

On the Benefits of Being Sexually Autonomous and Costs of Being Sexually Pressured: The
Contributions of Different Motives for Sex to Experiences of Sexual Well-Being

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ABSTRACT

A growing number of studies suggest that the reasons for which people engage in sexual activities matter for their sexual well-being. Grounded in self-determination theory (SDT), this thesis research investigated the contributions of autonomous and controlled sexual motivation to sexual well-being. These objectives were achieved through a series of five studies presented in four manuscripts. In Manuscript 1, we validated the Sexual Motivation Scale (SexMS), a measure of self-regulation for sexual activities grounded in SDT (Study 1: $N = 1,070$, Study 2: $N = 575$). Collectively, the findings provided strong support for the factorial validity of the SexMS. Additionally, the SexMS captured important individual differences in sexual well-being, specifically with respect to sexual satisfaction, sexual distress, and sexual function. Manuscript 2 explored how autonomous and controlled sexual motivation are integrated with broader psychological functioning by examining their motivational antecedents and well-being consequences ($N = 828$). The results showed that global and relational motivation explained individual differences in autonomous and controlled sexual motivation. Additionally, autonomous and controlled sexual motivation explained individual differences in sexual, relational, and global well-being. Finally, the results suggested that, for the most part, the associations between the motivational antecedents and the well-being consequences of autonomous and controlled sexual motivation followed a heterarchical structure. Next, in Manuscript 3, the motivational sequence proposed by SDT – in which basic psychological needs satisfaction predicts quality of motivation, and in turn quality of psychological functioning – was validated in the context of within-person variations in sexual well-being ($N = 113$). The results indicated that on days when people experience more basic psychological needs satisfaction during interactions with their partner, their sexual motivation was more autonomous and this was

associated with higher sexual well-being. However, basic needs satisfaction did not significantly predict controlled sexual motivation. Additionally, on days when people reported higher controlled sexual motivation, they experienced lower sexual well-being. Finally, in Manuscript 4, we examined the motivational sequence proposed by SDT from a dyadic perspective to better understand the contribution of sexual motivation to sexual well-being in couples ($N = 225$ couples). Specifically, we examined whether basic needs satisfaction during sexual activities and autonomous and controlled sexual motivation in one partner influenced the sexual well-being of the other partner. The unique contribution of each basic psychological need (i.e., autonomy, competence, and relatedness) to sexual well-being was also investigated. Taken together, the results supported SDT's predictions regarding the relevance of the motivational sequence and the unique contribution of each basic psychological need in explaining between-couple differences in sexual well-being. However, different patterns of association emerged for women and men, suggesting that in the context of sexual activities within heterosexual relationships, the motivational processes proposed by SDT may be moderated by gender. In sum, the findings from this thesis extend SDT and sexual motivation research. Overall, SDT may provide novel insights on human sexual behaviour, notably by improving our understanding of the factors that can enhance or impede sexual well-being in committed relationships.

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CONTRIBUTIONS OF AUTHORS

This thesis is composed of six chapters: a general introduction, four manuscripts, and a general conclusion. The general introduction (Chapter 1) provides an overview of the theoretical and conceptual backgrounds of the research, the four manuscripts present the findings of five studies (Chapter 2 – 5), and the general discussion presents an integration of the findings.

I, Emilie Eve Gravel, was responsible for the conceptualization, data collection, data analysis, and writing of this thesis. My thesis supervisors, Dr. Elke Reissing and Dr. Luc Pelletier, provided guidance and feedback at all stages of the thesis and they alternate as second and third authors on all of the manuscripts.

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CHAPTER ONE

GENERAL INTRODUCTION

Statement of the Problem

Sexuality is a fundamental part of the self and carries the potential to enhance close relationships and quality of life. Indeed, an important body of research shows that sexual activities¹ may contribute to optimal physical and psychological functioning (for reviews, see Byers & Rehman, 2014; Diamond & Huebner, 2012; George, Norris, Nguyen, Masters, & Davis, 2014); they also foster fulfilling and thriving relationships (for reviews, see Impett, Muise, & Peragine, 2014; Muise, Kim, McNulty, & Impett, 2016). Thus, sexual well-being can be understood as an integral component of well-being (Hooghe, 2011; World Health Organization [WHO], 2006) and its promotion and maintenance, a societal priority.

Recognition of the benefits of engaging in sexual activities has resulted in a growing interest from the scientific community in identifying the factors linked with the promotion and maintenance of sexual well-being (e.g., Anderson; 2013; Byers & Rehman, 2014; Diamond & Huebner, 2012). In recent years, the quality of sexual motivation – one's reasons for engaging in sexual activities – has emerged as an important determinant of sexual well-being, notably because motivation is amenable to change (for a review, see Muise, 2017).

