i.e., “I can handle this”), or as a threat when the demands exceed the perceived resources (i.e., “I can’t handle this”; Jamieson, 2017). Discussing one’s sex life with a partner can feel stressful for many people, as it involves potential judgement, rejection, and embarrassment (Rehman et al., 2019). However, differences in arousal-desire alignment might impact whether this stress is a positive or a negative outcome. For those who have greater arousal-

desire alignment, perceived resources might be relatively high as the synchrony of their sexual systems can meet the situational demands of requests of intimacy from the sexual partner. Therefore, people high in alignment would feel greater challenge, which is a positive form of stress which can mobilize a person to take action (i.e., be willing to engage in sexual intimacy), and is also associated with experiencing greater self-confidence in a situation (Weisbuch et al., 2009; Williams et al., 2010). On the other hand, somebody experiencing less alignment between their arousal and desire may feel as though their personal resources cannot meet the demands of the situation – due to the disconnect between mind and body sexual states – leading them to experience threat, a negative form of stress. During a discussion about sexual intimacy with a romantic partner, this alignment might become salient. For example, those with greater arousal-desire alignment might be more confident in discussing their sexual wants and needs, whereas those with less alignment might feel they do not have the resources to discuss such a topic.

These states of challenge and threat reliably cause distinct cardiovascular responses, allowing us insight into the psychological processes that are underlying (Seery, 2013). The body prepares itself for a stressful situation via the activation of the hypothalamic pituitary-adrenocortical axis (HPA) or the sympathetic-adrenomedullary axis (SAM; Dienstbier, 1989). SAM activation is associated with 'toughness' in individuals, which suggests experiencing challenge in terms of the BPS-CT theory (Seery, 2011). Threat is also associated with SAM activation, but additionally with heightened HPA activation (Dienstbier, 1989). Thus, challenge and threat can be indicated by four cardiovascular measures associated with the SAM and HPA axes (Seery, 2011). Both challenge and threat are associated with increased heart rate and ventricular contractility. Challenge is further characterized by increased cardiac output and decreased total peripheral resistance. Cardiac output is the amount of blood in liters pumped by the heart per minute, and total peripheral

resistance is a measure of the net constriction vs dilation in the arteries (mean arterial pressure x 80/cardiac output; Sherwood et al., 1990). Threat is characterized by low cardiac output and high total peripheral resistance. In the current study, we use these cardiovascular measures to assess how much challenge versus threat a participant is experiencing. The top-down approach of this model in which psychological experiences of resource-demand evaluations shape physiological responses has been robustly validated (e.g., Jamieson et al., 2012; Mendes et al., 2002; Tomaka et al., 1997), with these indices of cardiovascular challenge/threat corresponding to self-assessed challenge/threat in which people explicitly evaluate the extent to which their personal resources can meet situational demands (Blascovich, 2008; Blascovich & Mendes, 2000; Blascovich & Tomaka, 1996). However, physiological evaluations benefit from evaluating the resource-demand situation in the moments in which people are relying on them, for example during a conversation with their partners.

Arousal-Desire Misalignment: A Form of Dissonance?

A further question to ask is: why might the alignment between arousal and desire shape our evaluations of whether we can meet situational demands? When arousal and desire are aligned, our motivational systems are in sync with one another, signaling that our resources are readily available to meet the situational demands. However, when arousal and desire are less aligned, this creates dissonant state, that may indicate limited resources. Typically, there is a reciprocal relationship between a person's mind and body, wherein they work together to shape the person's understanding of reality (Niedenthal, 2007). However, there are often times when bodily states do not align with mental states, as commonly shown in research which finds that emotional expression can contradict one's emotions (Centerbar et al., 2008; Huang & Galinsky, 2011; Sutton, 1991). Thus, the mind and body can be in a dissonant state. We suggest that arousal-desire misalignment is a form of mind-body

dissonance, which may lead to states of discomfort (Festinger, 1962; Harmon-Jones & Harmon-Jones, 2012). Therefore, dissonance might be the mechanism behind which alignment leads to evaluations that resources can meet the demands of the situation (i.e., challenge), and why less alignment leads to evaluations that the demands cannot be met (i.e., threat). Upon discussing sexual intimacy needs and wants with a sexual partner, a person may be reminded of such dissonance between the mind and the body, leading them to feel less certain of their sexual wants and needs. This may cause the discussion itself to become a 'threatening' experience.

Considering Impact on the Partner: Dyadic Influences of Arousal-Desire Alignment

Thus far, our research on arousal-desire alignment has focused on outcomes for the individual (Chapter 3, Chapter 4). However, sex is inherently dyadic, and arousal and desire are typically experienced towards one another. Therefore, the potential outcomes of alignment should be considered both for the person and the romantic partner. Our research in Chapter 4 found that those who reported greater alignment between their arousal and desire on average were engaged in sexual intimacy with their partner more frequently, showing that alignment for one partner has clear active outcomes for the other partner, but it is unknown whether alignment impacts partner's satisfaction. Therefore, the secondary aim for this study was to further our understanding of how arousal-desire alignment impacts satisfaction for the partner. Moreover, if a person experiences less arousal-desire alignment, and thus does not have the resources to be able to respond to their partner's sexual wants and needs, then this could also have impacts for the partner. The present study also captured the dyadic effects of arousal-desire alignment on challenge/threat outcomes.

Study 5 Overview

Discussing aspects of sexual intimacy with a romantic partner can be stressful (Rehman et al., 2019), as it requires both partners to have confidence in their sexual wants and needs, and to be mutually responsive to those needs. As previous research shows that arousal-desire alignment has positive implications (Chapter 3, Chapter 4), we wanted to expand on our findings to test whether greater alignment was beneficial when couples engaged in a discussion about their sex lives. Based on the BPS-CT (Blascovich & Mendes, 2000), those with greater alignment might perceive enough resources to meet situational demands, and therefore experience greater challenge, which is a positive form of stress that motivates action. However, those experiencing less alignment might experience greater threat, as the disconnect between mind and body states might lead them to feel like lacking in the required resources to be responsive to the partner's needs. As less arousal-desire alignment represents a form of dissonance between the mind and body which may lead to states of discomfort (Festinger, 1962; Harmon-Jones & Harmon-Jones, 2012), this could explain why alignment impacts challenge and threat states. Moreover, as coupled sex is inherently dyadic, one partner's arousal-desire alignment might similarly impact the partner's stress responses by shaping expectations of the willingness and/or ability to engage in intimacy. Dyadic influences of alignment on both stress responses during an intimacy discussion, and on satisfaction with the sexual and romantic relationship, are considered.

The present study has multiple aims. Firstly, we assessed whether sexual arousal-desire alignment was associated with greater cardiovascular and self-reported challenge (relative to threat). Secondly, we tested whether those who experienced greater alignment experienced greater challenge due to experiencing less dissonance than those with less alignment. Finally, we aimed to replicate previous findings to test whether greater alignment was associated with greater sexual and relationship satisfaction. The dyadic structure of our

data allows us to make hypotheses for both actor and partner effects. The hypotheses below are our a priori hypotheses for the actor effects. We anticipate that any partner effects that emerge will show a similar pattern. We do not have any a priori hypotheses as to where actor versus partner effects may differ. Thus, our hypotheses are as follows:

Hypothesis 1. Greater arousal-desire alignment will be positively associated with a) cardiovascular challenge (relative to threat) during an intimacy discussion with a romantic partner, and b) self-reported challenge following the discussion.

Hypothesis 2. Greater arousal-desire alignment will be negatively associated with dissonance surrounding intimacy with a romantic partner.

Hypothesis 3. We will test a mediation model looking at whether the association between arousal-desire alignment and a) cardiovascular challenge b) self-reported challenge is mediated by dissonance.

Hypothesis 4. Greater arousal-desire alignment will be positively associated with a) sexual satisfaction and b) relationship satisfaction.

The preregistered hypotheses, anonymized aggregate data, and analysis codebooks are available on the project's repository on the Open Science Framework (https://osf.io/tm6ud/overview?view_only=ade8793580b9441fa4bc349f2682df57).

Methods

Participants

For the present study, 65 dyads (130 participants total) were recruited to take part. Both partners were required to be at least 18 years of age, in a romantic relationship with one another, and have had sex with their partner within the past 3 months[12]. Of the 65 couples

[12] We defined sex as any type of sexual activity with a partner, including oral, vaginal, and anal sex, but excluded any form of solo sex such as solo masturbation.

recruited, 2 couples were excluded due to missing survey data which meant their measures of arousal and desire alignment were not recorded. A further 9 couples were excluded for not being in a mixed-gender partnership. The decision to exclude same-gender or unspecified gendered dyads was made to allow for a focus on gender differences. This left 54 complete dyads (108 participants total). Physiological measures were not available for 8 participants, either due to messy signals that were too difficult to clean, or participants for which no Dz/Dt signal was recorded (which is necessary for computing the cardiovascular variables used in our analyses) due to technical issues. However, these participants remained in the data as structural equation modelling (SEM) can handle missing data. Unfortunately, due to difficulties in recruiting couples to participate in research that involves physiological measures and is focused on a personal topic, this sample size is much smaller than what was pre-registered (160 dyads). Based on sensitivity analyses for actor-partner dyadic models (Ackerman & Kenny, 2016), the sample is powered to detect medium (β = .30) actor and partner effects at 70.30% power.

Participants were either volunteers or paid participants. Volunteers were recruited through a university recruitment website where students were invited to bring their romantic partner to the lab to participate in exchange for course credit (14% of participants were volunteers). Volunteers also had the option of entering a prize draw for one of two £10 Amazon vouchers. After exhausting the volunteer/student credit pool, we were able to secure funding to offer compensation to new participants recruited into the study, making it possible to extend recruitment beyond a psychology student sample. Paid participants were recruited through recruitment mailing lists and posters distributed across a UK university campus. Paid participants received either £10 each (£20 per couple; 39% of participants were paid this amount) or £25 each (£50 per couple; 46% of participants were paid this amount) depending on the recruitment platform, after participating in both the pre-lab survey and the lab visit.

Partway through recruitment of the paid sample, we partnered with another lab at the University who supported recruitment through their community listserv, but which required, per their internal policy, a higher minimum payment than the £10 per person being offered to our participants initially. Consequently, we raised the compensation rate to £25 for the remainder of the study. Fourteen percent of participants were volunteers, 39% received £10 compensation.

Procedure

Prior to their in-lab discussion, each partner was asked to complete a 20–25-minute survey[13]. This survey collected data on the background demographics of the participants, and included the measures of relationship satisfaction, sexual satisfaction, dissonance, and arousal-desire alignment as discussed above.

The in-lab section of the study happened approximately a week after completion of the initial survey. Participants were instructed to wear loose clothing to the lab experiment to ensure the sensors could be placed correctly, and were asked to not drink alcohol or caffeine, to not smoke, eat, shower, or run 30 minutes before the experiment as to not disturb the natural heart rhythm. Two experimenters were present for each testing session to assist with setting up the placement of the electrodes and blood pressure for each participant. The lab set-up consisted of one room where the participants would remain for the duration of the experiment, as well as a control room for the experimenters to monitor the discussions, through live video recordings, and all physiological recordings.

On arrival to the lab, participants are firstly asked to remove any jewelry and to switch off any electronic devices. Participants read the information sheet and signed the consent form. In a short survey, participants then read the following intimacy prompt to

[13] For the majority of the participants this survey was completed at home in the week prior to the lab session. The first 10 couples completed their surveys at the start of the lab session before any other activities.

identify topics that they would discuss in the discussion: “In this part of the study, we would like you to think about your intimate relationship with each other. Please take a moment to think about something fun you would like to try in your sex life, and why you would like to try it”. Participants were then asked to briefly type about their topic of choice in the survey. This prompt ensured that the participant did not change their decided topic upon hearing their partner discuss their chosen topic, and it also eliminated unnatural pauses in the conversation when the participants were deciding what to discuss.

On completion of the first survey, the researchers helped each participant to place six electrodes across the body, on their right collarbone, between the collarbones at the base of the neck, at the bottom of the sternum, on the left side of the abdomen, at the bottom of the back of the neck, and on the middle of the back. An alcohol wipe was used to clean the area before each placement. In cases where clothing interfered with the electrode wire, the wire was secured with medical tape leaving significant slack between the tape and the electrode in order to minimize noise caused by moving of the clothing. The electrode wires were then plugged into the MindWare Mobile ECG device. The correct-sized blood pressure cuff was then attached to the non-dominant arm of each participant.

The participants were then instructed to remain silent and relaxed whilst the equipment was prepared, and that we would provide them with further instructions via an intercom. The experimenters moved to the control room where the blood pressure measurements were started via Bluetooth. The start of the baseline was flagged on the MindWare recording once the first blood pressure reading began. The baseline took approximately 4 minutes, or until the blood pressure machines had completed 4 rounds of measurements. Once the final measurement has been taken, this was noted on the MindWare software.

The experimenters read the intimacy prompt again to the participants via the intercom, and participants were reminded to remain as still as possible during the discussion. The blood pressure devices were reprogrammed remotely to take 6 measurements. As soon as the measurements began, the participants were instructed to start the conversation, and the start of the discussion was recorded on MindWare. The discussion took approximately 6 minutes, or until the blood pressure machines had completed 6 rounds of measurements. The end of the discussion was noted on MindWare after the final measurement had finished.

Participants engaged in two conversations, one of which is unrelated to the present study. Discussion order was randomized for each couple and counterbalanced across the study. Discussion order is included as a covariate in relevant hypotheses to account for any potential effects that the order of the discussion may have on the findings of this study.

After finishing the discussion, the participants completed a second short survey which contained the self-reported measure of challenge/threat. Participants were then fully debriefed with an opportunity to ask the researcher any questions before being disconnected from the physiological sensors and paid.

Materials and Measures

The participants responded to the following measures in a preliminary survey before attending the lab session:

Sexual Arousal-Desire Alignment. Participants additionally completed a measure of arousal-desire alignment to assess how individuals view the relationship between their sexual arousal and their sexual desire. This measure consists of one question where individuals are provided with a display of Venn diagrams which represent an overlap in their arousal and desire. This was adapted from the Inclusion of Other in the Self Scale (Aron et al., 1992; Chapter 3).

Cognitive Dissonance. Cognitive dissonance relating to sexual arousal and sexual desire was assessed using the Dissonance Affect Questionnaire, a 3-item measure that measures whether an individual feels 1) uncomfortable, 2) uneasy, and 3) bothered during the last time they were intimate with their partner (adapted from Harmon-Jones, 2000 & Elliot and Devine, 1994). Filler items were also included in this measure.

Relationship Satisfaction. Relationship satisfaction was measured using Rusbult's Relationship Satisfaction Level Subscale (Rusbult et al., 1998), a 5-item measure that aims to measure satisfaction within the relationship (e.g., 'My partner fulfils my needs for intimacy'; 1 = *don't agree at all*, 7 = *agree completely*).

Sexual Satisfaction. Sexual satisfaction was measured using the Global Measure of Sexual Satisfaction (GMSEX), a 5-item measure of an individual's rating of their sexual relationship on 7-point bipolar scales (e.g. good-bad, pleasant-unpleasant; Lawrance et al., 1998).

The following measures were measured during the lab session:

Cardiovascular Challenge and Threat. Cardiovascular challenge and threat were assessed via cardiovascular biomarkers for each partner. These biomarkers were recorded non-invasively during the 6-minute discussion using MindWare Mobile ECG/ICG Systems. Four cardiovascular indexes were assessed (Seery, 2013): (1) heart rate), (2) ventricular contractility, (3) cardiac output, and, (4) total peripheral resistance. Cardiovascular challenge (indexed by relative-to-baseline increases in heart rate and cardiac output, and decreases in total peripheral resistance and ventricular contractility) is a positive stress response associated with increased engagement and performance. Cardiovascular threat (decreased heart rate and cardiac output, and increased total peripheral resistance and ventricular contractility) is a negative stress response associated with poorer performance, reduced self-efficacy, and disengagement (Seery, 2013). To generate the cardiovascular indexes required to calculate

total peripheral resistance, blood pressure must also be assessed alongside the measures taken using MindWare. Blood pressure was measured using Microlife WatchBP Office blood pressure monitors. The monitors were programmed to wait 15 seconds, then take a measurement that took on average 45 seconds to obtain. This meant that blood pressure readings were taken continuously approximately every 60 seconds. Cardiovascular measures were averaged over each minute in line with the frequency of blood pressure readings, and the four cardiovascular indexes of heart rate, ventricular contractility, cardiac output, and total peripheral resistance were then created for each 60-second segment within the baseline and discussion. These indexes were not created if data was missing.

Self-Reported Challenge and Threat. Following the discussion, self-reported challenge and threat stress appraisals were measured using the Appraisals of Acute Stress Measure (SAAS; Mendes et al., 2007), a 10-item questionnaire which aims to measure perceptions of situational demands and personal resources available during their discussion. Demand items (e.g., 'The task was very demanding'; 1 = *strongly disagree*, 7 = *strongly agree*) were averaged separately to resource items (e.g., 'I felt I had the abilities to perform well in the task'). A challenge/threat ratio was created by dividing the demand average by the resource average. Higher scores reflect greater perceived resources than demand, reflecting a state of challenge.

Results

In order to account for the non-independence of responses from partners in the same couple, the actor-partner interdependence model (APIM; Kenny, 2018) was used in all analyses using structural equation modelling (SEM) approach to account for the non-independence between responses from partners within dyads. SEM was chosen as it is recommended for conducting mediational dyadic analyses (Ledermann & Kenny, 2017). This

analytic approach also makes it possible to test for both *actor* and *partner* effects in the same model, giving them equal analytic weight. Dyads were treated as distinguishable based on gender. All models additionally controlled for age and relationship length. It is important to note that the overall model fit did not meet the typical threshold advised for interpretation (χ^2, $p < .001$, TLI < .95, RMSEA > .05), and were most likely poor due to the small sample size. Thus, the results should be interpreted with caution. All analyses were completed in R Version 4.5.1. Descriptive statistics and bivariate correlations for main variables are in Table 5.1.

Table 5.1.
Descriptive Statistics and Bivariate Correlations.

	Mean	*SD*	1	2	3	4	5	6
1 Arousal-Desire Alignment	5.03	1.46	-					
2 Dissonance	1.46	0.67	-0.23*	-				
3 Self-Reported Challenge vs Threat	1.87	0.94	0.23*	0.07	-			
4 Physiological Challenge vs Threat	0.06	1.07	0.09	0.09	0.00	-		
5 Sexual Satisfaction	6.25	0.94	0.46***	-0.05	0.10	0.15	-	
6 Relationship Satisfaction	6.13	0.84	0.41***	-0.14	0.21*	0.13	0.54***	-

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Arousal-Desire Alignment and Challenge versus Threat

Cardiovascular Challenge and Threat

Mean levels of heart rate (HR), pre-ejection period (using R peak instead of Q, see Seery et al., 2016), cardiac output and total peripheral resistance were calculated for the last

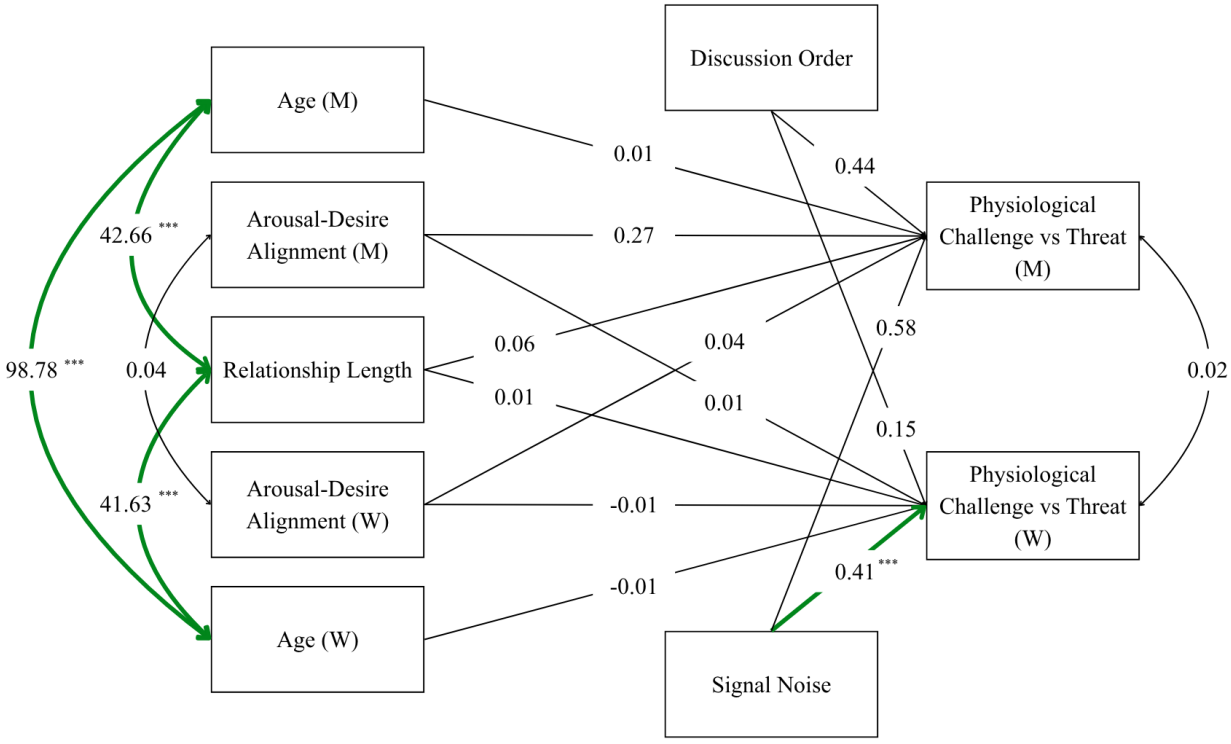
minute of the baseline, and each minute of the discussion period. In line with standard practice, for all cardiovascular variables we examined reactivity, or the difference between the final minute of the initial baseline period and the mean of the discussion period. As challenge and threat assume task engagement, we confirmed that participants were engaged in the discussion tasks by testing mean heart rate and ventricular contractility reactivity against zero. The mean heart rate increase during the discussion period was significantly greater than zero ($M = 5.06$, $SD = 5.11$), $t(99) = 9.92$, $p < .001$, as was the mean ventricular contractility increase ($M = 1.83$, $SD = 7.33$), $t(99) = 2.50$, $p = .007$. These results indicate that participants as a group were engaged by the discussion task, allowing us to examine the specific cardiovascular indexes of challenge and threat. We then calculated a single challenge and threat index for the discussion by converting each participant's total peripheral resistance and cardiac output values into z-scores and summing them. Greater positive scores indicated greater challenge, and greater negative scores indicated greater threat.