Although there are number of models of sexual motivation (for a review, see Hatfield, Luckhurst, & Rapson, 2010) the majority of these models are typologies (e.g., DeLamater & MacCorquodale, 1979; Hill & Preston, 1996; Leigh, 1989; Meston & Buss, 2007) and only a small number propose formal predictions regarding their quality. Most studies on the quality of sexual motivation have been grounded in the approach-avoidance framework of sexual

¹ For the purpose of simplicity, as this thesis research program focuses on sexual motivation in the context of committed relationships specifically, sexual activities will be understood as partnered behaviours whose purpose is to increase sexual arousal in one or both partners.

motivation developed by Cooper, Shapiro, and Powers (1998). A consistent trend that emerges from this research and others (for a review, see Muise, 2017) is that not all reasons to engage in sexual activities are equally conducive to well-being; some can be considered optimal because they tend to be associated with positive outcomes, whereas others can be considered non-optimal because they tend to be associated with lower scores on positive outcomes or with negative outcomes.

Self-determination theory (SDT) is a broad framework of the motivational underpinnings of growth, well-being, and optimal functioning (Deci & Ryan, 2000). Within this framework, researchers have demonstrated across a broad range of domains and using a variety of methodologies that autonomous motivation promotes optimal functioning, whereas controlled motivation tends to undermine optimal functioning (for reviews, see Guay, Ratelle, & Chanal, 2008, for education; Ng et al., 2012, for health; Knee, Hadden, & Baker, 2016, for relationships; Standage & Ryan, 2012, for sports and exercise; and Gagné & Deci, 2005, for work). Despite the breadth of SDT research, one important life domain that has received little attention is sexuality.

An investigation of autonomous and controlled sexual motivation is both an important and timely next step for SDT and sexual motivation research. First, from a theoretical standpoint, there is a need to further validate the generalizability of SDT's propositions in the domain of sexuality. Second, SDT researchers are devoting increasing attention to optimal functioning in committed relationships (Knee et al., 2016) and as sexual activities play such a critical role in their development, maintenance, and dissolution (e.g., Birnbaum & Finkel, 2015), understanding the interplay between broader relationship functioning and autonomous and controlled sexual motivation is a necessary direction for the growth of this area of research. Finally, autonomous

and controlled sexual motivation can provide novel insights on the characteristics of the quality of sexual motivation that predict positive and negative sexual experiences. Importantly, a better understanding of autonomous and controlled sexual motivation may eventually contribute to the development of both practical and accessible well-being interventions. The overall goal of this program of research is to provide an in-depth investigation of the contributions of autonomous and controlled sexual motivation to sexual well-being.

Conceptual and Theoretical Background

Sexuality is an integral part of human life. It carries the awesome potential to create new life. It can foster intimacy and bonding as well as shared pleasure in our relationships. It fulfills a number of personal and social needs, and we value the sexual part of our being for the pleasures and benefits it affords us. Sexual health is inextricably bound to both physical and mental health. (Satcher, 2001, p. 1)

The Contribution of Sexual Activities to Quality of Life

This quote from Surgeon General David Satcher powerfully conveys how sexuality is a fundamental part of the self. More than just a personal opinion, his sentiment is supported by results from several large-scale surveys suggesting that people view sexuality as an important dimension of their life. For instance, in a cross-cultural study conducted in 29 countries with 27,500 adults, the percentages of respondents who considered sexuality to be very or extremely important ranged from 28% to 61% in men and from 13% to 38% in women (Lauman et al., 2006). Similarly, in a study conducted in 26 countries with 26,032 adults, three participants in five reported that “sex is important”, one in three strongly agreed with this statement, and two thirds agreed that “good sex is a vital part of life” (Wylie, 2009). Additionally, a growing body of research demonstrates that sexual activities are inextricably integrated with broader physical

and psychological functioning (for reviews, see Diamond & Huebner, 2012; George et al., 2014). In a cross-sectional study of 3,032 American adults, frequent sexual activities, sexual well-being, and greater interest for sexual activities were all positively associated with self-reported health (Lindau & Gavrilova, 2010). Longitudinal studies also suggest a potential causal pathway from sexual activities to better health. A study of 918 Welsh men revealed that greater orgasm frequency at baseline was associated with lower mortality over a 10-year period (Smith, Frankel, & Yarnell, 1997). Similarly, results from a 14-year prospective study of 2,453 older Taiwanese adults indicated that ongoing sexual activities at baseline was associated with lower mortality over the course of the study (Chen, Tsend, Wu, Lee, & Chen, 2007).

Sexual activities are associated with better mental health and overall well-being. In a cross-sectional study of 1,018 community-dwelling women, “intimate relations” was reported as the daily activity that generated the strongest positive feelings, above, for example, socializing, relaxing, and praying (Kahneman, Krueger, Schkade, Schwartz, & Stone, 2004). Mirroring these results, a large-scale study of daily experiences in 2,250 adults revealed that sex was the activity that induced the highest levels of happiness (Killingsworth & Gilbert, 2010). Satisfying sexual activities also appear to be important for short-term and long-term life satisfaction. In a study of daily experiences conducted with 87 women, life satisfaction increased on days when women reported more sexual satisfaction (Stephenson & Meston, 2015). Furthermore, results from a 5-year longitudinal study of 5,582 adults revealed that increases in sexual satisfaction predicted increases in life satisfaction (Schmiedeborg, Huyer-May, Castiglioni, & Johnson, 2016).

Sexual activities are critical to relationship functioning (for reviews, see Impett et al., 2014; Muise et al., 2016). An important purpose of sexual activities is to foster and nurture intimacy in a relationship (e.g., Birnbaum & Finkel, 2015). Longitudinal studies of married

adults reveal that sexual satisfaction at baseline predicts long-term marital satisfaction. In two 8-wave longitudinal studies covering the first four to five years of marriage of 207 couples, there was a positive reciprocal association between sexual satisfaction and marital satisfaction over time (MacNulty, Wenner, & Fisher, 2016).

Sexual matters can be a decisive factor in the deterioration of a relationship and sexuality-related conflicts are one of the most common reasons for which couples seek therapy (Rosen, 2000). Disagreements over the frequency of sexual activities are one of the most commonly reported causes of conflicts in couples (Risch, Riley, & Lawler, 2003) and desire discrepancies tend to be particularly damaging to relationship functioning. A cross-sectional study of 7,463 adults showed that lower frequency of sexual activities was associated with higher marital dissatisfaction (Call, Sprecher, & Schwartz, 1995). Results from a more recent study of 1,054 couples revealed a similar trend in which sexual desire discrepancies were linked to lower relationship satisfaction and stability, and to increased conflict (Willoughby, Farero, & Busby, 2014). Finally, the waning of a couple's sexual life may be considered a "canary in a coal mine" as declines in the frequency of sexual activities (e.g., Yabiku & Gager, 2009) and sexual satisfaction (e.g., Sprecher, 2002) in some couples have been associated with relationship dissolution over time.

This body of research appears to suggest that with respect to sexual activities, more tends to be better given the positive associations between frequency of sexual activities and well-being. Therefore, increasing the frequency of sexual activities seems to be a simple and logical suggestion for those seeking to improve or enhance their well-being. However, recent studies suggest that the association between the frequency of sexual activities and well-being is complex and that more may not always be better. For instance, in a study of 128 couples who were

randomly assigned to a condition in which they were asked to double their weekly sexual frequency over a 90-day period or to a control condition an increase in well-being was not observed in those asked to increase their sexual frequency (Loewenstein, Krishnamurti, Kopsic, & McDonald, 2015). Instead, this strategy backfired as couples in the increased frequency condition reported a decrease in positive mood, sexual desire, and sexual enjoyment. Another research conducted with 30,645 participants demonstrated that the association between sexual frequency and well-being reached a plateau beyond a frequency of one sexual event per week (Muise, Schimmack, & Impett, 2016). Additionally, in a study of 105 married couples spanning 14 years, increased sexual satisfaction, but not increased sexual frequency, predicted increased marital satisfaction (Schoenfeld, Loving, Pope, Huston, & Štulhofer, 2017). Finally, a longitudinal study showed that people in committed relationships who reported lower frequencies of sexual activities did not report lower life satisfaction in comparison to their peers who reported higher frequencies as long as their sexual satisfaction remained constant (Schmiedeberg et al., 2017).

Collectively, these studies suggest that reaping benefits from sexual activities is not simply a question of quantity; it is also a question of quality. This insight has important practical ramifications as focusing on improving the quality of sexual activities, rather than primarily focusing on increasing their frequency, may be a more realistic and desirable goal for many couples. Indeed, some couples may find it difficult to squeeze another thing to do in an overloaded schedule (e.g., Loewenstein et al., 2015). Additionally, one could speculate that recommendations to increase sexual frequency may instill feelings of inadequacy in those with lower preferred sexual frequency through upward social comparisons with an externally imposed standard of what is considered normal for a healthy and thriving couple. In sum, the *sexual well-*

being generated by sexual activities appears to be a critical mechanism in the association between sexual activities and optimal functioning. Therefore, identifying the factors that promote or impede sexual well-being is an important agenda for research.

Defining Sexual Well-Being

In sexuality research, sexual well-being tends to be equated with satisfaction judgments and feelings pertaining to various dimensions of a person's sexual life. This approach reflects a subjective perspective in which it is the person that formulates an evaluation of their current situation in comparison to their ideal; this can be contrasted with an objective perspective in which the person well-being's is evaluated according the presence or absence of certain factors (for a discussion, see MacLeod, 2015).