Dyadic structural equation modelling was used to examine the actor and partner effects of arousal-desire alignment on physiological challenge and threat. Following Kenny and Ledermann (2010), the *k* parameters were not calculated as the standardized value of the actor effect was <.10 for women (Men = 0.27, Women = -0.05). In addition to including age and relationship length as covariates, discussion order was added as a covariate. We also controlled for signal noise, which included potential signal noise issues flagged during the analyses stage, such as signals that required heavy editing or poorer quality signals. The final model demonstrated a poor fit overall to the data, $\chi^2(25) = 63.83$, $p < .001$, TLI = .71, RMSEA = .17. The significance of χ^2 indicated a poor fit, however a Type 1 error can occur with smaller sample sizes (see Shi et al., 2018). The TLI was below the recommended .95 (see Schumacker & Lomax, 2004). The RMSEA was above the .05 recommended for a good fitting model (see MacCallum et al., 1996). The poor model fit is likely due to the sample size

being much smaller than the pre-registered sample. As such, these findings should be interpreted with extreme caution.

Contrary to hypotheses, there was a not a significant actor effect of arousal-desire alignment on physiological challenge relative to threat for men, $b = .27$, $z = 1.83$, $p = .068$, 95% CI [-.02, .56], although effects were in the expected direction. The same was true for women, $b = -.01$, $z = -0.39$, $p = .694$, 95% CI [-.08, .05]. No partner effects were found. The full model is presented in Figure 5.1.

Figure 5.1.
The actor-partner interdependence model for the actor and partner effects of arousal-desire alignment on physiological challenge versus threat, including the covariates of actor and partner age, relationship length, discussion order, and potential data issues.



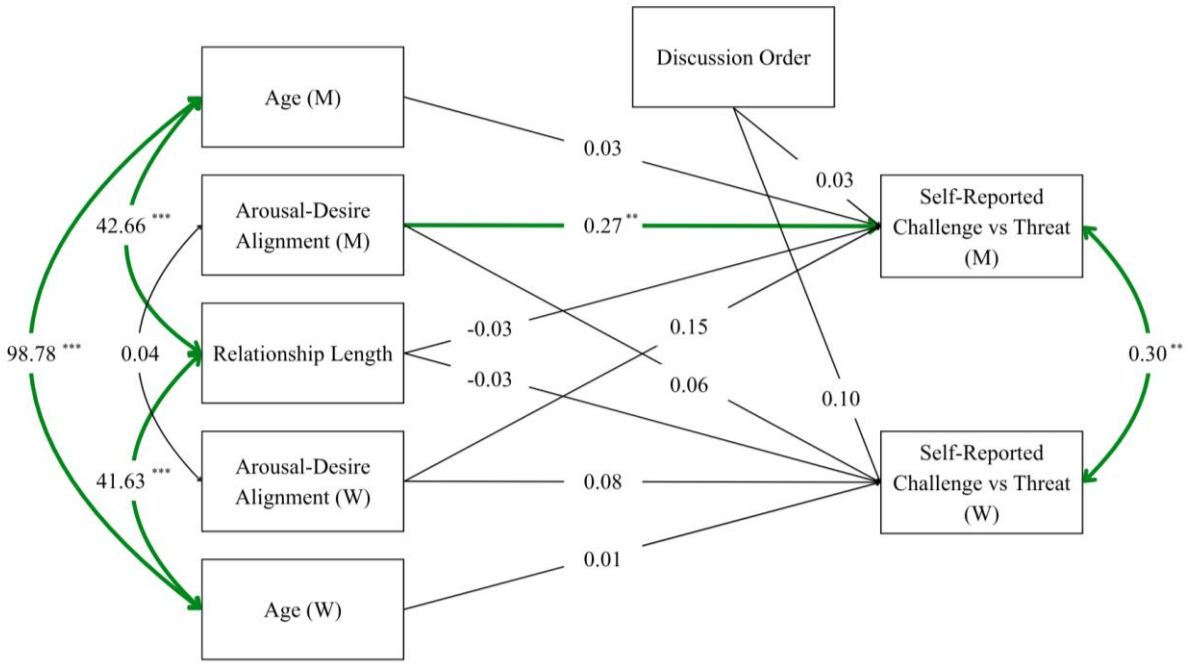
Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Self-Reported Challenge and Threat

The *k* parameters were not calculated the standardized value of the actor effect was <.10 for women (Men = 0.38, Women = 0.05). Discussion order was also added as a covariate to this analysis. The final model demonstrated a poor fit overall to the data, $\chi^2(14) = 40.72$, $p < .001$, TLI = .75, RMSEA = .19, again likely due to the sample size.

Partially consistent with hypotheses, there was a significant actor effect of arousal-desire alignment on self-reported challenge for men, $b = .27$, $z = 2.85$, $p = .004$, 95% CI [.08, .45], but not for women, $b = .02$, $z = 0.26$, $p = .796$, 95% CI [-.14, .19]. No partner effects were found. The full model is presented in Figure 5.2.

Figure 5.2.
The actor-partner interdependence model for the actor and partner effects of arousal-desire alignment on self-reported challenge versus threat, including the covariates of actor and partner age, relationship length, and discussion order.

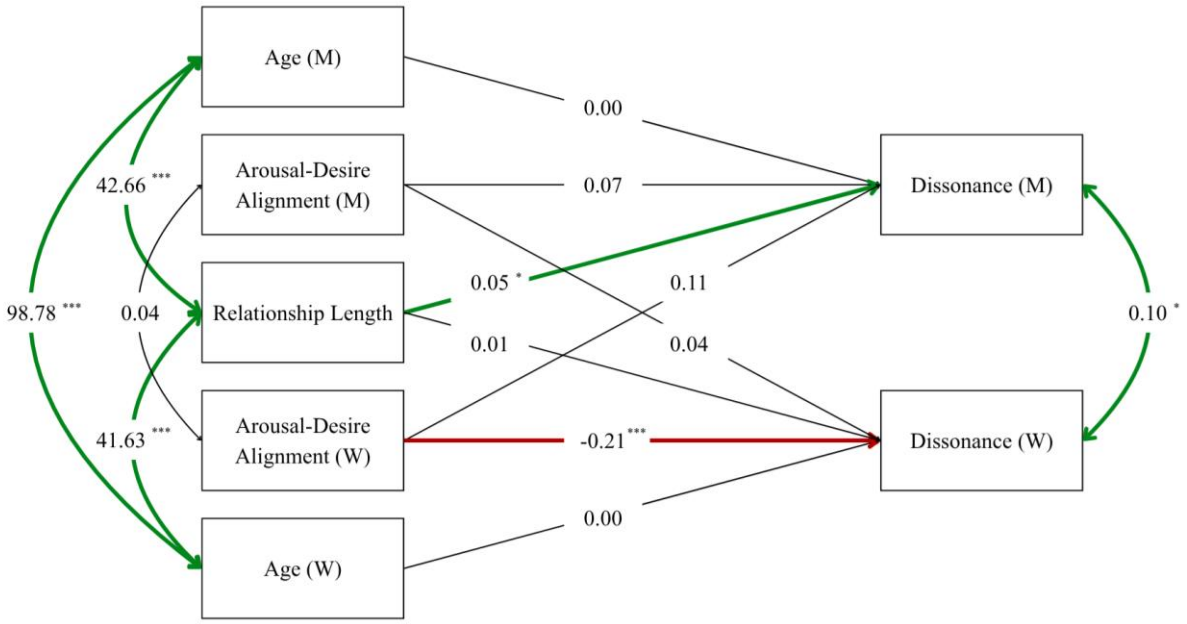


Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Arousal-Desire Alignment and Dissonance

The *k* parameters were calculated on the basic model as the standardized value of the actor effect was >.10 (Men = 0.15, Women = -0.42), as recommended by Kenny and Ledermann (2010). Kenny and Ledermann also recommend re-estimating the model constraining *k* based on whether the CIs contain 1, 0, or -1. As k_1, 95% CI [-12.75, 18.09], and k_2, 95% CI [-1.56, 0.64], contained 1, 0, and -1 in the bootstrapped confidence intervals with 5000 iterations, indicating that the partner effect could be negative, zero, or equal to the actor effect, *k* was not constrained in the final model.

Figure 5.3.
The actor-partner interdependence model for the actor and partner effects of arousal-desire alignment on dissonance, including the covariates of actor and partner age, and relationship length.



Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

The final model demonstrated a poor fit overall to the data, $\chi^2(8) = 34.65$, $p < .001$, TLI = .69, RMSEA = .25. Contrary to our hypothesis, there was not a significant actor effect of arousal-desire alignment on dissonance for men, $b = .07$, $z = 1.21$, $p = .225$, 95% CI [-.04, .18]. However, in support of our hypothesis, there was a significant actor effect of arousal-desire alignment on dissonance for women, $b = -.21$, $z = -3.48$, $p < .001$, 95% CI [-.33, .09]. Greater alignment was associated with reduced levels of dissonance. No partner effects were found. The APIM model estimates are presented in Figure 5.3.

Dissonance Mediating the Associations between Arousal-Desire Alignment and Challenge/Threat

Cardiovascular Challenge and Threat

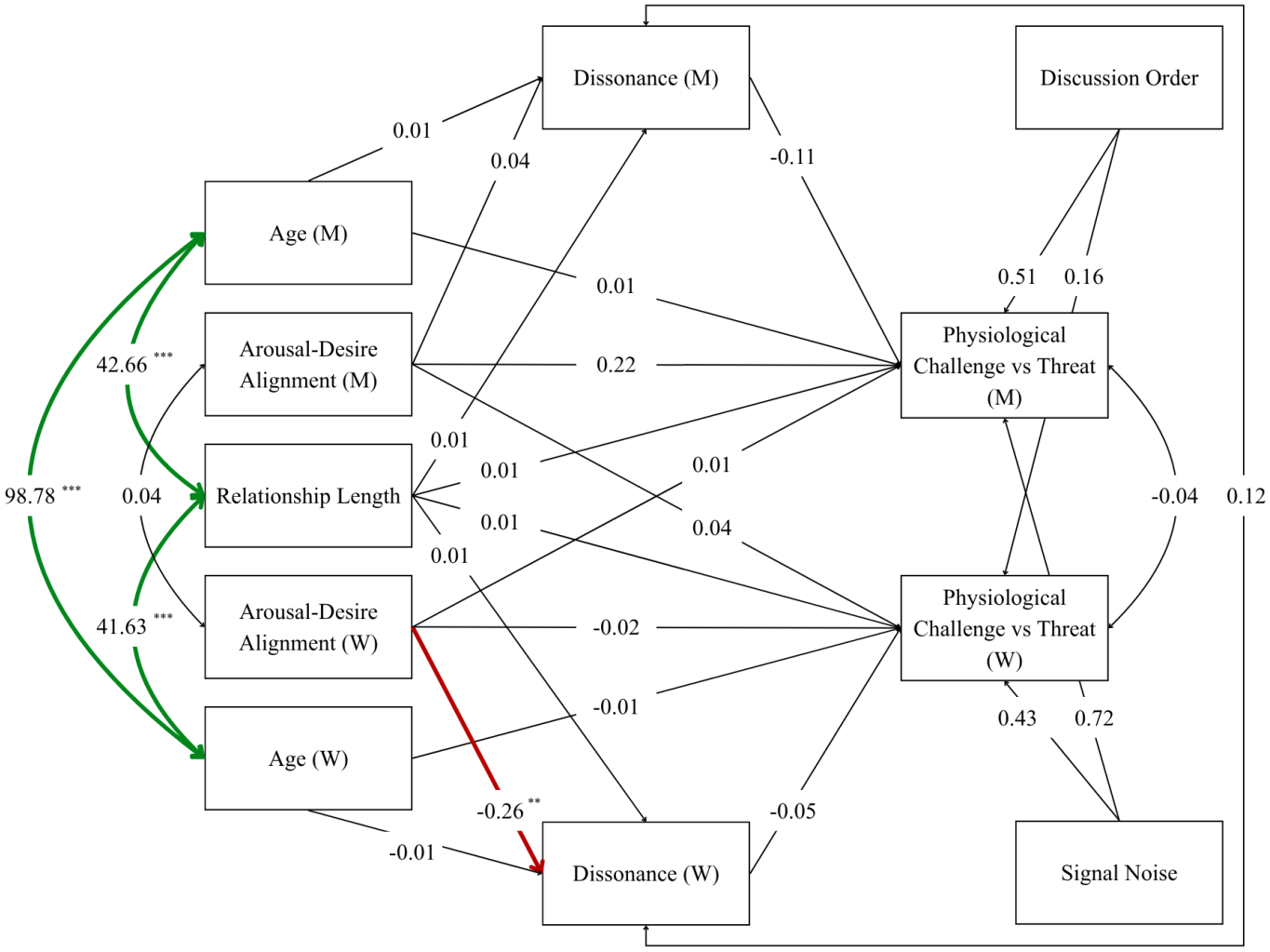
SEM was used to examine whether dissonance mediated the pathway between arousal-desire alignment and cardiovascular challenge. Age, relationship length, discussion order, and signal noise were controlled for. The final model demonstrated a poor fit overall to the data, $\chi^2(42) = 94.82$, $p < .001$, TLI = .69, RMSEA = .15. Contrary to hypotheses, the bootstrapped indirect effects were not significant, suggesting that dissonance did not mediate the relationship between alignment and self-reported challenge for men, $b = -.00$, $z = -0.23$, $p = .818$, 95% CI [-.06, .01] or for women, $b = .01$, $z = 0.49$, $p = .633$, 95% CI [-.05, .01]. The full model is presented in Figure 5.4.

Self-Reported Challenge

Then, SEM was used to examine whether dissonance mediated the pathway between arousal-desire alignment and self-reported challenge. Age, relationship length, and discussion order were controlled for. The final model demonstrated a poor fit overall to the data, $\chi^2(26) = 63.36$, $p < .001$, TLI = .74, RMSEA = .16. Again, contrary to hypotheses, the bootstrapped indirect effects were not significant, suggesting that dissonance did not mediate the

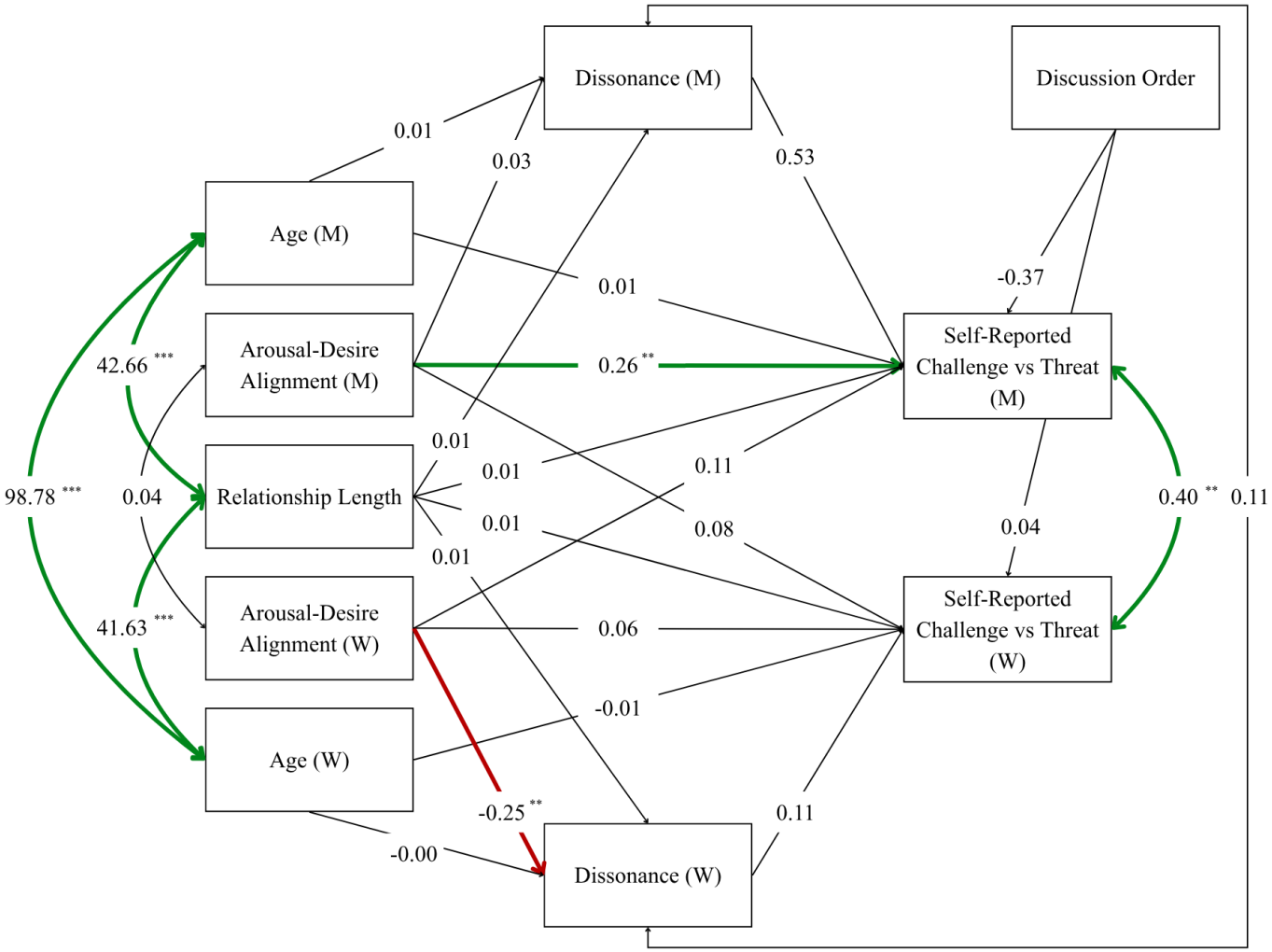
relationship between alignment and self-reported challenge for men, $b = .02$, $z = 0.50$, $p = .619$, 95% CI [-.03, .10] or for women, $b = -.02$, $z = -0.45$, $p = .656$, 95% CI [-.13, .07]. The full model is presented in Figure 5.5.

Figure 5.4.
The model for the actor effects of dissonance as a mediator of the association between arousal-desire alignment and physiological challenge, including the covariates of age, relationship length, discussion order and signal noise.



Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 5.5.
The model for the actor effects of dissonance as a mediator of the association between arousal-desire alignment and self-reported challenge, including the covariates of age, relationship length, and discussion order.



Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

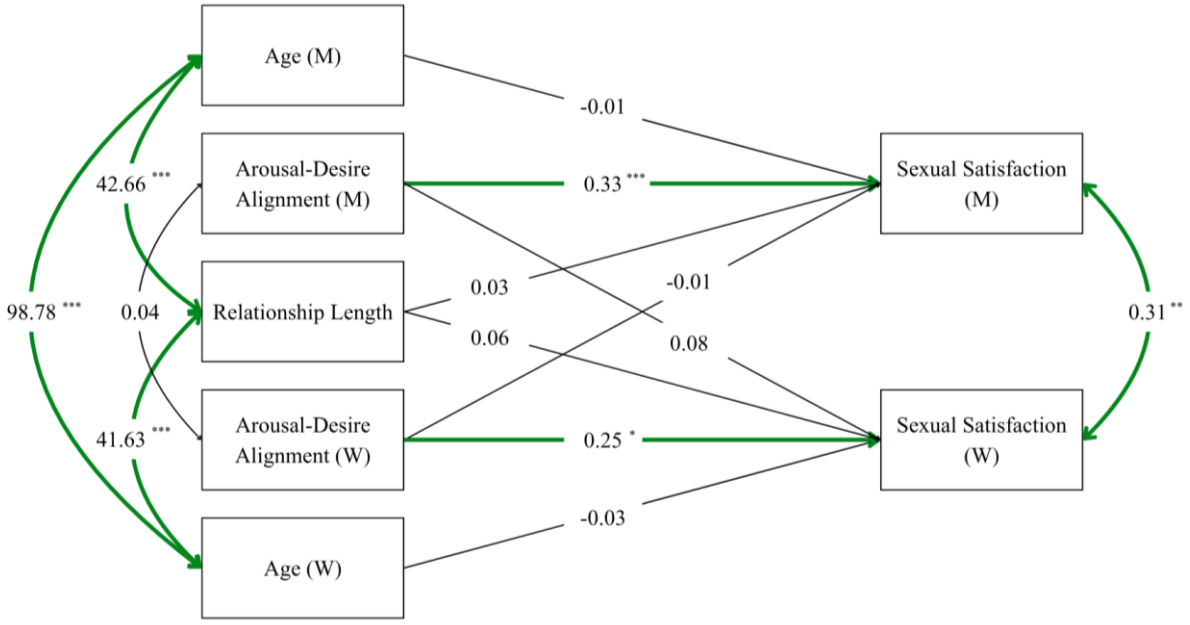
Arousal-Desire Alignment and Satisfaction

Sexual Satisfaction

The *k* parameters were calculated on the basic model for men and women as the standardized value of the actor effects was >.10 (Men = 0.62, Women = 0.33). As k_1, 95% CI [-0.45, 0.33], included 0, but not 1 or -1, and k_2, 95% CI [-0.36, 1.82], contained 0 and 1 in

the bootstrapped confidence intervals with 5000 iterations, *k* was not constrained in the final model. The final model demonstrated a poor fit overall to the data, $\chi^2(8) = 35.21$, $p < .001$, TLI = .71, RMSEA = .25, again likely due to the sample size. The actor effects of arousal-desire alignment on sexual satisfaction were significant for both men, $b = .33$, $z = 5.34$, $p < .001$, 95% CI [.21, .46], and women, $b = .25$, $z = 2.59$, $p = .010$, 95% CI [.06, .43]. No significant partner effects were found. The full model is presented in Figure 5.6.

Figure 5.6.
The actor-partner interdependence model for the actor and partner effects of arousal-desire alignment on sexual satisfaction, including the covariates of actor and partner age, and relationship length.