The definition of sexual well-being proposed by Öberg, Fugl-Meyer and Fugl-Meyer (2002) is one of the most commonly used in research. Based on the WHO's definition of sexual health, they defined sexual well-being as the "level of satisfaction with sexual life" (Öberg et al., 2002, p.330). In their seminal work on sexual well-being, Laumann and his colleagues (2006) subsequently used this definition to develop their own: The "cognitive and emotional evaluation of an individual's sexuality" (p. 146). The researchers specified that such evaluations encompass satisfaction judgments regarding sexual functioning, emotional and physical components of relationships, and the importance of sexuality in a person's life. In a recent review of sexual well-being, Byers and Rehman (2014) defined the concept as "an affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship" (p. 514). Importantly, the researchers argued that sexual problems should be distinguished from sexual well-being. People can *and* do report experiencing sexual problems while reporting high sexual satisfaction and conversely, people with no sexual problem can *and*

do report low levels of sexual satisfaction (Rehman, Fallis, & Byers, 2013). To clarify this question, the researchers explicitly distinguished the concept of sexual health, as defined by the WHO (2006), from the concept of sexual well-being. For Byers and Rehman (2014), sexual well-being refers to subjective sexual satisfaction judgments, whereas sexual health designates a broader concept that encompasses the physical, social, and psychological well-being related to sexuality in addition to an absence of disease, dysfunction, and sexual violence (Byers & Rehman, 2014).

Although measuring subjective sexual satisfaction judgments can provide valuable information pertaining to a person's state of sexual well-being, Stephenson and Meston (2010) have demonstrated that this approach is problematic. Indeed, it assumes that positive and negative indicators of sexual well-being are poles on a continuum when in fact they should be considered as independent constructs. In a study on sexual satisfaction and sexual distress in women with and without clinical levels of sexual dysfunction, the results indicated that these two constructs presented distinct profiles of correlates, providing evidence in support of the independence of positive and negative indicators of sexual well-being. Recent advances in the measurement of sexual satisfaction further support the necessity to distinguish the positive and negative indicators of sexual well-being. Shaw and Rogge (2016) argued that it is critical to consider that certain people can be ambivalent (i.e., high satisfaction and dissatisfaction) or indifferent (i.e., low satisfaction and dissatisfaction) toward their sexual life. They also demonstrated that items measuring sexual satisfaction and sexual dissatisfaction loaded on different factors. In light of these findings, both positive and negative indicators need to be taken into account in operationalizations of sexual well-being.

The Determination of Sexual Well-Being

Extant research suggests that the determination of sexual well-being is complex as it involves a wide variety of factors. For instance, recent reviews of the correlates of sexual satisfaction suggest that it is likely shaped by a host of personal (e.g., personality and physical health), interpersonal (e.g., attachment and communication), and sociocultural factors (e.g., cultural and religious values; Byers & Rehman, 2014; Sanchez-Fuentes, Santos-Iglesias, Byers, & Sierra, 2014). Therefore, influencing the development, maintenance, and enhancement of sexual well-being can be addressed from different angles, but some are more likely to be effective and importantly, more practical than others. For instance, restrictive sexual values transmitted by culture and religion are often linked to increased sexual guilt which in turn can interfere with sexual health and well-being (for a review, see Gravel, Young, Olavarria-Turner, & Lee, 2011). Nonetheless, sociocultural changes in sexual values are difficult to implement and when they do happen, they often require multiple generations to become fully accepted and are accompanied by a copious share of tension and conflicts. One simply needs think about the difficulties surrounding the implementation of comprehensive and evidenced-based sexual education programs in North American schools or about the precariousness of the rights and freedoms of sexual minorities. Therefore, factors that are more amenable to direct personal control are better candidates to produce effective and sustainable changes in sexual well-being. One such factor is the quality of sexual motivation.

The quality of sexual motivation. The function of motivation is to put behaviour in motion by energizing and orienting it in a particular direction (Ryan & Deci, 2017), making motivation one of the most proximal determinants of behaviour and by extension, of its well-being consequences. As Huta (2013) convincingly argues, “what we are responsible for, and

what we can control, are our motives and behaviours. It is difficult to change our well-being directly – the most direct point of intervention for bettering our lives is our chosen motives and behaviours, which may in turn produce well-being” (p.201). Thus, sexual motivation is highly relevant for enacting change on sexual well-being.

Sexual motivation can be defined following the general conceptualization of motivation as the processes by which sexual behaviour is initiated, energized, maintained, and directed toward an incentive and which occur through the mobilization of affective, cognitive, and motor behaviours (Hill & Preston, 1996; Pfaus, 1999). Therefore, it is a multifaceted construct that encompasses a number of physiological and psychological processes, notably drive and desire, arousal, and motives underlying sexual behaviour (Pfaus, 1999). Furthermore, following current theorization on general motivation (e.g., Deci & Ryan, 2000), it is important to distinguish between the quantity and the quality of sexual motivation. Specifically, sexual drive and desire, or how much a person wants to engage in sexual activities, relate to the quantity of sexual motivation, whereas sexual motives, or the reasons for which a person engages in sexual activities, relate to the quality of sexual motivation.

Although there are several models of sexual motives (for a review, see Hatfield et al., 2010), most are typologies (e.g., DeLamater & MacCorquodale, 1979; Hill & Preston, 1996; Leigh, 1989; Meston & Buss, 2007) and few provide formal theoretical explanations regarding their quality. Currently, the most widely used model in research on quality of sexual motivation is the approach-avoidance framework of sexual motivation developed by Cooper and colleagues (1998). In this model, sexual motives are understood as directing behaviour toward the avoidance of negative outcomes or the approach of positives ones, with approach sexual motives

generally considered as being more conducive to well-being than avoidance ones (Impett, Muise, & Rosen, 2015).

Studies using this framework have provided valuable insights on the determination of sexual well-being (for reviews, see Cooper, Talley, Sheldon, Levitt, & Barber, 2011; Impett et al., 2015; Muise, 2017). For example, in a series of studies conducted with emerging adults, Cooper and colleagues (2011) found that approach sexual motives were consistently associated with more positive sexual outcomes, such as positive feelings about sex, higher frequency of sexual activities, and higher sexual satisfaction. In contrast, avoidance sexual motives were consistently associated with poorer sexual outcomes, such as negative feelings about sex and lower sexual satisfaction. Other studies showed that approach sexual motives predicted greater daily sexual desire and satisfaction as well as sexual desire and satisfaction maintenance over time (Muise, Impett, & Desmarais, 2013). Importantly, a recent study in which sexual motives were experimentally manipulated showed that people who were asked to focus on approach sexual motives for a week reported greater sexual satisfaction in comparison to a control group, demonstrating that sexual motives can be amenable to conscious control (Muise, Boudreau, & Rosen, 2017).

Overall, these results are promising as they suggest that addressing the quality of sexual motivation may provide a practical strategy for inducing changes in sexual well-being. Furthermore, they suggest the direction of sexual motives (i.e., approaching a positive outcome versus avoiding a negative one) is an important dimension from which to understand the quality of sexual motivation. However, there is another important dimension of the quality of motivation that has received less attention from sexuality research which is its *self-determination*, or whether motives genuinely originate from the self or from controlling pressures and expectations

(Deci & Ryan, 2000). The most extensively validated theory addressing this dimension is SDT (Deci & Ryan, 2000).

An Overview of Self-Determination Theory

SDT is a broad framework of the motivational underpinnings of optimal development and well-being (for a recent presentation of the theory, see Ryan & Deci, 2017). SDT proposes two broad motivational processes that shape behaviours in close relationships. The first process concerns the extent to which relationship partners satisfy or thwart basic psychological needs. The second process concerns a person's motivational orientation toward their relationship and relationship-related behaviours.

Basic psychological needs. The core and unifying principle of SDT is basic needs theory, which proposes that the fulfilment of three basic psychological needs – autonomy, competence, and relatedness – provides the essential “nutriments” for growth and well-being (Ryan & Deci, 2000). *Autonomy* refers to the need to have volition and hence to genuinely be the source of one's behaviours; this concept is contrasted with *heteronomy* which refers to feeling that one's behaviour is controlled by external or internal pressures and expectations (Deci & Ryan, 1985). *Competence* refers to the need to feel mastery in one's environment and to experience challenges when engaging in an activity (Deci, 1975). Finally, *relatedness*, or the need to belong, refers to people's desire to form strong interpersonal bonds (Ryan, 1995).

Extensive empirical evidence shows that satisfaction of these needs support optimal functioning. Experience of basic needs satisfaction in a variety of settings is associated with a wide range of positive outcomes such as general well-being (e.g., Reis, Sheldon, Gable, Roscoe, & Ryan, 2000), health behaviour change (e.g., Ng et al., 2012), security of attachment (e.g., Ryan, La Guardia, Solky-Butzel, Chirkov, & Kim, 2005), better functioning in committed

relationships (e.g., Patrick, Knee, Canevello, & Lonsbary, 2007), better performance at work (Baard, Deci, & Ryan, 2004), and better classroom engagement (Cheon, Reeve, & Moon, 2012).

The unique role played by each basic psychological need in the functioning of close relationships has been recently formalized in a new theoretical axiom, relationships motivation theory (Deci & Ryan, 2014; Ryan & Deci, 2017). Its main proposition is that despite the fact that relatedness plays a central role in relational functioning, it is insufficient for people to thrive in a relationship. Rather, autonomy and competence make a distinct contribution to relational functioning (e.g., La Guardia, Ryan, Couchman, & Deci, 2000); hence, all three needs must be satisfied for people to enjoy the highest levels of well-being in their relationships.