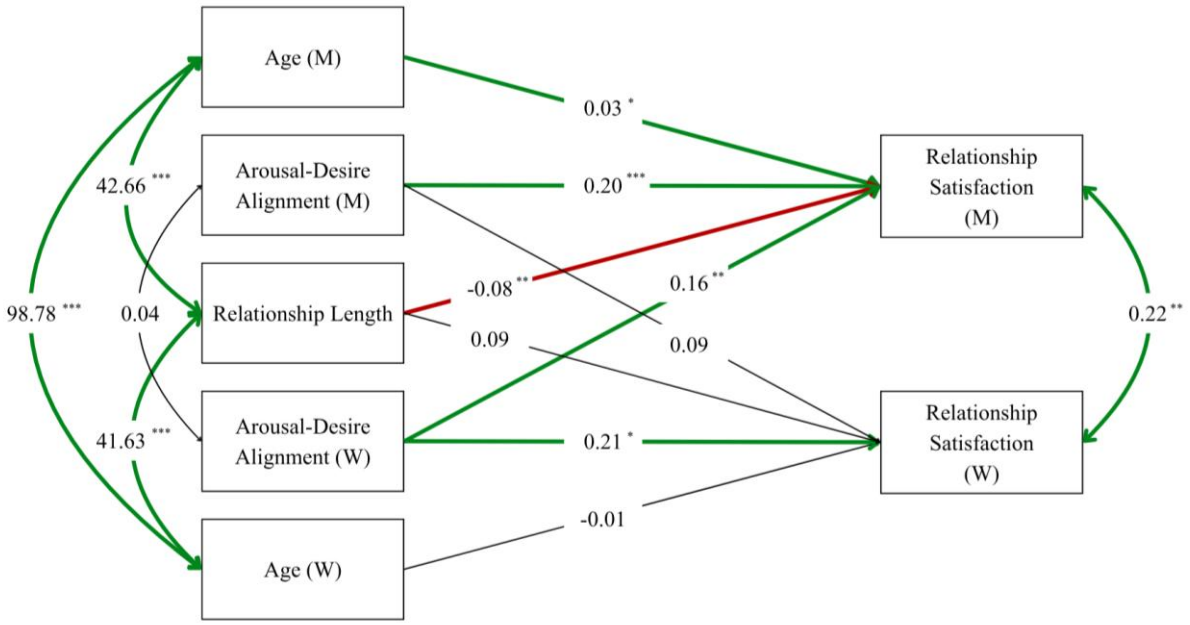
Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Relationship Satisfaction

The actor and partner effects of arousal-desire alignment on sexual satisfaction were also examined. The *k* parameters were calculated on the basic model as the standardized value of the actor effects was <.10 (Men = 0.43, Women = 0.30). As k_1, 95% CI [0.05, 2.22]

contained 0 and 1, and k_2, 95% CI [-1.25, 5.79], contained -1, 0, and 1 in the bootstrapped confidence intervals with 5000 iterations, k was not constrained in the final model. The final model demonstrated a poor fit overall to the data, $\chi^2(8) = 42.05$, $p < .001$, TLI = .65, RMSEA = .28. The actor effects of arousal-desire alignment on relationship satisfaction were significant for men, $b = .20$, $z = 3.53$, $p < .001$, 95% CI [.09, .31], and women, $b = .21$, $z = 0.01$, $p = .010$, 95% CI [.05, .38]. Additionally, there was a significant partner effect with women's greater alignment being significantly associated with men's relationship satisfaction, $b = .16$, $z = 2.77$, $p = .006$, 95% CI [.05, .27], however men's alignment was not significantly associated with women's relationship satisfaction, $b = .09$, $z = 1.01$, $p = .311$, 95% CI [-.08, .26]. The full model is presented in Figure 5.7.

Figure 5.7.
The actor-partner interdependence model for the actor and partner effects of arousal-desire alignment on relationship satisfaction, including the covariates of actor and partner age, and relationship length.



Note. The figure displays the unstandardized model estimates for the modelled associations. Bold lines represent significant associations. Red lines represent significant negative associations, and green lines represent significant positive associations. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

General Discussion

Navigating discussions of sexual intimacy with a partner can be stressful (Rehman et al., 2019), as it requires both partners to understand and feel confident about their needs, and to also be responsive to their partner's needs. Alignment between arousal and desire might shape how well people feel they are able to respond to their partner's sexual requests. When arousal-desire alignment is high, and thus sexual responses from the body and mind are working in a synchronized manner, people may feel as though they have the personal resources to respond to these demands. But, when alignment is low, they may feel as low these resources are lacking. We employed the BPS-CT to test whether those with greater alignment were more likely to perceive enough resources to meet the situational demands of a discussion about sexual wants in the relationship and therefore would be more likely to experience challenge which is a positive form of stress. We also tested if greater alignment leads to challenge because greater alignment mitigates feelings of mind-body dissonance. As coupled sex is dyadic, we also considered whether partner's arousal-desire alignment may similarly influence personal stress responses, and additionally satisfaction with the sexual and romantic relationship.

Largely, we found limited support for our hypotheses. Consistent with earlier chapters, both men and women's arousal-desire alignment was associated with their own relationship and sexual satisfaction. Women's alignment also significantly associated with their male partner's relationship, but not sexual satisfaction. Men typically report greater and more frequent arousal and desire than women do (Baumeister et al., 2001; Chivers et al., 2004; Regan & Atkins, 2006). Due to this, sex might be more likely to occur between the partners when the woman is feeling prepared and motivated to engage in sex, as men are more frequently ready to engage in sex than women. This is represented in previous research, with women sometimes being described as the 'gatekeepers' of sex according to traditional

sexual scripts (Byers, 2013; Gonzalez-Rivas & Peterson, 2020; Leavitt & Willoughby, 2015). As previous research has shown that having greater overall arousal-desire alignment was associated with a greater frequency of sexual intimacy over an 8-day period (Chapter 4), women's greater overall alignment might predict a greater overall frequency of sex. Therefore, greater arousal-desire alignment might lead to greater frequency of sex, but especially when alignment is greater in women as they may have more influence as to when sex is to occur. As sex is more important for men's relationship satisfaction than women's (Hassebrauck & Fehr, 2002; Sprecher, 2002), this might explain why women's alignment predicted men's relationship satisfaction. However, it is unexplained why this did not influence men's sexual satisfaction. Thus, while these findings further our previous knowledge about the importance of having aligned arousal and desire for satisfaction by extending them to a dyadic context in which gender differences can be evaluated, more research is needed to fully understand potential gender differences in the importance of arousal-desire alignment for satisfaction.

However, we found substantially less support for our primary hypotheses. Whilst there were significant actor effects for men's arousal-desire alignment predicting their self-reported challenge during the intimacy discussion with their partner, there were no actor effects for women, nor any actor effects for either men or women predicting challenge/threat during the conversation. Additionally, the actor effects of alignment were negatively associated with dissonance for women but not men. However, there was no evidence of dissonance mediating the association between alignment and objective or subjective challenge/threat. Although the lack of support for some of our hypotheses may come from methodological limitations discussion further below, our findings suggest that perhaps the benefits of arousal-desire alignment do not extend beyond satisfaction to protect against states of threat as a result of discussing sex with the romantic partner for women. Perhaps this

lack of association for women suggests that there are other factors which might be more important to women when discussing sex with her partner. One key factor could be perceptions of how the partner will respond to the sexual disclosure. Even if an individual is high in alignment, if they perceive that their partner would respond negatively or unsupportively, they might still interpret the demands of the situation to be too high. As women have been shown to engage in sex for reasons such as emotional closeness more than men (Meston & Buss, 2007), whilst men are more likely to engage in sexual for personal pleasure, it might be the case that the interpersonal quality of the discussion might be especially important to women.

Limitations & Future Directions

Although our findings demonstrate the importance of alignment to people's sexual and relationship satisfaction, there are important limitations to consider. Firstly, the sample size of 54 dyads (108 participants) was much smaller than the pre-registered 160 dyads (320 participants). The smaller than expected sample size reflects the difficulties of collecting dyadic data, due to financial constraints, and requiring both members of the dyad to attend a lab session simultaneously. Therefore, the model fit across all models presented in this study was poor, and interpretations of these models should be taken with extreme caution. Future research should aim to replicate the current findings with well-powered sample to test whether the found effects remain significant in a larger sample with better fitting models.

Secondly, participants were aware that they would be engaging in a conversation with their partner about their sex lives when signing up for the study, which could have led to self-selection biases. Whilst most psychological research is vulnerable to volunteer bias, sexuality research is particularly vulnerable (Morokoff, 1986; Strassberg & Lowe, 1995). For example, studies have shown that volunteers for sexuality research are more likely to have greater sexual esteem, have greater sexual experience, report less traditional attitudes regarding sex,

and have more positive attitudes towards their sex life (Strassberg & Lowe, 1995; Wiederman, 1999). Therefore, the people who participated in this research may have been biased in that they felt more comfortable discussing sex and felt more positive about their sex lives compared to the general population. Furthermore, research like the present where one person invites their partner to join the study can be biased, as previous research finds that the couples who participate in this research report greater relationship satisfaction, greater commitment, and less perceived likelihood of dissolving the relationship (Barton et al., 2020). Therefore, due to the nature of the research topic, and potential bias caused by recruitment methods, this research may miss valuable insights from couples who are less satisfied or feel less positively about their relationship and their sex lives, and those who feel less comfortable discussing their sex lives with their partner.

Third, there was a variable time lag between participants reporting their arousal-desire alignment and experiencing the discussion about sex with their partner. Participants reported on their alignment the last time they engaged in sex with their partner in the pre-lab survey, which was taken approximately a week prior to the lab session. As we know that arousal and desire individually can fluctuate daily (Harris et al., 2023; Kalmbach & Pillai, 2014; Mües et al., 2025a; Ter Kuile et al., 2007), and arousal-desire alignment specifically can fluctuate daily (Chapter 4), it is likely that participants may have reported different levels of alignment on the day of their visit if they engaged in sex between completing the pre-lab survey and the lab session. Perhaps a general measure which captured participant's general level of alignment would have been more beneficial for the research questions. Moreover, sexual and relationship satisfaction were measured in general, which meant that we compared alignment at one specific sexual encounter to satisfaction generally. Future research should take these limitations into consideration, potentially employing daily diary methods (like in Chapter 4) to assess how daily alignment is associated with satisfaction for the self and the partner, or

with measures representing alignment in general. Another potential measurement limitation is the fact that dissonance was measured with reference to the last sexual encounter. Perhaps it would have been more accurate to measure dissonance post-discussion to assess whether the discussion caused feelings of dissonance as it required reflecting on the mind-body disconnect that people low in alignment might be experiencing.

Finally, although the present research extends our previous findings about arousal-desire alignment, it does not test what impacts the alignment between the two. Future research should aim to understand what might decrease alignment between the two, and what increases alignment between the two. Previous research has found that interventions involving focusing on bodily sensations lead to increased alignment between mind and body sexual responses, which in turn increased sexual wellbeing (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). Perhaps similar interventions could increase arousal-desire alignment specifically. However, increasing awareness of bodily sensations might only help increase arousal-desire alignment when arousal is lower than desire, and other interventions might be needed for those who need to boost their sexual desire to bring the two into alignment.

Conclusion

As discussing sex with your romantic partner can be stressful, it is important to consider what make this stress a positive or negative outcome. This study aimed to expand on previous findings showing the positive benefits of arousal-desire alignment to test whether alignment could be beneficial when discussing sexual intimacy with a romantic partner. By applying the BPS-CT, we tested whether those with greater alignment might perceive enough resources to meet situational demands and therefore would feel greater challenge (a positive form of stress) during a discussion about sex with their romantic partner. Moreover, as experiencing less alignment could lead to a lack of perceived resources due to the dissonance

between mind and body states, we tested whether dissonance might explain why less alignment causes greater threat. Findings showed that although men's greater alignment led to feeling like they had the resources to engage in a discussion about their sex lives, and women's greater alignment led to reductions in dissonance, dissonance did not mediate the associations between alignment and challenge relative to threat. However, the current findings supported the secondary aim of the study, to replicate previous research, showing that alignment was important to both sexual and relationship satisfaction, for both men and women. Interestingly, women's alignment was additionally important for men's relationship satisfaction. Although this research confirms how arousal-desire alignment has benefits for our satisfaction, more research is needed to understand if it has benefits during discussions of sexual intimacy, and why it might be more important for men during these discussions.

Chapter 6 – General Discussion

Overview of Findings

Sexual arousal and sexual desire play important roles in preparing us for, and motivating us to engage in, sexual behaviors (e.g. Laan & Both, 2008; Levine, 2003; Pfaus et al., 2003; Regan & Berscheid, 1999; Toledano & Pfaus, 2006). Previous research suggests that some people may experience differences in the alignment between their arousal and desire (Blumenstock et al., 2024; Sarin et al., 2013). However, the ways in which the alignment between arousal and desire shape our sexual and relational wellbeing have not been explored. The research presented in this thesis filled this gap in the literature by examining whether people did experience differences between their arousal and desire alignment and examining whether alignment impacted outcomes for the person and their relationship.

Firstly, Study 1 presented in Chapter 2 found that whilst having aligned and high levels of both arousal and desire was important, it was additionally important to be engaging in frequent sex, at a frequency that meets your needs. This was important for sexual, relational, and psychological wellbeing. This study expands on previous research by testing these facets of sexual activation in relation to one another to assess their combined influence, as usually these facets are tested independently to one another, despite often being correlated. An important takeaway from this study is that improving only arousal and desire within the relationship might not necessarily be beneficial – in fact it might be counterproductively harmful to sexual and psychological wellbeing if the necessary increases in sexual frequency are not also met. The opposite is also true – if a therapist or practitioner were to encourage a couple to engage in sexual intimacy more frequently, without helping to resolve potential deficits in arousal and desire, this could additionally be harmful to wellbeing. Therefore, this study highlights the importance of looking at arousal and desire in context with other components of the couple's sex life to understand the full picture. We did expect to find

profiles that showed people experiencing differences in their arousal and desire. However, we did not find evidence for differences in arousal-desire alignment across profiles. In order to measure arousal and desire in this study, we adapted the Sexual Arousal and Desire Inventory (SADI; Toledano & Pfaus, 2006) to measure arousal and desire separately. Measures of arousal and desire can often be inconsistent (Toledano & Pfaus, 2006). In particular, measures of sexual desire are often based on the frequency of sexual behavior which is problematic as sexual desire is not just a behavioral construct (Brotto, 2010; Clement, 2002; Mark, 2015; Toledano & Pfaus, 2006). Therefore, we aimed to generate more distinct subscales of arousal and desire for our research by providing participants with definitions of arousal and desire, followed by the full list of items in the SADI, which they had to respond to once with respect to their arousal, and again with respect to their desire. We then conducted factor analysis to determine physiological and motivational subscales that reflect arousal and desire respectively[14]. We believe that providing the SADI twice against the different definitions of arousal and desire could have led to some conflation between the measures. So, whilst two separate subscales could be determined from the factor analysis, the presentation of the full SADI twice could have obscured differences seen between ratings of arousal and desire. Given our reflections on the results of the RSA, we built on these potential limitations in Studies 2 and 3, by presenting only the distinct subscales of arousal and desire we generated in Study 1. Although we found no evidence of differences in arousal-desire alignment, the findings from this study are important as they provide evidence that we can learn more about how sexual experiences are associated with wellbeing when we consider the influence of multiple facets of these sexual experiences in conjunction with one another.

[14] For more information about how the arousal and desire subscales were generated from the SADI, please see Appendix A2.

Studies 2 and 3, as presented in Chapter 3, aimed to further test whether differences in the alignment between arousal and desire exist, and whether this impacts sexual and relationship satisfaction. We found this to be true across two different measures of arousal-desire alignment. Firstly, response surface analyses revealed that people experienced differences in their alignment, with ~63% of people reporting misaligned arousal and desire. Greater alignment between arousal and desire was associated with both greater sexual and relationship satisfaction, when arousal and desire were both high. Whilst this was different to our prediction that misalignment would be particularly harmful to satisfaction, it suggests that alignment between the two is particularly beneficial. Secondly, we found that people reported variably across a measure of perceived arousal-desire alignment. This reflects differences in how aligned people perceive their arousal and desire to be. Greater perceived alignment on this measure was also associated with greater sexual and relationship satisfaction, once again showing the importance of alignment. The findings from this chapter support conceptualizing arousal and desire as two distinct concepts, rather than interchangeable ones (Blumenstock et al., 2024). Whilst it may seem like evidence of differences in arousal-desire alignment in Studies 2 and 3 contradicts findings in Study 1, which found no profiles containing arousal-desire misalignment, there are important nuances to address between the two findings. The aim of Study 1 was not to directly evaluate potential differences in arousal-desire alignment, but instead to test whether there were meaningful profiles of arousal-desire alignment, and/or misalignment, in conjunction with the other facets of sexual activation. This meant that a misaligned profile would only appear when either arousal or desire was significantly above the sample mean, and the other significantly below. Therefore, the findings from Study 1 cannot be seen as equivalent to only aligned arousal and desire, because we do not know whether their own arousal and desire were discrepant from each other. In contrast, in Studies 2 and 3, misalignment was based on whether arousal and desire were within half a z-score

unit (Barranti et al., 2017). Therefore, misalignment was assessed through direct comparison of the amount of arousal and desire reported by participants. The research presented in Chapter 3 is novel as it highlights that not only are arousal and desire important predictors of satisfaction when measured on their own, but that their combined effect when experienced at high levels together are associated with satisfaction with the sexual and romantic relationship.

In Study 4, presented in Chapter 4, we tested whether arousal-desire alignment fluctuated daily, and whether that reflected fluctuations in sexual satisfaction and frequency. We found that people reported greater satisfaction following days when they reported greater alignment, suggesting that people's evaluations of their sex lives could differ daily depending on whether their physiological and psychological systems were particularly aligned or out of alignment from their usual experiences. Interestingly, this occurred whether participants reported engaging in sex or not, perhaps reflecting that the sense of certainty that stems from coherence between mind and body states that can be projected onto feelings of the sexual relationship, and can increase wellbeing (Biddell et al., 2024; Brown et al., 2020). Whilst daily changes in alignment were not associated with engaging in sex that day, our exploratory analyses did show those with greater overall alignment had sex more frequently across the duration of the study. This could have reflected methodological limits of a relatively short daily diary period (8-days) meaning that most participants likely only engaged in sex once based on the population average of once a week (Blanchflower & Oswald, 2004; Call et al., 1995). However, it could also reflect that couples sometimes engage in sex without arousal or desire, or are prevented from engaging in sex when they wish to due to external factors (e.g., Ahlborg et al., 2005; Basson, 2010; Bodenmann et al., 2010; Impett et al., 2015; Impett et al., 2019; Jawed-Wessel & Sevick, 2017; Meston & Buss, 2007; Shen, 2019; Watson et al., 2017). Nonetheless, it was an interesting finding that those reporting overall greater alignment engaged in sex more frequently because it shows that arousal-desire alignment is

also beneficial for sexual frequency. Moreover, we found that daily changes in alignment were more important to those high in implicit sexual destiny beliefs, suggesting that there are individual differences that impact those associations between arousal-desire alignment and potential outcomes. Whilst we did not see an impact of implicit sexual beliefs on the association between alignment and satisfaction in general in Studies 2 and 3, holding greater sexual destiny beliefs seemed to have a greater impact on days when alignment was less than what it usually was in Study 4. This suggests that increasing implicit growth beliefs might protect against declines in satisfaction when alignment is lower than usual. This study extended our knowledge about arousal-desire alignment by showing that not only is it important overall for sexual satisfaction and engagement, but daily fluctuations in alignment also influence daily reports of sexual satisfaction, particularly for those who believe that natural sexual compatibility is highly important.

In Study 5, presented in Chapter 5, we tested whether arousal-desire alignment was beneficial when navigating the stressful situation of discussing sexual wants and needs with a romantic partner. Discussions about sex require being confident about sexual needs, and being mutually responsive to your partner's needs. We expected that alignment between arousal and desire could increase whether people feel like they have the resources to respond to their partner's requests, leading to the more adaptive stress response of challenge. Conversely, we expected that less alignment would lead to the response of threat. As experiencing less alignment could lead to a lack of perceived resources due to the dissonance between mind and body states, we also expected that dissonance would explain why less alignment causes greater threat. However, our hypotheses were not supported. Dissonance did not mediate the associations between alignment and challenge/threat responses. However, the findings showed that greater alignment reduced dissonance in women, and greater alignment was associated with greater challenge in men, suggesting that the mechanisms as to

why alignment is important might differ between men and women. Yet, more research is needed to clarify and determine the meaning of these associations. Moreover, we extended our previous findings by showing that alignment was important for both men and women's sexual and relationship satisfaction, and that women's alignment was also important for men's relationship satisfaction. More research is needed to understand why there was a gender difference in the partner effects of alignment, but also as to why alignment was only important for men's relationship satisfaction, but not sexual satisfaction.

To summarize, whilst Chapter 2 did not find evidence of differences in alignment, but highlighted the importance of experiencing both at high levels, Chapters 3-5 evidenced that people can experience differences in the alignment between their arousal and desire. Furthermore, Chapters 3-5 showcased the importance of arousal-desire alignment for one's own sexual and relationship satisfaction, including the importance of women's alignment on men's relationship satisfaction. Moreover, as demonstrated in Chapter 4, we found that daily fluctuations in alignment predicted daily sexual satisfaction, and found that people who have greater overall alignment are more likely to engage in sexual intimacy. Given the correlational nature of our studies, we also attempted to rule out the reverse to our predictions – that satisfaction would lead to greater alignment. Due to the methodological approach of daily surveys used in Chapter 4, we were able to test this and found that neither satisfaction nor engagement in sexual intimacy were followed by greater alignment. Overall, our findings have consistently shown that having greater alignment in arousal and desire is beneficial to relationship and sexual wellbeing. More broadly, they suggest that understanding sexual experiences in relationships requires considering not only the levels of arousal and desire, but also the extent to which these processes are aligned.