The continuum of self-determination. Another core principle of SDT is that basic needs satisfaction influences the quality of one's motivation to perform behaviours. In SDT, quality of motivation is understood as the extent to which one's motivation is self-determined or non-self-determined (Deci & Ryan, 2000). According to SDT, behaviours are self-determined when they are genuinely regulated by the self, whereas behaviours are non-self-determined when they stem from controlling pressures and expectations, or when they involve a lack of intention to behave. In SDT, the self is understood from an organismic perspective, meaning that it is the innate process responsible for assimilation and accommodation of experiences, guiding a person toward greater integration of their values and identities, resolving psychological conflicts and inconsistencies, and ultimately ensuring optimal growth and functioning (Ryan, 1995).

SDT proposes three broad types of motivation which can be placed on a self-determination continuum (Deci & Ryan, 1985). *Amotivation* is at the least self-determined pole of this continuum; it designates a lack of motivation and involvement of the self in behavioural regulation (Deci & Ryan, 1985). Next on the continuum is *extrinsic motivation*. In its broadest

sense, extrinsic motivation is characterized by engaging in behaviour in order to achieve a desired end extrinsic to the behaviour itself (Deci & Ryan, 1985). SDT delineates four types of extrinsic motivation that vary in their degree of self-determination depending on the extent to which the behaviour has been internalized in the self. *Internalization* is the active process through which a person attempts to incorporate socially sanctioned regulations and demands to their self such that they can be experienced as self-determined when enacting them (Ryan, Connell, & Deci, 1985). When this process is successful, a person feels that they are genuine and volitional when behaving; when it is not, a person feels controlled and pressured when behaving (Ryan et al., 1985). The least internalized type of extrinsic motivation is *external regulation*, which refers to a behaviour performed in order to obtain rewards or avoid negative outcomes imposed by others. An externally regulated behaviour has not been internalized because it is regulated by forces that reside outside the self; hence it is experienced as controlling. Moving up on the continuum is *introjected regulation*, which occurs when a behaviour is driven by ego involvement, such as the validation and enhancement of self-worth or the avoidance of guilt and shame. An introjected behaviour is only partially internalized. Instead of being motivated by rewards and punishments imposed by others it is now the self that imposes these pressures; hence the behaviour is experienced as controlling. For this reason, an introjected behaviour is not harmoniously integrated with the self and as such it is non-self-determined. Next is *identified regulation*, which refers to a behaviour that is performed because one genuinely endorses its importance in achieving a desired outcome. The behaviour is better internalized and one does not feel pressured when pursuing it; thus identified regulation is self-determined. Finally, *integrated regulation* is the most self-determined type of extrinsic motivation. With integrated regulation, not only is the behaviour genuinely endorsed, it is also fully internalized and integrated with

other important values and identities, thus contributing to a coherent and unified sense of self.

Finally, at the most self-determined pole of the continuum is *intrinsic motivation*, which refers to a behaviour that is performed because it is inherently pleasurable and interesting.

Extrinsic and intrinsic motivation can be further organized in two motivational orientations, *autonomous* and *controlled motivation* (Deci & Ryan, 2000). With external and introjected regulations, internalization is at best partial and the behaviour is experienced as controlling rather than volitional. Therefore, these two types of regulations reflect a broader controlled motivational orientation. In contrast, with identified regulation, integrated regulation, and intrinsic motivation, internalization has been successful; hence the behaviour is genuinely endorsed and performed volitionally. Therefore, these three types of regulation reflect a broader autonomous motivational orientation.

Characterizing the quality of motivation in terms of its self-determination has generated important insights on between-person and within-person differences in behavioural outcomes. Specifically, SDT proposes that autonomous motivation leads to positive outcomes, whereas controlled motivation leads to less positive outcomes and negative outcomes (Deci & Ryan, 2000). This proposition has received extensive empirical support from decades of research conducted with a variety of methods and in a multitude of life domains (for reviews, see Knee et al., 2016, for relationships; Ng et al., 2012, for health; Guay et al., 2008, for education; Gagné & Deci, 2005, for work; and Standage & Ryan, 2012, for sports and exercise).

SDT also delineates a full sequence of antecedents and consequences of motivation. This is a powerful feature of the theory because if the quality of motivation leads to different outcomes it then becomes critical to identify the factors that influence the quality of motivation in order to develop effective interventions. In its most basic form, SDT's *motivational sequence*

predicts that the satisfaction of basic psychological needs in important relationships facilitates the emergence of autonomous motivation which leads to positive outcomes. However, when basic needs are poorly satisfied or thwarted, controlled motivation emerges, which leads to less positive or negative outcomes.