Across Studies 2, 3 and 4 we found conflicting evidence about the impact of implicit sexual beliefs on the associations between alignment and satisfaction. Although we did not

find support for this in Studies 2 and 3, we found evidence that daily fluctuations in alignment were more important for those who believe that a sexual relationship should be naturally compatible in Study 4. Whilst there were no differences of the impact of arousal-desire alignment on satisfaction between those who more strongly endorsed growth or destiny beliefs, those who endorsed high sexual destiny beliefs were more impacted when their arousal and desire were less aligned than usual. Therefore, sexual beliefs mattered more strongly when considering daily fluctuations in alignment, but not overall alignment. One possible explanation of this finding is that those who endorse sexual destiny beliefs are more sensitive to deviations from typical sexual experiences. We know that people who endorse sexual destiny beliefs are more sensitive to sexual incompatibilities (Maxwell et al., 2017), and thus it might be the case that any deviations from the norm are interpreted as a signal of sexual incompatibility. This would make daily deviations in alignment particularly consequential for satisfaction, and explains why we saw inconsistent evidence of the role of implicit beliefs between Studies 2 and 3 which focused on overall alignment, and Study 4 which focused on daily fluctuations in alignment.

Implications

Across the studies presented in this thesis, our findings support conceptualizing sexual arousal and sexual desire as two distinct concepts. There has been some debate around whether arousal and desire are actually the same construct (Kleinplatz, 2011; Mark & Lasslo, 2018). This thesis not only shows that the two are indeed distinct, but that looking at the association between them is additionally of importance. Therefore, this thesis is useful to the field because it highlights the importance of distinguishing between desire and arousal in future research. Furthermore, our research is novel as it has highlighted that the combined effect of arousal and desire is associated with a range of wellbeing outcomes for the person

and their romantic partner. These findings regarding alignment might be particularly useful for therapists and practitioners treating those with complaints of sexual dissatisfaction, as it highlights how it is important to create interventions increasing both arousal and desire. If interventions only focus on one or the other, this could actually lead to a misalignment in arousal and desire, which could have negative implications. Additionally, interventions focusing on increasing alignment between the two might be more beneficial than just trying to increase arousal and desire alone. Previous research finds that interventions that increase the alignment between bodily and mental sexual response lead to increases in sexual wellbeing (Brotto et al., 2016; Handy & Meston, 2018; Korff & Geer, 1983; Velten et al., 2020; Velten et al., 2018). Perhaps, similar interventions aimed at increasing and bringing arousal and desire into alignment could not only benefit sexual wellbeing but also benefit relationship and psychological wellbeing simultaneously. More research is needed to determine whether such interventions would work, but this could provide a practical tool for therapists and practitioners to use to benefit those struggling with their sexual wellbeing. Moreover, Chapter 2 highlights the importance of looking at sexual frequency and whether this is meeting a person's needs, alongside arousal and desire, when treating a client experiencing sexual dysfunction. Interventions improving arousal and desire may be counterproductive if it is not accompanied by increases in the frequency of sex.

Our findings also increase our understanding of how sex influences romantic relationships. We know that sex is important in maintaining satisfying romantic relationships (e.g. Brezsnyak & Whisman, 2004; Byers, 2005; Call et al., 1995; Muise, Schimmack, et al., 2016), with arousal and desire towards the romantic partner also having a particular influence on relationship satisfaction (Brezsnyak & Whisman, 2004; Lawless et al., 2022; Regan, 2000). However, our research also shows that alignment between arousal and desire is additionally important for relationship satisfaction. Arousal-desire alignment may also be

important for other relational outcomes, including commitment, conflict reduction, enhancing sexual self-esteem, boosting likelihood of sexual self-disclosure, and much more. Future research should focus on the many positive benefits that arousal-desire alignment might have for romantic relationships. Moreover, this thesis highlights the importance of bringing together the two fields of relationship and sexuality psychology. As highlighted by Muise et al. (2018), the two psychological fields of relationships and sexuality psychology have previously remained distinct from one another, despite the obvious importance of sex within romantic relationships (Birnbaum et al., 2006; Diamond & Huebner, 2012; Muise, Kim, et al., 2016). This thesis depicts how integrating theoretical contributions from both fields can help us understand more about both sex and relationships and their interplay. The thesis was driven by the viewpoint that sex is not just for procreation, but has important positive implications for romantic relationships (Muise et al., 2016). Additionally, applying the theory of sexual implicit beliefs, a highly relevant application of a relationship theory applied to sex psychology (Maxwell et al., 2017), allowed us to understand some potential individual differences in how arousal-desire alignment impacts the relationship. This thesis also incorporated methodologies commonly used in relationship psychology, such as daily diary and dyadic study designs which has allowed us to explore the impact of arousal-desire alignment in a way that captures the daily changes in sexual and romantic relationships, as well as the impacts a person's sexual experiences can have on their partner. The present research also contributes to bridging the gap between the fields of sexual and relationship psychology by showing how a greater understanding of sexual processes (i.e., sexual arousal and desire) can expand our understanding of how relationships are evaluated and maintained.

General Limitations and Future Directions

Whilst this thesis has important implications for the field, it is not without its limitations. Notably, the research detailed in the present thesis only measured arousal and desire retrospectively, rather than in-situ. It is common for arousal and desire to be measured retrospectively (Cartagena-Ramos et al., 2018; Toledano & Pfaus, 2006). Nonetheless, retrospective evaluations can be biased (Birnbaum et al., 2016; Dewitte et al., 2018). For example, people who are feeling satisfied with their relationship might be more likely to reconstruct their sexual experiences through 'rose-colored' glasses and therefore might be more likely to report greater alignment between arousal and desire when reflecting upon this retrospectively. In Chapters 2, 3, and 5 we asked participants to reflect on their arousal and desire during their most recent sexual experience with their partner. This presents a potential methodological issue, as it might be the case that during that particular sexual experience the participant may have engaged in sex when they were experiencing low arousal or desire, as we know sometimes people engage in sex for reasons other than experiencing arousal or desire (Impett et al., 2015; Impett et al., 2019; Leigh, 1989; Meston & Buss, 2007; Muise & Impett, 2015; Watson et al., 2017). Perhaps the alignment between arousal and desire would be of importance to how satisfied a person was with that particular sexual experience, but we instead ask about satisfaction overall, which might mean we are missing out on detecting some of the effects of arousal-desire alignment on more immediate feelings of satisfaction. Moreover, perhaps misalignment would have greater negative implications if such implications were assessed soon after the sexual experience. Study 5 attempted to measure potential negative implications after discussing sex with a partner but still relied on retrospective measures of arousal-desire (mis)alignment. However, in Study 4 arousal-desire (mis)alignment was measured daily. This was beneficial as we were able to show that greater arousal-desire alignment on that day led to greater sexual satisfaction that day. Future

research should aim to measure alignment and potential associated outcomes closer to sexual activity.

A further potential limitation was that we relied on measuring people's subjective awareness of their sexual arousal, rather than measuring arousal objectively. In Chapters 2 and 3, arousal was assessed using a subscale that we had generated from the Sexual Arousal and Desire Inventory (SADI; Toledano & Pfaus, 2006)[15]. Our choice to measure arousal and desire was based on three key factors. Firstly, past work has demonstrated that subjective arousal and desire can be differentiated between (Blumenstock et al., 2024). Secondly, it is important to examine the subjective awareness of physiological sensations in the body, as this awareness can have important implications for how people interpret their sexual functioning (Dixon et al., 2024; Handy & Meston, 2016). Finally, there are practical advantages to being able to examine the subjective experience of arousal that does not rely on the intrusive and intensive measurements of objective physiological arousal, most commonly assessed via genital plethysmography (Bancroft et al., 1966; Barlow et al., 1970; Fisher et al., 1965; Hoon et al., 1976; Sintchak & Geer, 1975). Importantly, these physiological assessments of arousal tend to not be standardized, and repeated assessments with the same individual can provide different results each time (Toledano & Pfaus, 2006). However, subjective awareness of arousal tends to not perfectly correlate with objective measures of arousal, especially in women (Chivers et al., 2010; Meston & Stanton, 2019), but additionally in men (Delizonna, 2001; Hall et al., 1985; Sakheim et al., 1984). Therefore, the findings of this thesis are limited in that they can only make conclusions based on the alignment between subjective arousal and desire. Arousal-desire alignment as we measure it could thus be influenced by both not experiencing arousal, but also by not being able to subjectively detect physiological arousal.

[15] For more information about how the arousal and desire subscales were generated from the SADI, please see Appendix A2.

Future research should attempt to untangle what is driving misalignment when arousal is low – whether this is due to not experiencing any arousal physiologically or not being able to detect the physiological arousal that is being experienced.

Another potential methodological limitation across Studies 4 and 5 was that the self-reported arousal-desire alignment was a one-dimensional measure that was potentially less able to capture the nuances in how arousal and desire were in or out of alignment. For Studies 2 and 3, we created a self-reported alignment measure to capture how aligned people *perceived* their arousal and desire to be. The findings from our RSA predicting self-reported alignment from arousal and desire found that the self-reported measure better taps into when people experience alignment at high, relative to low, levels of arousal and desire. Therefore, future interpretations of alignment in Studies 4 and 5 focused on alignment when both arousal and desire at high levels, and interpretations surrounding misalignment, or alignment when both arousal and desire are low, cannot be made. This measure is limited compared to the use of RSA in Chapter 3 when we could directly test the effects of alignment between arousal and desire measures. Moreover, our perceived alignment measure could not test whether arousal was greater than desire, or if desire was greater than arousal. However, this measure has allowed us to demonstrate that it is not necessarily just about the importance of actual alignment between subjective arousal and desire, but also about the importance of perceived alignment between the two. Furthermore, using this measure allowed us to research the impact of daily alignment, as well as the dyadic impact of alignment, without being restricted to requiring the use of RSA and the large sample sizes needed to conduct RSA.

An important limitation across most of the research presented in this thesis is that there was a lack of equal gender representation. Across the studies presented in Chapter 2, 3, and 4, only a small proportion of the participants self-identified as men, despite our efforts to recruit equal proportions of men and women (22% in Study 1, 4% in Study 2, 6% in Study 3,

38% in Study 4). Whilst it is a common issue that men are harder to recruit for sex and relationship research (Hill et al., 1979; Senn & Desmarais, 2001), it limits the interpretation the findings of this thesis for several reasons. Firstly, men typically report greater and more frequent sexual arousal and desire than women (Baumeister et al., 2001; Chivers et al., 2004; Regan & Atkins, 2006). However, this may in part be due to how desire is often measured in a way in which conflates it with sexual frequency, or focuses on spontaneous desire which occurs before any sexual stimulation (Dawson & Chivers, 2014). Secondly, sexual arousal is organized differently within men and women, as women experience less agreement between their subjectively and objectively measured sexual arousal compared to men (Chivers et al., 2010; Meston & Stanton, 2019). This could mean that women are more likely to report arousal-desire misalignment than men if the driver behind misalignment is the reduced ability to subjectively detect physiological arousal. Third, men's sexual arousal patterns tend to align more with their sexual interests, whereas women's physiological arousal can more frequently occur across a wider range of sexual stimuli, including stimuli they do not find consciously desirable (Chivers et al., 2004; Suschinsky & Lalumière, 2011). This might potentially lead to gender differences in arousal-desire alignment, as women may report less alignment than men due to being more likely to experience arousal to a non-desirable stimulus. Overall, these gender differences in arousal and desire experiences suggest that men could experience unique differences in arousal-desire alignment that have not been accurately captured by the research within this thesis. Future research should test the impacts of arousal-desire alignment in men specifically, and test for gender-based differences. In Study 5, the gender representation between men and women was much more equal due to the recruitment of predominantly mixed-gender couples. This meant that we were able to test for gendered effects, finding that whilst own alignment was important for both men's and women's sexual and relationship satisfaction, women's alignment was additionally important for men's

relationship satisfaction. Therefore, future research should consider potential gender differences when researching arousal-desire alignment.

It is important to highlight that the findings presented in this thesis are centered around more heterocentric and allocentric experiences. The thesis overrepresented heteronormative, cisgender, and allosexual experiences, as the majority of participants required were in mixed-gender relationship, did not identify as transgender or non-binary, and asexual people were excluded. These findings may not capture the unique experiences that transgender people may have with their arousal and desire, especially people who are undergoing gender transformative procedures, including hormonal replacement therapies and surgery. Therefore, our findings cannot be generalized across gender identities. Moreover, it was beyond the scope of the present research to understand how asexual people experience arousal-desire (mis)alignment. Whilst asexuality has historically been defined as a lack of attraction, is actually an umbrella term which describes a wide range of people who have different experiences with sexual attraction and sexual behavior (Van Houdenhove et al., 2015). Due to this variety in experiences with sex, we decided to exclude asexual people from all of our studies as asexuality could have unknown effects on measures of arousal, desire, sexual frequency, sexual wellbeing, and more which were beyond the scope of this thesis. Future research should aim to examine how arousal-desire alignment might be unique in asexual experiences.

It is also important to consider biases, in addition to gender, that may manifest as a consequence of who decides to take part in research voluntarily. Whilst volunteer bias happens across most psychological research, sexuality research has been considered to be an area that is particularly vulnerable to volunteer bias (Morokoff, 1986; Strassberg & Lowe, 1995). Several studies have shown that volunteers for research involving themes of sex are more likely to indicate greater sexual esteem, report less traditional sexual attitudes, have

more positive attitudes towards their sex lives, and have had more sexual experiences (Strassberg & Lowe, 1995; Wiederman, 1999). Therefore, the people who volunteered to participate in the research presented in this thesis may have been a biased sample that are more comfortable and positive about their sex lives than the general population. However, more recent research has shown that most people are now willing to participate in a questionnaire about sex, although psychophysiology studies still appear to be impacted by these biases (Dawson et al., 2019). Therefore, biases may be less apparent in the questionnaire-based studies presented in Chapters 2, 3, and 4, but the participant sample in Study 5 may be more biased due to the more invasive component of discussing their sex life with their partner in a lab environment. This sample may have included couples who more frequently discussed and were more comfortable discussing their sex life or felt more positively about their sex life. Therefore, the findings of Study 5 might be less generalizable, and may have missed important contributions from people who feel less positive or feel less able to have such discussions. Moreover, research where one participant invites their partner to join the study (like in Study 5) finds that the couples who do participate report greater relationship satisfaction, commitment, and less perceived break-up likelihood, compared those who do not agree to participate (Barton et al., 2020). Therefore, our research may have an overly romantically satisfied sample of participants, which again may have missed important contributions from those who feel less positive.

Future research should expand on the present research by testing whether cultural differences could impact arousal-desire alignment and the outcomes associated with it. For example, it might be the case that people from Eastern cultures who more commonly embrace meditative techniques and mindfulness into their everyday lives might have different experiences with arousal-desire alignment. As cultural practices related to meditation and mindfulness facilitate bodily awareness (for a review, see Ma-Kellams, 2014), it could be that

being more mindful helps people recognize when their body is sexually aroused, which could lead to greater alignment between arousal and desire. Indeed, the use of meditation and mindfulness techniques have been found to improve recognition of arousal and desire when treating women with sexual dysfunction (Jaderek & Lew-Starowicz, 2019). Conversely, cultural differences in social attitudes towards sexuality, with people from East Asian cultures tending to express greater sexual guilt and sexual conservatism than people from North America and Europe (Woo et al., 2011), could also lead to cultural differences in arousal-desire alignment. Research has found that East Asian women reported lower sexual desire when compared to Western women, but no differences were found in self-reported or physiological sexual arousal (Woo et al., 2011; Yule et al., 2010). Therefore, it could be the case that people from East Asian cultures might be more likely to experience misalignment in their arousal and desire due to differences in their sexual desire. Future research should aim to consider the potential cultural differences in experiences of arousal-desire alignment.

Although the research presented in this thesis demonstrates why arousal-desire alignment is important for various personal and relational outcomes, we did not test why arousal and desire alignment differs between people, or identify why it fluctuates. There are many factors which could explain why alignment differs. For example, individual differences in interoceptive awareness could influence arousal-desire alignment, as greater interoceptive ability is associated with greater awareness of physiological sexual arousal responses (Handy & Meston, 2016, 2018). Greater interoceptive ability may lead to greater alignment between arousal and desire as perceptions of sexual arousal are more accurate, or on the other hand people who are more interoceptive might be particularly sensitive to when their arousal and desire are less aligned than usual because they are more easily able to subjectively detect their body's physiological responses. Life transitions such as menopause could also impact arousal-desire alignment. As a result of hormonal changes during menopause, significant

declines are often observed in sexual arousal, sexual desire, sexual frequency, alongside increases in vaginal dryness and dyspareunia (Dennerstein et al., 2003; Nappi & Lachowsky, 2009). Perhaps menopausal and post-menopausal women could be more vulnerable to experiencing less alignment, as physiological and hormonal fluctuations may impact how women experience these sexual cues. For example, declines in estrogen can reduce vaginal lubrication and genital blood flow (Bachmann & Leiblum, 2004), meaning that some women may still experience desire to engage in sex but experience diminished arousal, thereby impacting arousal-desire alignment. Conversely, some women may continue to experience physiological arousal, but perhaps not experience corresponding sexual desire, especially if sexual activity becomes associated with discomfort or pain. As this thesis demonstrates the importance of alignment for sexual and relational wellbeing outcomes, experiencing less alignment as a result of menopausal changes could be related to declines in sexual and relationship satisfaction, or sexual engagement, as often seen in those experiencing menopause (Caico, 2013; Dennerstein et al., 2001; Kling et al., 2019). Therefore, researching arousal-desire alignment in menopausal and post-menopausal women could be beneficial for improving their wellbeing. Additionally, daily fluctuations in mood, partner's mood, relationship quality and satisfaction, and stress can all have an impact on sexual desire (Blumenstock et al., 2024; Dewitte & Mayer, 2018; Frérart et al., 2025; Mües et al., 2025a, 2025b), which could impact some of the daily variability we see regarding arousal-desire alignment. There are many avenues of future research to test what impacts alignment, and this research will be beneficial for creating interventions which can support sexual and relational wellbeing through increasing alignment.

Whilst this thesis illustrated how arousal-desire alignment was important for satisfaction, it did not speak as to what the underlying mechanisms were explaining why alignment is so beneficial. In Chapter 5, we tested whether alignment might be important for

perceiving high resources relative to demands due to alignment increasing feelings of consonance between mind and body states. However, we did not find this to be the case. One might argue that greater alignment is associated with greater sexual frequency (Chapter 4), and that alignment increases satisfaction due to the increased level of sexual frequency. However, in Chapter 4 we found that alignment increased sexual satisfaction even on days when people had not engaged in sexual intimacy. One potential explanation as to why alignment is beneficial even on days without sex is that alignment could increase the consistency between cognitive and affective states, which can reduce feelings of ambiguity surrounding sexual experiences, which can contribute to more positive evaluations (Biddell et al., 2024; Brown et al., 2020; Centerbar et al., 2008). On days when alignment is lower, this could cause increases in uncertainty of a person's evaluations of their sexual feelings, and this uncertainty could be further reflected onto evaluations of their romantic relationship. Future research should examine the mechanisms behind why alignment between arousal and desire is beneficial as it may help in the development of future interventions.

In Chapter 4, we presented evidence that implicit sexual beliefs impact the association between arousal-desire alignment and satisfaction. Specifically, alignment was more important for satisfaction for people who held greater sexual destiny beliefs. Therefore, it could be the case that interventions to increase endorsement of growth beliefs could protect from decreases in satisfaction when arousal and desire fall out of alignment. However, the same impact of implicit sexual beliefs was not seen in Chapter 3, and so more research is needed to determine the impact implicit sexual beliefs have on the association between alignment and satisfaction. Moreover, there could be alternative individual differences that determine the importance of arousal-desire alignment for satisfaction. For example, differences in attachment might influence how people interpret that alignment between their arousal and desire. Anxiously attached individuals might find experiencing less alignment

than usual to be particularly distressing, as they are more prone to negative sexual experiences influencing their relationship quality (Birnbaum et al., 2006). Future research should test what individual differences impact the association between alignment and satisfaction to examine if they could inform interventions which help protect from a negative impact on satisfaction when arousal and desire are less aligned.

Final Summary

Overall, this thesis offers a novel exploration into how arousal and desire can impact personal and relational wellbeing outcomes. Firstly, we demonstrated how arousal and desire work in conjunction with other facets of sexual activation to influence sexual, relational, and personal wellbeing outcomes. Secondly, across multiple studies we show how the alignment between arousal and desire at high levels is important for sexual and relationship satisfaction. Moreover, we demonstrated that when arousal-desire alignment is greater than usual, this leads to greater than usual sexual satisfaction. Third, we examined how a person's beliefs about what makes a sexual relationship satisfying could change how important arousal-desire alignment is to sexual satisfaction. Fourth, we showed that those with greater arousal-desire alignment had sex more frequently, and fifth, we showed that there are also some impacts of arousal-desire alignment for the romantic partner, and that considering gendered effects of alignment was important. Finally, we presented what might be beneficial for future research in the field to focus on, and how therapists and practitioners might be able to benefit from the research. This thesis demonstrates the value that can be added to research by taking the theoretical position that arousal and desire are separate concepts, and by integrating concepts, theories, and methodologies from the fields of relationship and sexuality psychology.

References

Acevedo, B. P., Poulin, M. J., Geher, G., Grafton, S., & Brown, L. L. (2019). The Neural and Genetic Correlates of Satisfying Sexual Activity in Heterosexual Pair-Bonds. *Brain and Behavior*, *9*(6), e01289.

Ackerman, R. A., & Kenny, D. A. (2016). *Apimpower: An Interactive Tool for Actor-Partner Interdependence Model Power Analysis* Retrieved November 2025 from https://robert-a-ackerman.shinyapps.io/apimpower/

Adler, M. D., Dolan, P., & Kavetsos, G. (2017). Would You Choose to Be Happy? Tradeoffs between Happiness and the Other Dimensions of Life in a Large Population Survey. *Journal of Economic Behavior & Organization*, *139*, 60-73.

Ahlborg, T., Dahlöf, L. G., & Hallberg, L. R. M. (2005). Quality of the Intimate and Sexual Relationship in First-Time Parents Six Months after Delivery. *Journal of Sex Research*, *42*(2), 167-174.

Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple Regression: Testing and Interpreting Interactions*. Sage.

Akaike, H. (1974). A New Look at the Statistical Model Identification. *IEEE Transactions on Automatic Control*, *19*(6), 716-723.

Althof, S. E., Meston, C. M., Perelman, M. A., Handy, A. B., Kilimnik, C. D., & Stanton, A. M. (2017). Opinion Paper: On the Diagnosis/Classification of Sexual Arousal Concerns in Women. *The Journal of Sexual Medicine*, *14*(11), 1365-1371.

Andersen, J. P., & Zou, C. (2015). Exclusion of Sexual Minority Couples from Research. *Health Science Journal*, *9*(6), 1.

Anderson, R. (2013). Positive Sexuality and Its Impact on Overall Well-Being. *Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz*, *56*(2), 208-214.

Arcos-Romero, A. I., & Calvillo, C. (2023). Sexual Health and Psychological Well-Being of Women: A Systematic Review. *Healthcare*, *2023.*

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of Other in the Self Scale and the Structure of Interpersonal Closeness. *Journal of Personality and Social Psychology*, *63*(4), 596.

Arriaga, X. B. (2001). The Ups and Downs of Dating: Fluctuations in Satisfaction in Newly Formed Romantic Relationships. *Journal of Personality and Social Psychology*, *80*(5), 754.

Asparouhov, T., & Muthén, B. (2020). Comparison of Models for the Analysis of Intensive Longitudinal Data. *Structural Equation Modeling: A Multidisciplinary Journal*, *27*(2), 275-297.

American Psychological Association (APA). (2000). *Diagnostic and Statistical Manual of Mental Disorders* (4th ed).

American Psychological Association (APA). (2013). *Diagnostic and Statistical Manual of Mental Disorders* (5th ed).

Bachmann, G. A., & Leiblum, S. R. (2004). The Impact of Hormones on Menopausal Sexuality: A Literature Review. *Menopause*, *11*(1), 120-130.

Bakk, Z., & Vermunt, J. K. (2016). Robustness of Stepwise Latent Class Modeling with Continuous Distal Outcomes. *Structural Equation Modeling: A Multidisciplinary Journal*, *23*(1), 20-31.

Bancroft, J. (2002). Promoting Responsible Sexual Behavior. *Sexual and Relationship Therapy*, *17*(1), 9-12.

Bancroft, J. H., Jones, H. G., & Pullan, B. (1966). A Simple Transducer for Measuring Penile Erection, with Comments on Its Use in the Treatment of Sexual Disorders. *Behaviour Research and Therapy*, *4*(1-2), 239-241.

Barlow, D., Becker, R., Leitenberg, H., & Agras, W. (1970). A Mechanical Strain Gauge for Recording Penile Circumference Change. *Journal of Applied Behavior Analysis*, *3*(1), 73.

Barranti, M., Carlson, E. N., & Côté, S. (2017). How to Test Questions About Similarity in Personality and Social Psychology Research: Description and Empirical Demonstration of Response Surface Analysis. *Social Psychological and Personality Science*, *8*(4), 465-475.

Barton, A. W., Lavner, J. A., Stanley, S. M., Johnson, M. D., & Rhoades, G. K. (2020). "Will You Complete This Survey Too?" Differences between Individual Versus Dyadic Samples in Relationship Research. *Journal of Family Psychology*, *34*(2), 196.

Basson, R. (2000). The Female Sexual Response: A Different Model. *Journal of Sex & Marital Therapy*, *26*(1), 51-65.

Basson, R. (2001). Human Sex-Response Cycles. *Journal of Sex & Marital Therapy*, *27*(1), 33-43.

Basson, R. (2010). Sexual Function of Women with Chronic Illness and Cancer. *Women's Health*, *6*(3), 407-429.

Baumeister, R. F., Catanese, K. R., & Vohs, K. D. (2001). Is There a Gender Difference in Strength of Sex Drive? Theoretical Views, Conceptual Distinctions, and a Review of Relevant Evidence. *Personality and Social Psychology Review*, *5*(3), 242-273.

Biddell, H., Solms, M., Slagter, H., & Laukkonen, R. (2024). Arousal Coherence, Uncertainty, and Well-Being: An Active Inference Account. *Neurosci Conscious*, *2024*(1), niae011.

Birnbaum, G., Reis, H., Mizrahi, M., Kanat-Maymon, Y., Sass, O., & Granovski-Milner, C. (2016). Intimately Connected: The Importance of Partner Responsiveness for Experiencing Sexual Desire. *Journal of Personality and Social Psychology*, *111*.

Birnbaum, G. E., & Finkel, E. J. (2015). The Magnetism That Holds Us Together: Sexuality and Relationship Maintenance across Relationship Development. *Current Opinion in Psychology*, *1*, 29-33.

Birnbaum, G. E., Reis, H. T., Mikulincer, M., Gillath, O., & Orpaz, A. (2006). When Sex Is More Than Just Sex: Attachment Orientations, Sexual Experience, and Relationship Quality. *Journal of Personality and Social Psychology*, *91*(5), 929.

Blanchflower, D. G., & Oswald, A. J. (2004). Money, Sex and Happiness: An Empirical Study. *The Scandinavian Journal of Economics*, *106*(3), 393-415.

Blascovich, J. (2008). In *Challenge and Threat* (A. J. Elliot, Ed.). Psychology Press.

Blascovich, J., & Mendes, W. B. (2000). Challenge and Threat Appraisals: The Role of Affective Cues. In *Feeling and Thinking: The Role of Affect in Social Cognition.* (pp. 59-82). Cambridge University Press.

Blascovich, J., & Tomaka, J. (1996). The Biopsychosocial Model of Arousal Regulation. In *Advances in Experimental Social Psychology* (Vol. 28, pp. 1-51). Elsevier.

Blumenstock, S. M., Suschinsky, K., Brotto, L. A., & Chivers, M. L. (2024). Sexual Desire Emerges from Subjective Sexual Arousal, but the Connection Depends on Desire Type and Relationship Satisfaction. *Journal of Sex & Marital Therapy*, *50*(2), 252-271.

Bodenmann, G., Atkins, D. C., Schär, M., & Poffet, V. (2010). The Association between Daily Stress and Sexual Activity. *Journal of Family Psychology*, *24*(3), 271.

Both, S., Everaerd, W., Laan, E., & Janssen, E. (2007). Desire Emerges from Excitement: A Psychophysiological Perspective on Sexual Motivation. *The Psychophysiology of Sex*, *8*, 327-339.

Bőthe, B., Toth-Kiraly, I., Demetrovics, Z., & Orosz, G. (2017). The Pervasive Role of Sex Mindset: Beliefs About the Malleability of Sexual Life Is Linked to Higher Levels of

Relationship Satisfaction and Sexual Satisfaction and Lower Levels of Problematic Pornography Use. *Personality and Individual Differences*, *117*, 15-22.

Bray, B. C., Lanza, S. T., & Collins, L. M. (2010). Modeling Relations among Discrete Developmental Processes: A General Approach to Associative Latent Transition Analysis. *Structural Equation Modeling*, *17*(4), 541-569.

Brezsnyak, M., & Whisman, M. A. (2004). Sexual Desire and Relationship Functioning: The Effects of Marital Satisfaction and Power. *Journal of Sex & Marital Therapy*, *30*(3), 199-217.

Brody, S. (2010). The Relative Health Benefits of Different Sexual Activities. *The Journal of Sexual Medicine*, *7*(4), 1336-1361.

Brotto, L. A. (2010). The Dsm Diagnostic Criteria for Hypoactive Sexual Desire Disorder in Women. *Archives of Sexual Behavior*, *39*(2), 221-239.

Brotto, L. A. (2017). Evidence-Based Treatments for Low Sexual Desire in Women. *Frontiers in Neuroendocrinology*, *45*, 11-17.

Brotto, L. A., Bitzer, J., Laan, E., Leiblum, S., & Luria, M. (2010). Women's Sexual Desire and Arousal Disorders. *Journal of Sexual Medicine*, *7*(2), 856-856.

Brotto, L. A., Chivers, M. L., Millman, R. D., & Albert, A. (2016). Mindfulness-Based Sex Therapy Improves Genital-Subjective Arousal Concordance in Women with Sexual Desire/Arousal Difficulties. *Archives of Sexual Behavior*, *45*, 1907-1921.

Brotto, L. A., Heiman, J. R., & Tolman, D. L. (2009). Narratives of Desire in Mid-Age Women with and without Arousal Difficulties. *Journal of Sex Research*, *46*(5), 387-398.

Brown, C. L., Van Doren, N., Ford, B. Q., Mauss, I. B., Sze, J. W., & Levenson, R. W. (2020). Coherence between Subjective Experience and Physiology in Emotion: Individual Differences and Implications for Well-Being. *Emotion*, *20*(5), 818-829.

Bucher, A., Neubauer, A. B., Voss, A., & Oetzbach, C. (2019). Together Is Better: Higher Committed Relationships Increase Life Satisfaction and Reduce Loneliness. *Journal of Happiness Studies*, *20*, 2445-2469.

Buczak-Stec, E., König, H.-H., & Hajek, A. (2021). Sexual Satisfaction of Middle-Aged and Older Adults: Longitudinal Findings from a Nationally Representative Sample. *Age and Ageing*, *50*(2), 559-564.

Bühler, J. L., Krauss, S., & Orth, U. (2021). Development of Relationship Satisfaction across the Life Span: A Systematic Review and Meta-Analysis. *Psychological Bulletin*, *147*(10), 1012.

Byers, E. S. (2005). Relationship Satisfaction and Sexual Satisfaction: A Longitudinal Study of Individuals in Long-Term Relationships. *Journal of Sex Research*, *42*(2), 113-118.

Byers, E. S. (2013). How Well Does the Traditional Sexual Script Explain Sexual Coercion? Review of a Program of Research. In *Sexual Coercion in Dating Relationships* (pp. 7-26). Routledge.

Caico, C. (2013). Do Perimenopausal and Menopausal Symptoms Affect the Marital Relationship? *Journal of Research in Nursing*, *18*(3), 204-215.

Call, V., Sprecher, S., & Schwartz, P. (1995). The Incidence and Frequency of Marital Sex in a National Sample. *Journal of Marriage and the Family*, 639-652.

Cartagena-Ramos, D., Fuentealba-Torres, M., Rebustini, F., Leite, A., Alvarenga, W. A., Arcêncio, R. A., Dantas, R., A., S., Nascimento, L. C. (2018). Systematic Review of the Psychometric Properties of Instruments to Measure Sexual Desire. *BMC Medical Research Methodology*, *18*(1), 109.

Celeux, G., & Soromenho, G. (1996). An Entropy Criterion for Assessing the Number of Clusters in a Mixture Model. *Journal of Classification*, *13*, 195-212.

Centerbar, D. B., Schnall, S., Clore, G. L., & Garvin, E. D. (2008). Affective Incoherence: When Affective Concepts and Embodied Reactions Clash. *Journal of Personality and Social Psychology*, *94*(4), 560.

Chao, J.-K., Lin, Y.-C., Ma, M.-C., Lai, C.-J., Ku, Y.-C., Kuo, W.-H., & Chao, I.-C. (2011). Relationship among Sexual Desire, Sexual Satisfaction, and Quality of Life in Middle-Aged and Older Adults. *Journal of Sex & Marital Therapy*, *37*(5), 386-403.

Cheng, Z., & Smyth, R. (2015). Sex and Happiness. *Journal of Economic Behavior & Organization*, *112*, 26-32.

Chernyavska, T., Yermakova, A., Kokorina, Y., Kolot, S., & Kremenchutska, M. (2022). Sexual Satisfaction as a Factor of Psychological Well-Being. *BRAIN. Broad Research in Artificial Intelligence and Neuroscience*, *13*(1), 292-307.

Chivers, M., Rieger, G., Latty, E., & Bailey, J. (2004). A Sex Difference in the Specificity of Sexual Arousal. *Psychological Science*, *15*, 736-744.

Chivers, M. L., & Brotto, L. A. (2017). Controversies of Women's Sexual Arousal and Desire. *22*(1), 5-26.

Chivers, M. L., Seto, M. C., Lalumière, M. L., Laan, E., & Grimbos, T. (2010). Agreement of Self-Reported and Genital Measures of Sexual Arousal in Men and Women: A Meta-Analysis. *Archives of Sexual Behavior*, *39*(1), 5-56.

Clark, S. L., & Muthén, B. (2009) Relating Latent Class Analysis Results to Variables not Included in the Analysis. Available online at: http://www.statmodel.com/download/relatinglca.pdf

Clement, U. (2002). Sex in Long-Term Relationships: A Systemic Approach to Sexual Desire Problems. *Archives of Sexual Behavior*, *31*(3), 241-246.

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *Journal of Health and Social Behavior*, 385-396.

Connolly, J., Craig, W., Goldberg, A., & Pepler, D. (1999). Conceptions of Cross-Sex Friendships and Romantic Relationships in Early Adolescence. *Journal of Youth and Adolescence*, *28*(4), 481-494.

Craig, A. D. (2002). How Do You Feel? Interoception: The Sense of the Physiological Condition of the Body. *Nature Reviews Neuroscience*, *3*(8), 655-666.

Davies, S., Katz, J., & Jackson, J. L. (1999). Sexual Desire Discrepancies: Effects on Sexual and Relationship Satisfaction in Heterosexual Dating Couples. *Archives of Sexual Behavior*, *28*, 553-567.

Davison, S. L., Bell, R. J., LaChina, M., Holden, S. L., & Davis, S. R. (2009). The Relationship between Self-Reported Sexual Satisfaction and General Well-Being in Women. *The Journal of Sexual Medicine*, *6*(10), 2690-2697.

Dawson, S. J., & Chivers, M. L. (2014). Gender Differences and Similarities in Sexual Desire. *Current Sexual Health Reports*, *6*, 211-219.

Dawson, S. J., Huberman, J. S., Bouchard, K. N., McInnis, M. K., Pukall, C. F., & Chivers, M. L. (2019). Effects of Individual Difference Variables, Gender, and Exclusivity of Sexual Attraction on Volunteer Bias in Sexuality Research. *Archives of Sexual Behavior*, *48*(8), 2403-2417.

Debrot, A., Meuwly, N., Muise, A., Impett, E. A., & Schoebi, D. (2017). More Than Just Sex: Affection Mediates the Association between Sexual Activity and Well-Being. *Personality and Social Psychology Bulletin*, *43*(3), 287-299.

Delizonna, L. L., Wincze, J. P., Litz, B. T., Brown, T. A., & Barlow, D. H. (2001). A Comparison of Subjective and Physiological Measures of Mechanically Produced and Erotically Produced Erections (or, Is an Erection an Erection?). *Journal of Sex &Marital Therapy*, *27*(1), 21-31.

Dennerstein, L., Alexander, J. L., & Kotz, K. (2003). The Menopause and Sexual Functioning: A Review of the Population-Based Studies. *Annual Review of Sex Research*, *14*(1), 64-82.

Dennerstein, L., Dudley, E., & Burger, H. (2001). Are Changes in Sexual Functioning During Midlife Due to Aging or Menopause? *Fertility and Sterility*, *76*(3), 456-460.

Dewitte, M., & Mayer, A. (2018). Exploring the Link between Daily Relationship Quality, Sexual Desire, and Sexual Activity in Couples. *Archives of Sexual Behavior*, *47*(6), 1675-1686.

Dewitte, M., Schepers, J., & Melles, R. (2018). The Effects of Partner Presence and Sexual Stimulation on the Appraisal of Vaginal Pressure and Sexual Arousal. *Journal of Sexual Medicine*, *15*(4), 539-549.

Diamond, L. M., & Huebner, D. M. (2012). Is Good Sex Good for You? Rethinking Sexuality and Health. *Social and Personality Psychology Compass*, *6*(1), 54-69.

Diener, E., Wirtz, D., Biswas-Diener, R., Tov, W., Kim-Prieto, C., Choi, D.-w., & Oishi, S. (2009). New Measures of Well-Being. *Assessing Well-Being*, 247-266.

Dienstbier, R. A. (1989). Arousal and Physiological Toughness: Implications for Mental and Physical Health. *Psychological Review*, *96*(1), 84.

Dixon, E., Poerio, G. L., Rieger, G., & Klabunde, M. (2024). Interoceptive Awareness and Female Orgasm Frequency and Satisfaction. *Brain Sciences*, *14*(12), 1236.

Dorahy, M. J., Corry, M., Shannon, M., Webb, K., McDermott, B., Ryan, M., & Dyer, K. F. (2013). Complex Trauma and Intimate Relationships: The Impact of Shame, Guilt and Dissociation. *Journal of Affective Disorders*, *147*(1-3), 72-79.

Dosch, A., Rochat, L., Ghisletta, P., Favez, N., & Van der Linden, M. (2016). Psychological Factors Involved in Sexual Desire, Sexual Activity, and Sexual Satisfaction: A Multi-Factorial Perspective. *Archives of Sexual Behavior*, *45*(8), 2029-2045.

Edwards, J. N., & Booth, A. (1994). Sexuality, Marriage, and Well-Being: The Middle Years. *Sexuality Across the Life Course*, 233-259.

Edwards, J. R. (2002). Alternatives to Difference Scores: Polynomial Regression Analysis and Response Surface Methodology. In F. Drasgow & N. Schmitt (Eds.), *Measuring and analyzing behavior in organizations: Advances in measurement and data analysis (pp. 350–400). Jossey-Bass/Wiley.*

Elliot, A. J., & Devine, P. G. (1994). On the Motivational Nature of Cognitive Dissonance: Dissonance as Psychological Discomfort. *Journal of Personality and Social Psychology*, *67*(3), 382.

Fallis, E. E., Rehman, U. S., Woody, E. Z., & Purdon, C. (2016). The Longitudinal Association of Relationship Satisfaction and Sexual Satisfaction in Long-Term Relationships. *Journal of Family Psychology*, *30*(7), 822.

Ferguson, S. L., G. Moore, E. W., & Hull, D. M. (2020). Finding Latent Groups in Observed Data: A Primer on Latent Profile Analysis in Mplus for Applied Researchers. *International Journal of Behavioral Development*, *44*(5), 458-468.

Festinger, L. (1962). Cognitive Dissonance. *Scientific American*, *207*(4), 93-106.

Fincham, F. D., & Linfield, K. J. (1997). A New Look at Marital Quality: Can Spouses Feel Positive and Negative About Their Marriage? *Journal of Family Psychology*, *11*(4), 489.

Fincham, F. D., & Rogge, R. (2010). Understanding Relationship Quality: Theoretical Challenges and New Tools for Assessment. *Journal of Family Theory & Review*, *2*(4), 227-242.

Finkel, E. J., Simpson, J. A., & Eastwick, P. W. (2017). The Psychology of Close Relationships: Fourteen Core Principles. *Annual Review of Psychology*, *68*(1), 383-411.

Fisher, C., Gross, J., & Zuch, J. (1965). Cycle of Penile Erection Synchronous with Dreaming (REM) Sleep. *Archives of General Psychiatry*, *12*(1), 29-45.

Flynn, K. E., Lin, L., Bruner, D. W., Cyranowski, J. M., Hahn, E. A., Jeffery, D. D., Reese, J. B., Reeve, B. B., Shelby, R. A., Weinfurt, K. P. (2016). Sexual Satisfaction and the Importance of Sexual Health to Quality of Life Throughout the Life Course of Us Adults. *The Journal of Sexual Medicine*, *13*(11), 1642-1650.

Fowers, B. J., Laurenceau, J.-P., Penfield, R. D., Cohen, L. M., Lang, S. F., Owenz, M. B., & Pasipanodya, E. (2016). Enhancing Relationship Quality Measurement: The Development of the Relationship Flourishing Scale. *Journal of Family Psychology*, *30*(8), 997.

Frederick, D. A., Lever, J., Gillespie, B. J., & Garcia, J. R. (2017). What Keeps Passion Alive? Sexual Satisfaction Is Associated with Sexual Communication, Mood Setting, Sexual Variety, Oral Sex, Orgasm, and Sex Frequency in a National Us Study. *The Journal of Sex Research*, *54*(2), 186-201.

Frérart, L., De Roovere, C., Sels, L., Ceulemans, E., Janssen, E., & Kuppens, P. (2025). In the Mood: How Sexual Desire Predicts and Is Predicted by Romantic Partners' Mood. *The Journal of Sex Research*, *62*(5), 832-842.

Gable, S. L. (2006). Approach and Avoidance Social Motives and Goals. *Journal of Personality*, *74*(1), 175-222.

Gable, S. L., & Impett, E. A. (2012). Approach and Avoidance Motives and Close Relationships. *Social and Personality Psychology Compass*, *6*(1), 95-108.

Galician, M.-L. (2004). *Sex, Love, and Romance in the Mass Media: Analysis and Criticism of Unrealistic Portrayals and Their Influence*. Routledge.

Geisen, E. (2022). Improve Data Quality by Using a Commitment Request Instead of Attention Checks. Available online at: https://www.qualtrics.com/blog/attention-checks-and-data-quality/

Girard, A. (2019). Sexual Desire Discrepancy. *Current Sexual Health Reports*, *11*, 80-83.

Goldey, K. L., & van Anders, S. M. (2012). Sexual Arousal and Desire: Interrelations and Responses to Three Modalities of Sexual Stimuli. *The Journal of Sexual Medicine*, *9*(9), 2315-2329.

Gómez-López, M., Viejo, C., & Ortega-Ruiz, R. (2019). Psychological Well-Being During Adolescence: Stability and Association with Romantic Relationships. *Frontiers in Psychology*, *10*, 1772.

Gonzalez-Rivas, S. K., & Peterson, Z. D. (2020). Women's Sexual Initiation in Same-and Mixed-Sex Relationships: How Often and How? *The Journal of Sex Research*.

Graham, C. A. (2016). Reconceptualising Women's Sexual Desire and Arousal in DSM-5. *Psychology & Sexuality*, *7*(1), 34-47.

Graham, C. A., Sanders, S. A., Milhausen, R. R., & McBride, K. R. (2004). Turning on and Turning Off: A Focus Group Study of the Factors That Affect Women's Sexual Arousal. *Archives of Sexual Behavior*, *33*, 527-538.

Hagenaars, J. A. (1993). *Loglinear Models with Latent Variables*. Sage.

Hall, K. S., Binik, Y., & Di Tomasso, E. (1985). Concordance between Physiological and Subjective Measures of Sexual Arousal. *Behaviour Research and Therapy*, *23*(3), 297-303.