An emergent area of study in SDT research is committed relationships (Knee, Hadden, Porter, & Rodriguez, 2013). These relationships are among the most important ones in a person life, with critical ramifications for well-being and optimal functioning. So far, much of SDT research in this area has focused the contribution of basic psychological needs satisfaction and relational motivation (i.e., the reasons for a which a person maintains a relationship) to broad relationship processes, such as attachment (Slotter & Finkel, 2009), response to conflict (Blais, Sabourin, Boucher, & Vallerand, 1991; Knee, Lonsbary, Canevello, & Patrick, 2005; Patrick et al., 2007), coping strategies (Knee, Patrick, Vietor, Nanayakkara, & Neighbors, 2002), support provision (Hadden, Rodriguez, Knee, & Porter, 2015), meaning in life derived from a relationship (Hadden & Knee, 2017), and involvement in relationship activities (Gaine & La Guardia, 2009). Surprisingly, sexual activities, which are one of the most defining features of committed relationships, have received little attention from SDT research.

Self-determination theory research on sexual activities. By addressing both the antecedents and consequences of motivation, the motivational sequence proposed by SDT provides a powerful framework to predict *why* and *when* people experience variations in the quality of their sexual activities. Only a handful of SDT studies have examined sexual activities, but available evidence suggests that basic needs satisfaction and the self-determination of sexual motivation are consequential for well-being.

In the majority of these studies, sexual motivation was measured using an index of relative self-determination in which weighted scores for non-self-determined types of motivation are subtracted from self-determined types of motivation. In a cross-sectional study of university students, those with a more autonomy-supportive partner reported greater self-determined sexual motivation, whereas those with a more controlling partner felt less sexually competent (Boislard-Pépin, Green-Demers, Pelletier, Chartrand, & Séguin-Lévesque, 2002). Furthermore, higher sexual competence was associated with higher self-determined sexual motivation, and higher self-determined sexual motivation was associated with higher sexual satisfaction.

In a 21-day study of daily experiences conducted with university students, on days when people reported higher basic psychological needs satisfaction during sexual activities they experienced more positive sexual affect, less negative sexual affect, and higher sexual satisfaction (Smith, 2007). In support of the main proposition of relationships motivation theory (Deci & Ryan, 2014), each basic need made a unique contribution sexual well-being when modelled simultaneously. Finally, an examination of individual differences in basic needs satisfaction during sexual activities revealed that people who reported higher sexual autonomy and competence in general experienced more positive daily sexual interactions.

In a mixed method investigation, Brunell and Webster (2013) tested a variation of the motivational sequence. They investigated whether self-determined sexual motivation predicted basic psychological needs satisfaction during sexual activities and whether this was associated with psychological and relational well-being. Results from cross-sectional (Study 1) and daily experiences (Study 2) studies provided support for the model. Engaging in sexual activities for more self-determined reasons was associated with perceiving more basic needs satisfaction during sexual activities which in turn was linked to higher psychological and relational well-

being. However, results from a daily experiences study conducted with heterosexual couples (Study 3) were mixed. In terms of actor effects (i.e., effects involving the person's own variables), higher self-determined sexual motivation, but not basic needs satisfaction during sexual activities, was associated with better well-being outcomes in women. In men, higher sexual self-determined motivation and basic needs satisfaction were associated with higher psychological well-being, but only basic needs satisfaction was associated with relational well-being. The only partner effect (i.e., effects of one person's variable on their partner's variable) that was found was a positive association between men's sexual self-determination and relational well-being in their partner.

One study examined the longitudinal effects of motivation for casual sex on psychological well-being in university students (Vrangalova, 2015). Self-determined motivation and non-self-determined motivation for sexual activities were measured separately. The results indicated that students who engaged in casual sex for non-self-determined reasons over the course of the academic year reported lower self-esteem, stronger symptoms of depression and anxiety, and more physical symptoms. Engaging in causal sexual relationships for self-determined motives was not associated with any of the well-being outcomes. Students who engaged in casual sex for non-self-determined motives also reported lower levels of well-being in comparison to those who did not engage in casual sex and those who engaged in casual sex for self-determined reasons.

In sum, this small body of research provides initial evidence that self-determination is an important dimension of the quality of sexual motivation as it is associated with both within-person and between-person differences in well-being. Furthermore, basic psychological needs

satisfaction provides important insights on the contribution of the quality of interactions between partners to the quality of sexual motivation and sexual experiences.