Halleröd, B., & Seldén, D. (2013). The Multi-Dimensional Characteristics of Wellbeing: How Different Aspects of Wellbeing Interact and Do Not Interact with Each Other. *Social Indicators Research*, *113*(3), 807-825.

Handy, A. B., & Meston, C. M. (2016). Interoceptive Awareness Moderates the Relationship between Perceived and Physiological Genital Arousal in Women. *The Journal of Sexual Medicine*, *13*(12), 1907-1914.

Handy, A. B., & Meston, C. M. (2018). Interoception and Awareness of Physiological Sexual Arousal in Women with Sexual Arousal Concerns. *Journal of Sex & Marital Therapy*, *44*(4), 398-409.

Handy, A. B., Stanton, A. M., & Meston, C. M. (2018). Understanding Women's Subjective Sexual Arousal within the Laboratory: Definition, Measurement, and Manipulation. *Sexual Medicine Reviews*, *6*(2), 201-216.

Harmon-Jones, E. (2000). Cognitive Dissonance and Experienced Negative Affect: Evidence That Dissonance Increases Experienced Negative Affect Even in the Absence of Aversive Consequences. *Personality and Social Psychology Bulletin*, *26*(12), 1490-1501.

Harmon-Jones, E., & Harmon-Jones, C. (2012). Cognitive Dissonance Theory. *Handbook of Motivation Science*, *71*, 377-397.

Harris, E. A., Hornsey, M. J., Hofmann, W., Jern, P., Murphy, S. C., Hedenborg, F., & Barlow, F. K. (2023). Does Sexual Desire Fluctuate More among Women Than Men? *Archives of Sexual Behavior*, *52*(4), 1461-1478.

Hassebrauck, M., & Fehr, B. (2002). Dimensions of Relationship Quality. *Personal Relationships*, *9*(3), 253-270.

Heiman, J. R., Long, J. S., Smith, S. N., Fisher, W. A., Sand, M. S., & Rosen, R. C. (2011). Sexual Satisfaction and Relationship Happiness in Midlife and Older Couples in Five Countries. *Archives of Sexual Behavior*, *40*, 741-753.

Heiman, J. R., Rupp, H., Janssen, E., Newhouse, S. K., Brauer, M., & Laan, E. (2011). Sexual Desire, Sexual Arousal and Hormonal Differences in Premenopausal Us and

Dutch Women with and without Low Sexual Desire. *Hormones and Behavior*, *59*(5), 772-779.

Henderson-King, D. H., & Veroff, J. (1994). Sexual Satisfaction and Marital Well-Being in the First Years of Marriage. *Journal of Social and Personal Relationships*, *11*(4), 509-534.

Hendrick, C., & Hendrick, S. S. (2004). Sex and Romantic Love: Connects and Disconnects. In *The Handbook of Sexuality in Close Relationships* (pp. 159-182). Psychology Press.

Henning, M. A., Lyndon, M., Hawken, S. J., & Webster, C. S. (2018). Mind–Body Processes. In *Wellbeing in Higher Education* (pp. 7-19). Routledge.

Hill, C. T., Rubin, Z., Peplau, L. A., & Willard, S. G. (1979). The Volunteer Couple: Sex Differences, Couple Commitment, and Participation in Research on Interpersonal Relationships. *Social Psychology Quarterly*, 415-420.

Hipp, J. R., & Bauer, D. J. (2006). Local Solutions in the Estimation of Growth Mixture Models. *Psychological methods*, *11*(1), 36.

Hoon, P. W., Wincze, J. P., & Hoon, E. F. (1976). Physiological Assessment of Sexual Arousal in Women. *Psychophysiology*, *13*(3), 196-204. https://doi.org/10.1111/j.1469-8986.1976.tb00097.x

Huang, L., & Galinsky, A. D. (2011). Mind–Body Dissonance: Conflict between the Senses Expands the Mind's Horizons. *Social Psychological and Personality Science*, *2*(4), 351-359.

Huang, L., & Whitson, J. (2020). Organizational Costs of Compensating for Mind-Body Dissonance through Conspiracies and Superstitions. *Organizational Behavior and Human Decision Processes*, *156*, 1-12.

Impett, E. A., Gordon, A. M., Kogan, A., Oveis, C., Gable, S. L., & Keltner, D. (2010). Moving Toward More Perfect Unions: Daily and Long-Term Consequences of Approach and Avoidance Goals in Romantic Relationships. *Journal of Personality and Social Psychology*, *99*(6), 948.

Impett, E., Muise, A., & Rosen, N. (2015). Is It Good to Be Giving in the Bedroom? A Prosocial Perspective on Sexual Health and Well-Being in Romantic Relationships. *Current Sexual Health Reports*, *7*.

Impett, E. A., Muise, A., & Harasymchuk, C. (2019). Giving in the Bedroom: The Costs and Benefits of Responding to a Partner's Sexual Needs in Daily Life. *Journal of Social and Personal Relationships*, *36*(8), 2455-2473.

Impett, E. A., Muise, A., & Peragine, D. (2014). Sexuality in the Context of Relationships.

Impett, E. A., & Peplau, L. A. (2003). Sexual Compliance: Gender, Motivational, and Relationship Perspectives. *Journal of Sex Research*, *40*(1), 87-100.

Impett, E. A., Peplau, L. A., & Gable, S. L. (2005). Approach and Avoidance Sexual Motives: Implications for Personal and Interpersonal Well-Being. *Personal Relationships*, *12*(4), 465-482.

Impett, E. A., Strachman, A., Finkel, E. J., & Gable, S. L. (2008). Maintaining Sexual Desire in Intimate Relationships: The Importance of Approach Goals. *Journal of Personality and Social Psychology*, *94*(5), 808.

Jaderek, I., & Lew-Starowicz, M. (2019). A Systematic Review on Mindfulness Meditation–Based Interventions for Sexual Dysfunctions. *The Journal of Sexual Medicine*, *16*(10), 1581-1596. https://doi.org/10.1016/j.jsxm.2019.07.019

Jamieson, J. P. (2017). Challenge and Threat Appraisals. *Handbook of Competence and Motivation: Theory and Application*, *2*, 175-191.

Jamieson, J. P., Nock, M. K., & Mendes, W. B. (2012). Mind over Matter: Reappraising Arousal Improves Cardiovascular and Cognitive Responses to Stress. *Journal of Experimental Psychology*, *141*(3), 417.

Janssen, E. (2007). *The Psychophysiology of Sex*. Indiana University Press.

Janssen, E. (2011). Sexual Arousal in Men: A Review and Conceptual Analysis. *Hormones and Behavior*, *59*(5), 708-716.

Jawed-Wessel, S., & Sevick, E. (2017). The Impact of Pregnancy and Childbirth on Sexual Behaviors: A Systematic Review. *The Journal of Sex Research*, *54*(4-5), 411-423.

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A Survey Method for Characterizing Daily Life Experience: The Day Reconstruction Method. *Science*, *306*(5702), 1776-1780.

Kalmbach, D. A., & Pillai, V. (2014). Daily Affect and Female Sexual Function. *The Journal of Sexual Medicine*, *11*(12), 2938-2954.

Kaplan, H. S. (1974). *New Sex Therapy: Active Treatment of Sexual Dysfunctions* (Brunner/Mazel, Ed.). Routledge.

Kaplan, H. S. (1995). *Sexual Desire Disorders: Dysfunctional Regulation of Sexual Motivation*. Brunner and Mazel.

Karraker, A., DeLamater, J., & Schwartz, C. R. (2011). Sexual Frequency Decline from Midlife to Later Life. *Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, *66*(4), 502-512.

Kenny, D. A. (2018). Reflections on the Actor–Partner Interdependence Model. *Personal Relationships*, *25*(2), 160-170.

Kenny, D. A., & Ledermann, T. (2010). Detecting, Measuring, and Testing Dyadic Patterns in the Actor–Partner Interdependence Model. *Journal of Family Psychology*, *24*(3), 359.

Kjell, O. N., & Diener, E. (2021). Abbreviated Three-Item Versions of the Satisfaction with Life Scale and the Harmony in Life Scale Yield as Strong Psychometric Properties as the Original Scales. *Journal of Personality Assessment*, *103*(2), 183-194.

Kleinplatz, P. J. (2011). Arousal and Desire Problems: Conceptual, Research and Clinical Considerations or the More Things Change the More They Stay the Same. *Sexual and Relationship Therapy*, *26*(1), 3-15.

Kling, J. M., Kelly, M., Rullo, J., Kapoor, E., Kuhle, C. L., Vegunta, S., Mara, K. C., Faubion, S. S. (2019). Association between Menopausal Symptoms and Relationship Distress. *Maturitas*, *130*, 1-5.

Knee, C. R., & Canevello, A. (2006). Implicit Theories of Relationships and Coping in Romantic Relationships. In K. D. Vohs & E. J. Finkel (Eds.), *Self and relationships: Connecting intrapersonal and interpersonal processes* (pp. 160–176). The Guilford Press.

Korff, J., & Geer, J. H. (1983). The Relationship between Sexual Arousal Experience and Genital Response. *Psychophysiology*, *20*(2), 121-127.

Laan, E., & Both, S. (2008). What Makes Women Experience Desire? *Feminism & Psychology*, *18*(4), 505-514.

Lapping-Carr, L., Mustanski, B., Ryan, D. T., Costales, C., & Newcomb, M. E. (2023). Stress and Depression Are Associated with Sexual Function and Satisfaction in Young Men Who Have Sex with Men. *Archives of Sexual Behavior*, *52*(5), 2083-2096.

Laumann, E. O., Paik, A., Glasser, D. B., Kang, J.-H., Wang, T., Levinson, B., Moreira, E. D., Nicolosi, A., Gingell, C. (2006). A Cross-National Study of Subjective Sexual Well-Being among Older Women and Men: Findings from the Global Study of Sexual Attitudes and Behaviors. *Archives of Sexual Behavior*, *35*(2), 143-159.

Laumann, E. O., Paik, A., & Rosen, R. C. (1999). Sexual Dysfunction in the United States: Prevalence and Predictors. *Jama*, *281*(6), 537-544.

Lawless, N. J., Karantzas, G. C., Mullins, E. R., & McCabe, M. P. (2022). Does It Matter Who You Feel Sexually Aroused By? Associations between Sexual Arousal, Relationship Quality, and Sexual Satisfaction. *Sexual Medicine*, *10*(4), 100523-100523.

Lawrance, K., Byers, E. S., & Cohen, J. N. (1998). Interpersonal Exchange Model of Sexual Satisfaction Questionnaire. *Sexuality Related Measures: A Compendium*, *2*, 514-519.

Leavitt, C. E., & Willoughby, B. J. (2015). Associations between Attempts at Physical Intimacy and Relational Outcomes among Cohabiting and Married Couples. *Journal of Social and Personal Relationships*, *32*(2), 241-262.

Ledermann, T., & Kenny, D. A. (2017). Analyzing Dyadic Data with Multilevel Modeling Versus Structural Equation Modeling: A Tale of Two Methods. *Journal of Family Psychology*, *31*(4), 442.

Leigh, B. C. (1989). Reasons for Having and Avoiding Sex: Gender, Sexual Orientation, and Relationship to Sexual Behavior. *Journal of Sex Research*, *26*(2), 199-209.

Levine, S. B. (2002). Reexploring the Concept of Sexual Desire. *Journal of Sex &Marital Therapy*, *28*(1), 39-51.

Levine, S. B. (2003). The Nature of Sexual Desire: A Clinician's Perspective. *Archives of Sexual Behavior*, *32*, 279-285.

Lief, H. I. (1977). Inhibited Sexual Desire. *Medical Aspects of Human Sexuality*, *7*(1), 94-95.

Litzinger, S., & Gordon, K. C. (2005). Exploring Relationships among Communication, Sexual Satisfaction, and Marital Satisfaction. *Journal of Sex & Marital Therapy*, *31*(5), 409-424.

Liu, C. (2003). Does Quality of Marital Sex Decline with Duration? *Archives of Sexual Behavior*, *32*, 55-60.

Lo, Y., Mendell, N. R., & Rubin, D. B. (2001). Testing the Number of Components in a Normal Mixture. *Biometrika*, *88*(3), 767-778.

Loewenstein, G., Krishnamurti, T., Kopsic, J., & Mcdonald, D. (2015). Does Increased Sexual Frequency Enhance Happiness? *Journal of Economic Behavior & Organization*, *116*, 206-218.

Londero-Santos, A., Natividade, J. C., & Féres-Carneiro, T. (2021). Do Romantic Relationships Promote Happiness? Relationships' Characteristics as Predictors of Subjective Well-Being. *Interpersona: An International Journal on Personal Relationships*, *15*(1), 3-19.

Lorimer, K., DeAmicis, L., Dalrymple, J., Frankis, J., Jackson, L., Lorgelly, P., McMillan, L., Ross, J. (2019). A Rapid Review of Sexual Wellbeing Definitions and Measures: Should We Now Include Sexual Wellbeing Freedom? *The Journal of Sex Research*, *56*(7), 843-853.

Lubke, G., & Muthén, B. O. (2007). Performance of Factor Mixture Models as a Function of Model Size, Covariate Effects, and Class-Specific Parameters. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(1), 26-47.

Lubke, G., & Neale, M. C. (2006). Distinguishing between Latent Classes and Continuous Factors: Resolution by Maximum Likelihood? *Multivariate Behavioral Research*, *41*(4), 499-532.

Ma-Kellams, C. (2014). Cross-Cultural Differences in Somatic Awareness and Interoceptive Accuracy: A Review of the Literature and Directions for Future Research. *Frontiers in Psychology*, *5*, 1379.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power Analysis and Determination of Sample Size for Covariance Structure Modeling. *Psychological Methods*, *1*(2), 130.

Mark, K. P. (2014). The Impact of Daily Sexual Desire and Daily Sexual Desire Discrepancy on the Quality of the Sexual Experience in Couples. *The Canadian Journal of Human Sexuality*, *23*(1), 27-33.

Mark, K. P. (2015). Sexual Desire Discrepancy. *Current Sexual Health Reports*, *7*(3), 198-202.

Mark, K. P., & Lasslo, J. A. (2018). Maintaining Sexual Desire in Long-Term Relationships: A Systematic Review and Conceptual Model. *The Journal of Sex Research*, *55*(4-5), 563-581.

Mark, K. P., & Murray, S. H. (2012). Gender Differences in Desire Discrepancy as a Predictor of Sexual and Relationship Satisfaction in a College Sample of Heterosexual Romantic Relationships. *Journal of Sex & Marital Therapy*, *38*(2), 198-215.

Martin, K. M., & Woodgate, R. L. (2020). Concept Analysis: The Holistic Nature of Sexual Well-Being. *Sexual and Relationship Therapy*, *35*(1), 15-29.

Masters, W. H., & Johnson, V. E. (1966). *Human Sexual Response*. Little, Brown.

Mathew, A., & Doorenbos, A. Z. (2022). Latent Profile Analysis–an Emerging Advanced Statistical Approach to Subgroup Identification. *Indian Journal of Continuing Nursing Education*, *23*(2), 127-133.

Mathew, R. J., & Weinman, M. L. (1982). Sexual Dysfunctions in Depression. *Archives of Sexual Behavior*, *11*(4), 323-328.

Maxwell, J. A., Muise, A., MacDonald, G., Day, L. C., Rosen, N. O., & Impett, E. A. (2017). How Implicit Theories of Sexuality Shape Sexual and Relationship Well-Being. *Journal of Personality and Social Psychology*, *112*(2), 238.

McCabe, M. P. (1997). Intimacy and Quality of Life among Sexually Dysfunctional Men and Women. *Journal of Sex & Marital Therapy*, *23*(4), 276-290.

McKeever, N. (2016). Love: What's Sex Got to Do with It? *International Journal of Applied Philosophy*, *30*(2), 201-218.

McLachlan, G., & Peel, D. (2000). Finite Mixture Models. *A wiley-interscience publication*.

McNulty, J. K., & Fisher, T. D. (2008). Gender Differences in Response to Sexual Expectancies and Changes in Sexual Frequency: A Short-Term Longitudinal Study of Sexual Satisfaction in Newly Married Couples. *Archives of Sexual Behavior*, *37*(2), 229-240.

McNulty, J. K., Wenner, C. A., & Fisher, T. D. (2016). Longitudinal Associations among Relationship Satisfaction, Sexual Satisfaction, and Frequency of Sex in Early Marriage. *Archives of Sexual Behavior*, *45*, 85-97.

McNulty, J. K., & Widman, L. (2013). The Implications of Sexual Narcissism for Sexual and Marital Satisfaction. *Archives of Sexual Behavior*, *42*, 1021-1032.

Meisler, A. W., & Carey, M. P. (1991). Depressed Affect and Male Sexual Arousal. *Archives of Sexual Behavior*, *20*, 541-554.

Meltzer, A. L., Makhanova, A., Hicks, L. L., French, J. E., McNulty, J. K., & Bradbury, T. N. (2017). Quantifying the Sexual Afterglow: The Lingering Benefits of Sex and Their Implications for Pair-Bonded Relationships. *Psychological Science*, *28*(5), 587-598.

Mendes, W. B., Blascovich, J., Lickel, B., & Hunter, S. (2002). Challenge and Threat During Social Interactions with White and Black Men. *Personality and Social Psychology Bulletin*, *28*(7), 939-952.

Mendes, W. B., Gray, H. M., Mendoza-Denton, R., Major, B., & Epel, E. S. (2007). Why Egalitarianism Might Be Good for Your Health: Physiological Thriving During Stressful Intergroup Encounters. *Psychological Science*, *18*(11), 991-998.

Merwin, K. E., & Rosen, N. O. (2020). Perceived Partner Responsiveness Moderates the Associations between Sexual Talk and Sexual and Relationship Well-Being in Individuals in Long-Term Relationships. *The Journal of Sex Research*, *57*(3), 351–364.

Meston, C. M., & Buss, D. M. (2007). Why Humans Have Sex. *Archives of Sexual Behavior*, *36*, 477-507.

Meston, C. M., & Stanton, A. M. (2019). Understanding Sexual Arousal and Subjective–Genital Arousal Desynchrony in Women. *Nature Reviews Urology*, *16*(2), 107-120.

Mitchell, K. R., Lewis, R., O'Sullivan, L. F., & Fortenberry, J. D. (2021). What Is Sexual Wellbeing and Why Does It Matter for Public Health? *The Lancet Public Health*, *6*(8), e608-e613.

Mitchell, K. R., Wellings, K. A., & Graham, C. (2014). How Do Men and Women Define Sexual Desire and Sexual Arousal? *Journal of Sex & Marital Therapy*, *40*(1), 17-32.

Mize, S. J. S. (2015). A Review of Mindfulness-Based Sex Therapy Interventions for Sexual Desire and Arousal Difficulties: From research to Practice. *Current Sexual Health Reports*, *7*(2), 89-97.

Mollaioli, D., Sansone, A., Ciocca, G., Limoncin, E., Colonnello, E., Di Lorenzo, G., & Jannini, E. A. (2021). Benefits of Sexual Activity on Psychological, Relational, and Sexual Health During the Covid-19 Breakout. *The Journal of Sexual Medicine*, *18*(1), 35-49.

Montesi, J. L., Fauber, R. L., Gordon, E. A., & Heimberg, R. G. (2011). The Specific Importance of Communicating About Sex to Couples' Sexual and Overall

Relationship Satisfaction. *Journal of Social and Personal Relationships*, *28*(5), 591-609.

Morokoff, P. J. (1986). Volunteer Bias in the Psychophysiological Study of Female Sexuality. *Journal of Sex Research*, *22*(1), 35-51.

Mües, H. M., Markert, C., Feneberg, A. C., & Nater, U. M. (2025a). Bidirectional Associations between Daily Subjective Stress and Sexual Desire, Arousal, and Activity in Healthy Men and Women. *Annals of Behavioral Medicine*, *59*(1), kaaf007.

Mües, H. M., Markert, C., Feneberg, A. C., & Nater, U. M. (2025b). Too Stressed for Sex? Associations between Stress and Sex in Daily Life. *Psychoneuroendocrinology*, 107583.

Muise, A., Boudreau, G. K., & Rosen, N. O. (2017). Seeking Connection Versus Avoiding Disappointment: An Experimental Manipulation of Approach and Avoidance Sexual Goals and the Implications for Desire and Satisfaction. *The Journal of Sex Research*, *54*(3), 296-307.

Muise, A., Giang, E., & Impett, E. A. (2014). Post Sex Affectionate Exchanges Promote Sexual and Relationship Satisfaction. *Archives of Sexual Behavior*, *43*(7), 1391-1402.

Muise, A., & Impett, E. A. (2015). Good, Giving, and Game:The Relationship Benefits of Communal Sexual Motivation. *Social Psychological and Personality Science*, *6*(2), 164-172.

Muise, A., & Impett, E. A. (2016). Applying Theories of Communal Motivation to Sexuality. *Social and Personality Psychology Compass*, *10*(8), 455-467.

Muise, A., Impett, E. A., & Desmarais, S. (2013). Getting It on Versus Getting It over With: Sexual Motivation, Desire, and Satisfaction in Intimate Bonds. *Personality and Social Psychology Bulletin*, *39*(10), 1320-1332.

Muise, A., Kim, J. J., McNulty, J. K., & Impett, E. A. (2016). The Positive Implications of Sex for Relationships. *In* C. Knee & H. Reis (Eds.), *Advances in Personal Relationships, Vol. 1: Positive approaches to optimal relationship development.*

Muise, A., Kovacevic, K., Shoikhedbrod, A., & Uppot, A. (2023). The Benefits (and Costs) of Sexual Responsiveness in Romantic Relationships. *Current Opinion in Psychology*, *52*, 101644.

Muise, A., Maxwell, J. A., & Impett, E. A. (2018). What Theories and Methods from Relationship Research Can Contribute to Sex Research. *The Journal of Sex Research*, *55*(4-5), 540-562.

Muise, A., Schimmack, U., & Impett, E. A. (2016). Sexual Frequency Predicts Greater Well-Being, but More Is Not Always Better. *Social Psychological and Personality Science*, *7*(4), 295-302.

Muthén, L., & Muthén, B. (2023). Version 8.9 and 8.10 Mplus Language Addendum. *Los Angeles, CA: Author. Retrieved Jan*, *2*, 2024.

Nappi, R. E., & Lachowsky, M. (2009). Menopause and Sexuality: Prevalence of Symptoms and Impact on Quality of Life. *Maturitas*, *63*(2), 138-141.

Narrow, W. E., Clarke, D. E., Kuramoto, S. J., Kraemer, H. C., Kupfer, D. J., Greiner, L., & Regier, D. A. (2013). Dsm-5 Field Trials in the United States and Canada, Part Iii: Development and Reliability Testing of a Cross-Cutting Symptom Assessment for Dsm-5. *American Journal of Psychiatry*, *170*(1), 71-82.

Niedenthal, P. M. (2007). Embodying Emotion. *Science*, *316*(5827), 1002-1005.

Nylund, K. L., Asparouhov, T., & Muthén, B. O. (2007). Deciding on the Number of Classes in Latent Class Analysis and Growth Mixture Modeling: A Monte Carlo Simulation Study. *Structural equation modeling: A multidisciplinary Journal*, *14*(4), 535-569.

Ochs, E. P., & Binik, Y. M. (1999). The Use of Couple Data to Determine the Reliability of Self-Reported Sexual Behavior. *Journal of Sex Research*, *36*(4), 374-384.

Pancheva, M. G., Ryff, C. D., & Lucchini, M. (2021). An Integrated Look at Well-Being: Topological Clustering of Combinations and Correlates of Hedonia and Eudaimonia. *Journal of Happiness Studies*, *22*, 2275-2297.

Park, H. G., Leonhardt, N. D., Johnson, M. D., Muise, A., Busby, D. M., Hanna-Walker, V. R., Yorgason, J. B., Holmes, E. K., Impett, E. A. (2023). Sexual Satisfaction Predicts Future Changes in Relationship Satisfaction and Sexual Frequency: New Insights from within-Person Associations over Time. *Personality Science*, *4*(1), e11869.

Pateraki, E., & Roussi, P. (2012). Marital Quality and Well-Being: The Role of Gender, Marital Duration, Social Support and Cultural Context. In *A Positive Psychology Perspective on Quality of Life* (pp. 125-145). Springer.

Pfaus, J. G., Kippin, T. E., & Coria-Avila, G. (2003). What Can Animal Models Tell Us About Human Sexual Response? *Annual Review of Sex Research*, *14*(1), 1-63.

Philippe, F. L., Vallerand, R. J., Bernard-Desrosiers, L., Guilbault, V., & Rajotte, G. (2017). Understanding the Cognitive and Motivational Underpinnings of Sexual Passion from a Dualistic Model. *Journal of Personality and Social Psychology*, *113*(5), 769.

Poerio, G. L., Klabunde, M., Bird, G., & Murphy, J. (2024). Interoceptive Attention and Mood in Daily Life: An Experience-Sampling Study. *Philosophical Transactions of the Royal Society B*, *379*(1908), 20230256.

Price, C. J., & Thompson, E. A. (2007). Measuring Dimensions of Body Connection: Body Awareness and Bodily Dissociation. *The Journal of Alternative and Complementary Medicine*, *13*(9), 945-953.

Quinn-Nilas, C. (2020). Relationship and Sexual Satisfaction: A Developmental Perspective on Bidirectionality. *Journal of Social and Personal Relationships*, *37*(2), 624-646.

Regan, P. C. (2000). The Role of Sexual Desire and Sexual Activity in Dating Relationships. *Social Behavior and Personality*, *28*(1), 51-59.

Regan, P. C., & Atkins, L. (2006). Sex Differences and Similarities in Frequency and Intensity of Sexual Desire. *Social Behavior and Personality*, *34*(1), 95-102.

Regan, P. C., & Berscheid, E. (1999). *Lust: What We Know About Human Sexual Desire*. Sage Publications.

Rehman, U. S., Balan, D., Sutherland, S., & McNeil, J. (2019). Understanding Barriers to Sexual Communication. *Journal of Social and Personal Relationships*, *36*(9), 2605-2623.

Reis, H. T., Crasta, D., Rogge, R. D., Maniaci, M. R., & Carmichael, C. L. (2017). Perceived Partner Responsiveness Scale (PPRS). In *The Sourcebook of Listening Research* (eds D. L. Worthington and G. D. Bodie).

Roels, R., & Janssen, E. (2020). Sexual and Relationship Satisfaction in Young, Heterosexual Couples: The Role of Sexual Frequency and Sexual Communication. *The Journal of Sexual Medicine*, *17*(9), 1643-1652.

Røsand, G.-M. B., Slinning, K., Eberhard-Gran, M., Røysamb, E., & Tambs, K. (2012). The Buffering Effect of Relationship Satisfaction on Emotional Distress in Couples. *BMC Public Health*, *12*, 1-13.

Rosen, N. O., Bailey, K., & Muise, A. (2018). Degree and Direction of Sexual Desire Discrepancy Are Linked to Sexual and Relationship Satisfaction in Couples Transitioning to Parenthood. *The Journal of Sex Research*, *55*(2), 214-225.

Rosen, N. O., Corsini-Munt, S., Dubé, J. P., Boudreau, C., & Muise, A. (2020). Partner Responses to Low Desire: Associations with Sexual, Relational, and Psychological Well-Being among Couples Coping with Female Sexual Interest/Arousal Disorder. *The Journal of Sexual Medicine*, *17*(11), 2168-2180.

Rosen, N. O., Dube, J. P., Corsini-Munt, S., & Muise, A. (2019). Partners Experience Consequences, Too: A Comparison of the Sexual, Relational, and Psychological Adjustment of Women with Sexual Interest/Arousal Disorder and Their Partners to Control Couples. *The Journal of Sexual Medicine*, *16*(1), 83-95.

Rosen, R. C., Shifren, J. L., Monz, B. U., Odom, D. M., Russo, P. A., & Johannes, C. B. (2009). Correlates of Sexually Related Personal Distress in Women with Low Sexual Desire. *The Journal of Sexual Medicine*, *6*(6), 1549-1560.

Ross, C. E. (1995). Reconceptualizing Marital Status as a Continuum of Social Attachment. *Journal of Marriage and the Family*, 129-140.

Rossi, M. A., Impett, E. A., Dawson, S. J., Vannier, S., Kim, J., & Rosen, N. O. (2022). A Longitudinal Investigation of Couples' Sexual Growth and Destiny Beliefs in the Transition to Parenthood. *Archives of Sexual Behavior*, *51*(3), 1559-1575.

Rost, J. (2006). Latent-Class-Analyse. *Handbuch der psychologischen Diagnostik*, *4*, 275-287.

Rusbult, C. E. (1983). A Longitudinal Test of the Investment Model: The Development (and Deterioration) of Satisfaction and Commitment in Heterosexual Involvements. *Journal of Personality and Social Psychology*, *45*(1), 101.

Rusbult, C. E., Martz, J. M., & Agnew, C. R. (1998). The Investment Model Scale: Measuring Commitment Level, Satisfaction Level, Quality of Alternatives, and Investment Size. *Personal Relationships*, *5*(4), 357-387.

Ryff, C. D. (1989). Happiness Is Everything, or Is It? Explorations on the Meaning of Psychological Well-Being. *Journal of Personality and Social Psychology*, *57*(6), 1069.

Ryff, C. D., & Keyes, C. L. M. (1995). The Structure of Psychological Well-Being Revisited. *Journal of Personality and Social Psychology*, *69*(4), 719.

Sachs, B. D. (2000). Contextual Approaches to the Physiology and Classification of Erectile Function, Erectile Dysfunction, and Sexual Arousal. *Neuroscience & Biobehavioral Reviews*, *24*(5), 541-560.

Sachs, B. D. (2007). A Contextual Definition of Male Sexual Arousal. *Hormones and Behavior*, *51*(5), 569-578.

Sakheim, D. K., Barlow, D. H., Beck, J. G., & Abrahamson, D. J. (1984). The Effect of an Increased Awareness of Erectile Cues on Sexual Arousal. *Behaviour Research and Therapy*, *22*(2), 151-158.

Santtila, P., Wager, I., Witting, K., Harlaar, N., Jern, P., Johansson, A., Varjonen, M., Sandnabba, N. K. (2007). Discrepancies between Sexual Desire and Sexual Activity: Gender Differences and Associations with Relationship Satisfaction. *Journal of Sex & Marital Therapy*, *34*(1), 31-44.

Sarin, S., Amsel, R. M., & Binik, Y. M. (2013). Disentangling Desire and Arousal: A Classificatory Conundrum. *Archives of Sexual Behavior*, *42*, 1079-1100.

Satcher, D. (2001). The Surgeon General's Call to Action to Promote Sexual Health and Responsible Sexual Behavior. *American Journal of Health Education*, *32*(6), 356-368.

Satcher, D. (2013). Addressing Sexual Health: Looking Back, Looking Forward. *Public Health Reports*, *128*(2), 111-114.

Schmiedeberg, C., Huyer-May, B., Castiglioni, L., & Johnson, M. D. (2017). The More or the Better? How Sex Contributes to Life Satisfaction. *Archives of Sexual Behavior*, *46*, 465-473.

Schmiedeberg, C., & Schröder, J. (2016). Does Sexual Satisfaction Change with Relationship Duration? *Archives of Sexual Behavior*, *45*(1), 99-107.

Schoenfeld, E. A., Loving, T. J., Pope, M. T., Huston, T. L., & Štulhofer, A. (2017). Does Sex Really Matter? Examining the Connections between Spouses' Nonsexual Behaviors, Sexual Frequency, Sexual Satisfaction, and Marital Satisfaction. *Archives of Sexual Behavior*, *46*(2), 489-501.

Schönbrodt, F., & Humberg, S. (2023). Package 'RSA'. *Rural Hall NC USA*.

Schönbrodt, F. D., Humberg, S., & Nestler, S. (2018). Testing Similarity Effects with Dyadic Response Surface Analysis. *European Journal of Personality*, *32*(6), 627-641.

Schumacker, R. E., & Lomax, R. G. (2004). *A Beginner's Guide to Structural Equation Modeling*. Psychology Press.

Schwarz, G. (1978). Estimating the Dimension of a Model. *The Annals of Statistics*, 461-464.

Schwenck, G. C., Bergeron, S., Huberman, J. S., Impett, E. A., Oliveira, H., & Rosen, N. O. (2025). Daily and Prospective Associations between Responses to Sexual Rejection and Sexual Well-Being and Relationship Satisfaction in Couples Coping with Sexual Interest/Arousal Disorder. *Archives of Sexual Behavior*, 1-21.

Sclove, S. L. (1987). Application of Model-Selection Criteria to Some Problems in Multivariate Analysis. *Psychometrika*, *52*, 333-343.

Seery, M. D. (2011). Challenge or Threat? Cardiovascular Indexes of Resilience and Vulnerability to Potential Stress in Humans. *Neuroscience & Biobehavioral Reviews*, *35*(7), 1603-1610.

Seery, M. D. (2013). The Biopsychosocial Model of Challenge and Threat: Using the Heart to Measure the Mind. *Social and Personality Psychology Compass*, *7*(9), 637-653.

Seery, M. D., Kondrak, C. L., Streamer, L., Saltsman, T., & Lamarche, V. M. (2016). Preejection Period Can Be Calculated Using R Peak Instead of Q. *Psychophysiology*, *53*(8), 1232-1240.

Senn, C. Y., & Desmarais, S. (2001). Are Our Recruitment Practices for Sex Studies Working across Gender? The Effect of Topic and Gender of Recruiter on Participation Rates of University Men and Women. *Journal of Sex Research*, *38*(2), 111-117.

Seth, A. K. (2013). Interoceptive Inference, Emotion, and the Embodied Self. *Trends in Cognitive Sciences*, *17*(11), 565-573.

Shanock, L. R., Baran, B. E., Gentry, W. A., Pattison, S. C., & Heggestad, E. D. (2010). Polynomial Regression with Response Surface Analysis: A Powerful Approach for Examining Moderation and Overcoming Limitations of Difference Scores. *Journal of Business and Psychology*, *25*, 543-554.

Shek, D. T. (1995). Marital Quality and Psychological Well-Being of Married Adults in a Chinese Context. *The Journal of Genetic Psychology*, *156*(1), 45-56.

Shen, S. (2019). Chronic Disease Burden, Sexual Frequency, and Sexual Dysfunction in Partnered Older Adults. *Journal of Sex & Marital Therapy*, *45*(8), 706-720.

Sherwood, A., Allen, M. T., Fahrenberg, J., Kelsey, R. M., Lovallo, W. R., & Van Doornen, L. J. (1990). Methodological Guidelines for Impedance Cardiography. *Psychophysiology*, *27*(1), 1-23.

Shi, D., Lee, T., & Terry, R. A. (2018). Revisiting the Model Size Effect in Structural Equation Modeling. *Structural Equation Modeling: A Multidisciplinary Journal*, *25*(1), 21-40.

Simeon, D., Riggio-Rosen, A., Guralnik, O., Knutelska, M., & Nelson, D. (2003). Depersonalization Disorder: Dissociation and Affect. *Journal of Trauma & Dissociation*, *4*(4), 63-76.

Singer, B., & Toates, F. M. (1987). Sexual Motivation. *Journal of Sex Research*, *23*(4), 481-501.

Sintchak, G., & Geer, J. H. (1975). A Vaginal Plethysmograph System. *Psychophysiology*, *12*(1), 113-115.

Smith, A., Lyons, A., Ferris, J., Richters, J., Pitts, M., Shelley, J., & Simpson, J. M. (2011). Sexual and Relationship Satisfaction among Heterosexual Men and Women: The Importance of Desired Frequency of Sex. *Journal of Sex & Marital Therapy*, *37*(2), 104-115.

Snell Jr, W. E., & Papini, D. R. (1989). The Sexuality Scale: An Instrument to Measure Sexual-Esteem, Sexual-Depression, and Sexual-Preoccupation.

Sprecher, S. (2002). Sexual Satisfaction in Premarital Relationships: Associations with Satisfaction, Love, Commitment, and Stability. *The Journal of Sex Research*, *39*(3), 190-196.

Sprecher, S., Cate, R. M., Harvey, J., & Wenzel, A. (2004). Sexual Satisfaction and Sexual Expression as Predictors of Relationship Satisfaction and Stability. *The Handbook of Sexuality in Close Relationships*, *235*, 256.

Sprecher, S., & Regan, P. C. (2002). Liking Some Things (in Some People) More Than Others: Partner Preferences in Romantic Relationships and Friendships. *Journal of Social and Personal Relationships*, *19*(4), 463-481.

Spurk, D., Hirschi, A., Wang, M., Valero, D., & Kauffeld, S. (2020). Latent Profile Analysis: A Review and "How to" Guide of Its Application within Vocational Behavior Research. *Journal of Vocational Behavior*, *120*, 103445.

Stack, S., & Eshleman, J. R. (1998). Marital Status and Happiness: A 17-Nation Study. *Journal of Marriage and the Family*, 527-536.

Stein, D. J., Schmeidler, J., & Hollander, E. (1997). Feeling Unreal: 30 Cases of Dsm-Iii-R Depersonalization Disorder. *Am J Psychiatry*, *154*, 1107-1113.

Stephenson, K. R., & Meston, C. M. (2015a). The Conditional Importance of Sex: Exploring the Association between Sexual Well-Being and Life Satisfaction. *Journal of Sex & Marital Therapy*, *41*(1), 25-38.

Stephenson, K. R., & Meston, C. M. (2015b). Why Is Impaired Sexual Function Distressing to Women? The Primacy of Pleasure in Female Sexual Dysfunction. *The Journal of Sexual Medicine*, *12*(3), 728-737.

Stephenson, K. R., Truong, L., & Shimazu, L. (2018). Why Is Impaired Sexual Function Distressing to Men? Consequences of Impaired Male Sexual Function and Their Associations with Sexual Well-Being. *The Journal of Sexual Medicine*, *15*(9), 1336-1349.

Strassberg, D. S., & Lowe, K. (1995). Volunteer Bias in Sexuality Research. *Archives of Sexual Behavior*, *24*(4), 369-382.

Suschinsky, K., D., & Lalumière, M., L. (2011). Prepared for Anything?: An Investigation of Female Genital Arousal in Response to Rape Cues. *Psychological Science*, *22*(2), 159-165.

Sutherland, S., & Rehman, U. S. (2018). Viewing Sexual Desire as Stable Versus Fluid: The Impact of Implicit Beliefs on Women's Coping with Sexual Desire Problems. *Journal of Sex & Marital Therapy*, *44*(4), 410-420.

Sutton, R. I. (1991). Maintaining Norms About Expressed Emotions: The Case of Bill Collectors. *Administrative Science Quarterly*, 245-268.

Tavares, I. M., Schlagintweit, H. E., Nobre, P. J., & Rosen, N. O. (2019). Sexual Well-Being and Perceived Stress in Couples Transitioning to Parenthood: A Dyadic Analysis. *International Journal of Clinical and Health Psychology*, *19*(3), 198-208.

Tein, J.-Y., Coxe, S., & Cham, H. (2013). Statistical Power to Detect the Correct Number of Classes in Latent Profile Analysis. *Structural Equation Modeling: A Multidisciplinary Journal*, *20*(4), 640-657.

Ter Kuile, M. M., Vigeveno, D., & Laan, E. (2007). Preliminary Evidence That Acute and Chronic Daily Psychological Stress Affect Sexual Arousal in Sexually Functional Women. *Behaviour Research and Therapy*, *45*(9), 2078-2089.

Thibault, J., & Kelley, H. (1978). Interpersonal Relations. *NY: Wiley*.

Till, B., Tran, U. S., & Niederkrotenthaler, T. (2016). Relationship Satisfaction and Risk Factors for Suicide. *Crisis*.

Toates, F. (2009). An Integrative Theoretical Framework for Understanding Sexual Motivation, Arousal, and Behavior. *Journal of Sex Research*, *46*(2-3), 168-193.

Toledano, R., & Pfaus, J. (2006). The Sexual Arousal and Desire Inventory (SADI): A Multidimensional Scale to Assess Subjective Sexual Arousal and Desire. *The Journal of Sexual Medicine*, *3*(5), 853-877.

Tomaka, J., Blascovich, J., Kibler, J., & Ernst, J. M. (1997). Cognitive and Physiological Antecedents of Threat and Challenge Appraisal. *Journal of Personality and Social Psychology*, *73*(1), 63.

Van Houdenhove, E., Gijs, L., T'Sjoen, G., & Enzlin, P. (2015). Asexuality: A Multidimensional Approach. *The Journal of Sex Research*, *52*(6), 669-678.

Vasconcelos, P., Carrito, M. L., Quinta-Gomes, A. L., Patrão, A. L., Nóbrega, C. A., Costa, P. A., & Nobre, P. J. (2024). Associations between Sexual Health and Well-Being: A Systematic Review. *Bulletin of the World Health Organization*, *102*(12), 873.

Velten, J., Brotto, L. A., Chivers, M. L., Hirschfeld, G., & Margraf, J. (2020). The Power of the Present: Effects of Three Mindfulness Tasks on Women's Sexual Response. *Clinical Psychological Science*, *8*(1), 125-138.

Velten, J., Margraf, J., Chivers, M. L., & Brotto, L. A. (2018). Effects of a Mindfulness Task on Women's Sexual Response. *The Journal of Sex Research*, *55*(6), 747-757.

Velten, J., Tavares, I. M., & Rosen, N. O. (2025). What Factors Are Associated with Sexual Satisfaction, Distress, and Function in Couples? A Systematic Scoping Review of Dyadic Diary Studies. *The Journal of Sex Research*, 1-18.

Vowels, L. M., & Mark, K. P. (2020). Partners' Daily Love and Desire as Predictors of Engagement in and Enjoyment of Sexual Activity. *Journal of Sex & Marital Therapy*, *46*(4), 330-342.

Walen, H. R., & Lachman, M. E. (2000). Social Support and Strain from Partner, Family, and Friends: Costs and Benefits for Men and Women in Adulthood. *Journal of Social and Personal Relationships*, *17*(1), 5-30.

Watson, E., Milhausen, R. R., Wood, J., & Maitland, S. (2017). Sexual Motives in Heterosexual Women with and without Sexual Difficulties. *Journal of Sex and Marital Therapy*, *43*(2), 110-120.

Weis, D. L. (2002). The Need to Integrate Sexual Theory and Research. In *Handbook for Conducting Research on Human Sexuality* (pp. 7-24). Psychology Press.

Weisbuch, M., Seery, M. D., Ambady, N., & Blascovich, J. (2009). On the Correspondence between Physiological and Nonverbal Responses: Nonverbal Behavior Accompanying Challenge and Threat. *Journal of Nonverbal Behavior*, *33*(2), 141-148.

Whalen, R. E. (1966). Sexual Motivation. *Psychological Review*, *73*(2), 151.

Whitton, S. W., Rhoades, G. K., & Whisman, M. A. (2014). Fluctuation in Relationship Quality over Time and Individual Well-Being: Main, Mediated, and Moderated Effects. *Personality and Social Psychology Bulletin*, *40*(7), 858-871.

Whitton, S. W., & Whisman, M. A. (2010). Relationship Satisfaction Instability and Depression. *Journal of Family Psychology*, *24*(6), 791.

Wiederman, M. W. (1999). Volunteer Bias in Sexuality Research Using College Student Participants. *Journal of Sex Research*, *36*(1), 59-66.

Williams, S. E., Cumming, J., & Balanos, G. M. (2010). The Use of Imagery to Manipulate Challenge and Threat Appraisal States in Athletes. *Journal of Sport and Exercise Psychology*, *32*(3), 339-358.

Willoughby, B. J., Farero, A. M., & Busby, D. M. (2014). Exploring the Effects of Sexual Desire Discrepancy among Married Couples. *Archives of Sexual Behavior*, *43*(3), 551-562.

Woo, J. S., Brotto, L. A., & Gorzalka, B. B. (2011). The Role of Sex Guilt in the Relationship between Culture and Women's Sexual Desire. *Archives of Sexual Behavior*, *40*(2), 385-394.

Xia, M., & Hudac, C. M. (2023). Social Connection Constellations and Individual Well-Being Typologies: Using the Loglinear Modeling Approach with Latent Variables. *Journal of Happiness Studies*, *24*(6), 1991-2012.

Young, L. J., & Wang, Z. (2004). The Neurobiology of Pair Bonding. *Nature Neuroscience*, *7*(10), 1048-1054.

Yu, H.-T., & Park, J. (2014). Simultaneous Decision on the Number of Latent Clusters and Classes for Multilevel Latent Class Models. *Multivariate behavioral research*, *49*(3), 232-244.

Yule, M., Woo, J. S., & Brotto, L. A. (2010). Sexual Arousal in East Asian and Euro-Canadian Women: A Psychophysiological Study. *The journal of sexual medicine*, *7*(9), 3066-3079.

Zilbergeld, B. (1980). Desire Discrepancies and Arousal Problems in Sex Therapy. *Principles and Practice of Sex Therapy*.

Appendix A - Supplementary Materials for Chapter 2

A1: Missing Data Analyses for Study 1

As a high proportion of data was removed from the final dataset due to incomplete data or exclusion criteria, data analyses were conducted to compare demographic variables between excluded and retained data to test for differences that might impact the final sample. Excluded participants did not significantly differ in age $t(1002) = -0.55$, $p = .581$, or in their relationship length, $t(890) = 1.59$, $p = .113$ (for means and standard deviations, see Table S2.1). Additionally, there were no significant differences between the excluded and retained participants for gender, $\chi^2(2) = 2.09$, $p = .353$, sexual orientation, $\chi^2(4) = 2.82$, $p = .589$, ethnicity, $\chi^2(1) = 3.20$, $p = .073$, relationship status, $\chi^2(2) = 3.16$, $p = .206$, relationship style, $\chi^2(2) = 0.63$, $p = .728$ (see Table S2.1 for frequencies). Missing data analyses were conducted only on demographic variables as 76% of excluded participants did not answer questions beyond the demographic section.

Table S2.1.
Demographic Frequencies Between Retained Data and Data Removed Due to Incomplete Responses or Exclusion Criteria in Study 1

			Full Dataset	Retained Data	Excluded Data
Mean (SD)		Age	26.92 (7.42)	27.01 (7.90)	26.77 (6.51)
		Relationship Length	4.93 (5.92)	4.73 (6.21)	5.30 (5.34)
N	Gender	Men	241	162	78
		Women	860	537	323
		Other Gender Category	31	20	11
	Sexual Orientation	Heterosexual	770	491	279
		Homosexual	46	33	13
		Bisexual	236	154	82
		Pansexual	44	29	15
		Queer or Another Sexual Orientation	23	12	11
	Ethnicity	White	928	585	343
		Any Other Ethnicity	185	130	55
	Relationship Status	Exclusively Dating	783	513	266
		Engaged	119	76	41
		Married/Civil Union /Common-Law Partnership	220	130	89
	Relationship Style	Monogamous	1054	674	373
		Polyamorous/Consensually Non-Monogamous	49	34	15
		Another Style Not Listed	16	11	5

Note. Relationship length is measured in years.

A2: Creation of Arousal and Desire Subscales

Two subscales adapted from the Sexual Arousal and Desire Inventory (Toledano & Pfaus, 2006) were created to uniquely capture sexual arousal versus sexual desire. The pre-registered arousal subscale initially included 11 items which represented the physical sensations people may experience during sex and the desire subscale initially included 13 items which represent the psychological experiences people may have during sex. A confirmatory factor analysis (CFA) was used to determine whether the selected items loaded onto the intended factors. We removed any items that did not have a factor loading of >.400 onto the intended factor. One item (wet/hard) from the original arousal subscale was removed for mapping onto desire, not arousal, and two items (frustrated and impatient) were dropped from the original desire subscale for not loading onto the desire factor. A further item (anticipatory) was dropped from the pre-registered desire subscale because we believed it reflected a physiological readiness for sexual activity, rather than the psychological aspect of desire we wanted to capture in the subscale. This left two unique scales of 10-items each.

The final arousal scale included the items: tingly all over, sensitive to touch, flushed, breathe faster/pant, quivering sensations, genitals reddish, throbs in genital area, warm all over, tingling genital area, and heart beats faster. Reliability for this scale was good (a = .89). The final desire scale included the items**:** urge to satisfy, driven, enthusiastic, tempted, passionate, fantasize about sex, sensual, seductive, naughty, and horny. Reliability for this scale was good (a = .90). The items for each subscale were averaged, with higher scores reflecting greater arousal or desire on the respective subscale.

A3: Latent Profile Analysis with Only Arousal and Desire

As the rest of the thesis is primarily concerned with arousal-desire alignment, we additionally conducted exploratory analyses to see if similar profiles to the sexual activation

profiles replicated if we used only arousal and desire in the LPA. Among the LPA models of arousal and desire, models with 2- and 3- profiles were well-identified and considered for model selection. Models with more than 4 profiles had latent profile membership probabilities on the main diagonal that were not above .80, as discussed by Rost (2006). Whilst the 3- and 4-profile models had similar fit statistics, the 4-profile model contained a very small profile ($N = 27$) that was not theoretically distinct. The 2- and 3-profile models also had similar fit statistics, but an additional, theoretically distinct model appeared in the 3-profile model that did not in the 2-profile model, and the fit statistics were better for the 3-profile model, and so the 3-profile model of arousal and desire was considered as optimal for further interpretation and analysis. Model fit information is presented in Table S2.2.

Table S2.2.
Model Fit Information for Analyses Involving only Arousal and Desire

No. of Profiles	One-Profile Model	Two-Profile Model	Three-Profile Model	Four-Profile Model	Five-Profile Model	Six-Profile Model
Free Parameters	4	7	10	13	16	19
Log-Likelihood	-1790.948	-1615.053	-1558.260	-1546.766	-1538.529	-1532.175
AIC	3589.896	3244.106	3136.520	3119.533	3109.059	3102.349
BIC	3608.077	3275.924	3181.974	3178.622	3181.784	3188.711
a-BIC	3595.376	3253.697	3150.222	3137.345	3130.981	3128.383
Entropy	-	0.736	0.724	0.722	0.729	0.686
LMR	-	$p < .001$	$p < .001$	$p = .014$	$p = .025$	$p = .459$
BLRT	-	$p < .001$	$p < .001$	$p < .001$	$p < .001$	$p = .020$
Profile Counts (Classification Probabilities)						
P1	-	234 (.89)	117 (.88)	27 (.82)	19 (.89)	18 (.88)
P2	-	462 (.94)	261 (.89)	296 (.82)	197 (.81)	69 (.64)
P3	-	-	318 (.85)	135 (.82)	98 (.85)	123 (.68)
P4	-	-	-	238 (.88)	173 (.86)	95 (.81)
P5	-	-	-	-	209 (.75)	194 (.87)
P6	-	-	-	-	-	197 (.72)

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; a-BIC = sample size adjusted BIC; LMR = Lo-Mendell-Rubin test; BLRT = bootstrapped likelihood ratio test; P = profile number. Dashes indicate criterion is not applicable; gray column indicates selected model.

Table S2.3 presents the means for each profile in the 3-profile model of arousal and desire. The first profile represented 17% of the sample. They were characterized by arousal and desire that was below the sample mean. The second profile represented 38% of the sample and were characterized by arousal and desire that was above the sample mean. The third profile represented 46% of the sample and were characterized with arousal that was below the sample mean, but desire levels that were close to the mean.

Table S2.3.
Parameter Estimates for the Three Profile Model of Arousal and Desire

Latent Profile Size (Membership Probability)		P1	P2	P3
		N = 117	*N* = 261	*N* = 318
		17%	38%	46%
	Overall Sample Means (SD)	Profile Specific Item Means		
Arousal	3.243 (0.891)	1.981[b]	4.062[a]	3.033[b]
Desire	3.547 (0.862)	2.307[b]	4.248[a]	3.428[~]

Note. P1 ~ P3 = Profile 1 ~ Profile 3 of Relationship Wellbeing.
[a] Value is statistically significantly higher than the overall sample mean value at $p < .05$.
[b] Value is statistically significantly lower than the overall sample mean value at $p < .05$.

A4: Distribution of Gender and Age Across Profiles

Gender and Age Distribution in Sexual Activation Profiles

Gender did not significantly differ across the profiles of sexual activation, $\chi^2 = 19.32$, $p = .372$. Likewise, age did not significantly differ across profiles, $\chi^2 = 0.45$, $p = .929$. The gender distribution percentages and mean ages for each sexual activation profile are shown in Table S2.4.

Table S2.4.

Gender and Age Descriptive Statistics for the Four-Profile Model of Sexual Activation

Latent Profiles of Sexual Activation	P1 Disengaged	P2 Apathetic	P3 Satiated	P4 Unsatiated
Gender Distribution Across Profiles				
Women	75.6%	76.5%	73.7%	74.0%
Men	20.6%	21.9%	23.0%	23.7%
Another Gender Category	3.8%	1.6%	3.3%	2.3%
Age Means (and Standard Deviations) Across Profiles				
Mean (SD)	27.59 (8.76)	26.91 (9.99)	26.99 (9.40)	26.99 (9.05)

Note. Percentages, means, and standard deviations are based on the most likely latent profile classifications.

Gender and Age Distribution in Wellbeing Profiles

Gender did not significantly differ across the profiles of relationship wellbeing, $\chi^2 = 19.93$, $p = .069$. Age also did not significantly differ across profiles, $\chi^2 = 0.76$, $p = .684$. The gender distribution percentages and mean ages for each relationship wellbeing profile are shown in Table S2.5.

Table S2.5.

Gender and Age Descriptive Statistics for the Three-Profile Model of Relationship Wellbeing

Latent Profiles of Relationship Wellbeing	P1 Distressed	P2 Stagnating	P3 Thriving
Gender Distribution Across Profiles			
Women	83.2%	73.5%	73.9%
Men	15.4%	22.9%	23.5%
Another Gender Category	1.5%	3.5%	2.5%
Age Means (and Standard Deviations) Across Profiles			
Mean (SD)	26.40 (7.10)	26.98 (7.82)	27.23 (8.72)

Note. Percentages, means, and standard deviations are based on the most likely latent profile classifications.

Gender also did not significantly differ across the profiles of sexual wellbeing, $\chi^2 = 14.40$, $p = .276$. Similarly, age did not significantly differ across profiles, $\chi^2 = 0.95$, $p = .620$.

The gender distribution percentages and mean ages for each sexual wellbeing profile are shown in Table S2.6.

Table S2.6.
Gender and Age Descriptive Statistics for the Three-Profile Model of Sexual Wellbeing

Latent Profiles of Sexual Wellbeing	P1 Struggling	P2 Disassociated	P3 Actualized
Gender Distribution Across Profiles			
Women	74.7%	76.1%	73.8%
Men	23.1%	20.8%	23.6%
Another Gender Category	2.2%	2.3%	2.7%
Age Means (and Standard Deviations) Across Profiles			
Mean (SD)	27.37 (8.19)	27.44 (9.68)	26.75 (8.28)

Note. Percentages, means, and standard deviations are based on the most likely latent profile classifications.

Gender did not significantly differ across the profiles of psychological wellbeing, $\chi^2 = 11.60$, $p = .478$. Likewise, age did not significantly differ across profiles, $\chi^2 = 1.81$, $p = .405$. The gender distribution percentages and mean ages for each psychological wellbeing profile are shown in Table S2.7.

Table S2.7.
Gender and Age Descriptive Statistics for the Three-Profile Model of Psychological Wellbeing

Latent Profiles of Psychological Wellbeing	P1 Unfulfilled	P2 Burdened	P3 Euthymic
Gender Distribution Across Profiles			
Women	78.9%	73.0%	75.4%
Men	18.5%	24.4%	21.7%
Another Gender Category	2.6%	2.7%	2.9%
Age Means (and Standard Deviations) Across Profiles			
Mean (SD)	26.29 (6.71)	27.01 (8.65)	27.53 (10.13)

Note. Percentages, means, and standard deviations are based on the most likely latent profile classifications.

Appendix B – Supplementary Materials for Chapter 3

B1: Missing Data Analyses Study 2

For Study 2, as a high proportion of data was removed from the final dataset due to incomplete data or exclusion criteria, data analyses were conducted to compare demographic variables between excluded and retained data to test for differences that might impact the final sample. Excluded participants did not significantly differ to retained participants in age $t(914) = 0.98$, $p = .329$, or in their relationship length, $t(977) = -0.24$, $p = .809$ (for means and standard deviations, see Table S3.1). Additionally, there were no significant differences between the excluded and retained participants for gender, $\chi^2(2) = 0.31$, $p = .856$, ethnicity, $\chi^2(1) < 0.00$, $p = .986$, relationship status, $\chi^2(2) = 0.65$, $p = .723$, relationship style, $\chi^2(2) = 0.15$, $p = .927$. However, sexual orientation was significantly different between the excluded and retained data, $\chi^2(4) = 14.13$, $p = .007$. Examination of the standardized residuals showed that heterosexual participants were overrepresented in the excluded data, whereas bisexual participants were overrepresented in the retained data. It might be the case that those who were bisexual were more likely to complete the full study as we advertised our study to be inclusive of all sexual orientations, and as those of a sexual minority are often excluded from important research it might be the case that they had greater desire to complete the research in order to see themselves represented (i.e., Andersen & Zou, 2015).

Table S3.1.
Demographic Frequencies Between Retained Data and Data Removed Due to Incomplete Responses or Exclusion Criteria in Study 2

			Full Dataset	Retained Data	Excluded Data
Mean (SD)		Age	25.19 (4.28)	25.07 (4.06)	25.33 (4.55)
		Relationship Length	3.44 (3.32)	3.46 (3.36)	3.41 (3.28)
N	Gender	Men	46	26	20
		Women	979	554	425
		Other Gender Category	18	9	9
	Sexual Orientation	Heterosexual	727	391	336
		Homosexual	31	14	17
		Bisexual	231	148	83
		Pansexual	30	22	8
		Queer or Another Sexual Orientation	20	14	6
	Ethnicity	White	982	557	425
		Any Other Ethnicity	57	32	25
	Relationship Status	Exclusively Dating	849	490	359
		Engaged	84	45	39
		Married/Civil Union /Common-Law Partnership	98	54	44
	Relationship Style	Monogamous	1019	576	443
		Polyamorous/Consensually Non-Monogamous	19	10	9
		Another Style Not Listed	5	3	2

Note. Relationship length is measured in years.

B2: Missing Data Analyses Study 3

For Study 3, as a high proportion of data was removed from the final dataset due to incomplete data or exclusion criteria, data analyses were conducted to compare demographic variables between excluded and retained data to test for differences that might impact the final sample. Excluded participants did significantly differ in age $t(974) = -3.06$, $p = .002$, or in their relationship length, $t(987) = -2.33$, $p = .020$, with excluded participants being slightly younger, with a shorter relationship length on average (for means and standard deviations, see Table S3.2). Whilst we are unsure why this was the case, this could have led to a biased sample that were older and in longer relationship on average. However we did control for these variables across analyses and thus we do not expect this to largely impact our findings, but unfortunately we did not control for relationship length. There were no significant differences between the excluded and retained participants for ethnicity, $\chi^2(1) = 0.562$, $p = .453$, relationship status, $\chi^2(2) = 1.36$, $p = .506$, relationship style, $\chi^2(2) = 0.16$ $p = .923$. However, gender, $\chi^2(2) = 7.30$, $p = .026$, and sexual orientation were significantly different between the excluded and retained data, $\chi^2(4) = 16.85$, $p = .002$. Similarly to Study 2, examination of the standardized residuals showed that heterosexual participants were overrepresented in the excluded data, whereas bisexual participants were overrepresented in the retained data. For gender, examination of the standardized residuals showed that women were overrepresented in the excluded data. This might be the case because the sample consisted of majority women, and thus women were much more likely to be excluded from the study. We controlled for gender in our analyses, and thus we do not expect this have had a significant impact on our findings.

Table S3.2.
Demographic Frequencies Between Retained Data and Data Removed Due to Incomplete Responses or Exclusion Criteria in Study 3

			Full Dataset	Retained Data	Excluded Data
Mean (SD)		Age	25.68 (4.92)	26.12 (5.68)	25.21 (3.89)
		Relationship Length	4.05 (4.04)	4.32 (4.32)	3.75 (3.31)
N	Gender	Men	49	32	17
		Women	991	505	486
		Other Gender Category	16	12	4
	Sexual Orientation	Heterosexual	702	345	357
		Homosexual	27	9	18
		Bisexual	271	163	108
		Pansexual	32	22	10
		Queer or Another Sexual Orientation	19	10	9
	Ethnicity	White	984	508	476
		Any Other Ethnicity	72	41	31
	Relationship Status	Exclusively Dating	823	428	395
		Engaged	102	59	43
		Married/Civil Union /Common-Law Partnership	114	62	52
	Relationship Style	Monogamous	1023	531	492
		Polyamorous/Consensually Non-Monogamous	28	15	13
		Another Style Not Listed	5	3	2

Note. Relationship length is measured in years.

B3: Exploratory Analyses: Arousal-Desire (Mis)Matching and Overlap Studies 1 & 2

To further our understanding of how polynomial regression and RSA capture similar or novel dynamics from other measurement approaches, we were interested in testing how the self-reported measure of arousal-desire overlap corresponded to (mis)matching arousal and desire as modelled by the RSA. Table S3.3 contains the model coefficients for the RSAs.

Table S3.3.
Arousal-Desire Matching and Mismatching as Predictors of Arousal-Desire Overlap in Study 2 and Study 3.

	Study 1	Study 2
Polynomial regression coefficients		
Arousal (b_1)	.122	.062
Desire (b_2)	.608***	.657***
Arousal^2 (b_3)	-.014	.096
Arousal x Desire (b_4)	.035	.013
Desire^2 (b_5)	-.001	.032
Response surface analysis coefficients		
Slope of the line of congruence (a_1)	.731***	.719***
Curvature of the line of congruence (a_2)	.021	.142
Slope of the line of incongruence (a_3)	-.486**	-.595***
Curvature of the line of incongruence (a_4)	-.050	.116
Model statistics: R^2	.154***	.161***

Note. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Appendix C – Supplementary Materials for Chapter 4

Table S4.1.
Model Coefficients for the Effect of Average Sexual Arousal-Desire Alignment on Average Sexual Satisfaction and Average Sexual Intimacy Over the Course of the Study Period, Controlling for Age, Gender, and Relationship Length.

	Sexual Satisfaction		**Sexual Intimacy**	
Variables	*b [95% CI]*	*t*	*b [95% CI]*	*t*
Arousal-Desire Alignment	.19 [.07, .32]	3.08**	.04 [.02, .06]	4.23***
Age	.02 [-.01, .04]	1.14	.00 [-.00, .01]	1.34
Gender – Women	.33 [-.09, .75]	1.55	.02 [-.04, .08]	0.60
Gender – Other	.39 [-1.47, 2.25]	0.42	-.04 [-.31, .22]	-0.31
Relationship Length	-.02 [-.05, -.00]	-1.65	-.01 [-.01, -.00]	0.01*

Note. Numbers in brackets represent 95% confidence intervals. Gender effects are in reference to the coefficients for men. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table S4.2.
Model Coefficients for the Main Effect of Sexual Satisfaction on Next-Day Sexual Arousal-Desire Alignment, and Interaction Effects of Sexual Destiny and Sexual Growth Beliefs, Controlling for Age, Gender, and Relationship Length.

Main Effects Models		
	Sexual Satisfaction	
Variables	*b [95% CI]*	*t*
Sexual Satisfaction	-.01 [-.08, .06]	-0.32
Age	-.01 [-.04, .03]	-0.29
Gender – Women	-.52 [-1.07, .04]	-1.81
Gender – Other	1.91 [-.43, 4.25]	1.58
Relationship Length	-.01 [-.04, .03]	-0.31
Interaction Models		
	Sexual Satisfaction	
Variables	*b [95% CI]*	*t*
Sexual Satisfaction	-.02 [-.10, .05]	-0.66
Age	-.01 [-.04, .03]	-0.41
Gender – Women	-.51 [-1.08, .06]	-1.74
Gender – Other	1.87 [-.45, 4.19]	1.55
Relationship Length	-.01 [-.04, .04]	-0.02
Destiny Beliefs	.01 [-.26, .28]	0.06
Growth Beliefs	-.43 [-.85, -.01]	-1.94
Sexual Satisfaction x Destiny Beliefs	.03 [-.03, .10]	1.02
Sexual Satisfaction x Growth Beliefs	.09 [-.04, .22]	1.36

Note. Next-day sexual satisfaction was analyzed using linear mixed-effects models, whereas next-day sexual intimacy was analyzed using binomial generalized mixed-effects models. Numbers in brackets represent 95% confidence intervals. Gender effects are in reference to the coefficients for men. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table S4.3.
Model Coefficients for the Main Effect of Sexual Intimacy on Next-Day Sexual Arousal-Desire Alignment, and Interaction Effects of Sexual Destiny and Sexual Growth Beliefs, Controlling for Age, Gender, and Relationship Length.

Main Effects Models		
	Sexual Satisfaction	
Variables	*b [95% CI]*	*t*
Sexual Intimacy	-.23 [-.49, .02]	-1.81
Age	-.01 [-.04, .03]	-0.28
Gender – Women	-.52 [-1.07, .03]	-1.82
Gender – Other	1.92 [-.42, 4.26]	1.59
Relationship Length	-.01 [-.04, .03]	-0.31
Interaction Models		
	Sexual Satisfaction	
Variables	*b [95% CI]*	*t*
Sexual Intimacy	-.02 [-.49, .02]	-1.82
Age	-.01 [-.04, .03]	-0.40
Gender – Women	-.51 [-1.08, .06]	-1.74
Gender – Other	1.88 [-.44, 4.20]	1.56
Relationship Length	-.00 [-.04, .04]	-0.03
Destiny Beliefs	.01 [-.26, .28]	0.06
Growth Beliefs	-.42 [-.85, .01]	-1.89
Sexual Intimacy x Destiny Beliefs	.12 [-.15, .38]	0.88
Sexual Intimacy x Growth Beliefs	.10 [-.32, .52]	0.48

Note. Next-day sexual satisfaction was analyzed using linear mixed-effects models, whereas next-day sexual intimacy was analyzed using binomial generalized mixed-effects models. Numbers in brackets represent 95% confidence intervals. Gender effects are in reference to the coefficients for men. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.