Next Directions for Self-Determination Theory Research on Sexual Activities

As SDT research on sexual activities is scant, several important questions remain to be investigated. First, there is currently a lack of valid and reliable measures of the six types of regulations proposed by SDT in the context of sexual activities. The measure used in Brunell and Webster's (2013) study failed to produce a six-factor solution in exploratory factorial analysis as the items measuring identified and integrated regulations loaded on the same factor (Jenkins, 2003). The measure employed by Boislard-Pépin and colleagues (2002) showed adequate factorial validity in exploratory factorial analyses (see Green-Demers, Séguin, Chartrand, & Pelletier, 2002). However, its factorial structure has not been formally examined with more rigorous tests available through confirmatory factor analysis. Furthermore, other important psychometric properties of this measure and its subscales, notably convergent validity, discriminant validity, and measurement invariance in women and men, have yet to be examined. Therefore, validating this instrument is a critical step for the growth of SDT research on sexual activities.

Second, no studies have examined the distinct contributions of autonomous and controlled sexual motivation to sexual well-being. Studies conducted so far have examined the self-determination of sexual motivation by aggregating both self-determined and non-self-determined sexual motivation into a relative index of sexual self-determination (Boislard-Pépin et al., 2002; Brunell & Webster, 2013). While this method provides an indication of the extent to which a person's overall sexual motivation is self-determined, it ultimately cannot provide information on the distinct processes involved in optimal and non-optimal sexual self-regulation.

Autonomous and controlled motivation are theoretically distinct constructs and aggregating them into an index can render substantive interpretation difficult and mask potentially important differences in their antecedents and outcomes (e.g., Brunet, Gunnell, Gaudreau, & Sabiston, 2015). Investigating autonomous and controlled sexual motivation as distinct motivational orientations will generate a more comprehensive understanding of the different processes and outcomes associated with optimal and non-optimal forms of sexual motivation.

There is also a need to better understand the breadth of the antecedents and consequences of autonomous and controlled sexual motivation by examining their associations with broader psychological functioning. Specifically, there is a need to determine how they are related to other forms of motivation, such as global motivation, or a person's general tendency to behave in autonomous and controlled ways as well as relational motivation. Second, there is a need to clarify the breadth of the well-being outcomes associated with autonomous and controlled sexual motivation. Collectively, studies suggest that the well-being outcomes associated with self-determined sexual motivation are not restricted to the sexual domain (Boislard-Pépin et al., 2002) as they extend to global and relational well-being (Brunell & Webster, 2013; Vrangalova, 2015). However, none of these studies controlled for motivation at the corresponding level of these well-being outcomes (i.e., global motivation and relational motivation). Thus, it is not clear whether the self-determination of sexual motivation does contribute to relational and global well-being beyond the contribution of relational and global motivation. There is a possibility that the associations found in these studies were due to a common unmeasured variance between global, relational, and sexual motivation. Thus, if global and relational motivation were to be measured, these associations could potentially disappear. From a broader perspective, examining these

questions may generate novel insights on the ways in which sexual activities interact with the broader psychological functioning of the person and how they contribute to overall well-being.

Motivation can be understood not only as a disposition, but also as a state (Vallerand, 1997). Therefore, it is important to consider the manner in which within-person variations in sexual motivation are associated with sexual well-being. So far, SDT research has examined the links between daily variations in overall self-determined sexual motivation and daily experiences of relational and personal well-being (Brunell & Webster, 2013). However, the contribution of sexual self-determination to variations in sexual well-being from one sexual encounter to another has yet to be examined. By considering daily variations in autonomous and controlled sexual motivation we may better delineate the distinct processes underlying positive and negative sexual experiences.

Given that partnered sexual activities are inherently embedded in the broader context of the relationship, SDT research should focus on the contribution of relationship processes to variations in sexual motivation and well-being. One way to achieve this goal is to investigate the mutual effects that occur between partners. The dyadic nature of sexual activities in committed relationships means that the quality of sexual experiences results from the contribution of both partners to the unfolding of the sexual encounter. So far, SDT research using a dyadic approach has investigated the effect of one partner's self-determined sexual motivation on the other partner's relational and global well-being (Brunell & Webster, 2013). Consequently, there is a need to extend this research by investigating sexual well-being specifically.

Another avenue to understand the contribution of relationship processes to sexual motivation and well-being is to consider the extent to which basic psychological needs are satisfied during partnered interactions. A number of aspects pertaining to basic needs satisfaction

in the context of sexual activities deserve closer attention. First, only one study to date has investigated the proposition of relationships motivation theory in the context of sexual activities (Smith, 2007), namely that each basic psychological needs makes a unique contribution to relationship functioning (Deci & Ryan, 2014). Thus, there is a need to replicate these findings. Additionally, although two studies have investigated basic needs satisfaction as it occurs during sexual activities (Brunell & Webster, 2013; Smith, 2007), no research has examined whether basic needs satisfaction during non-sexual partnered interactions contributes to the quality of sexual motivation and well-being. This may provide novel insights on the manner in non-sexual relationship processes contribute to setting the stage for the occurrence of optimal and non-optimal sexual motivation and of positive and negative sexual well-being experiences. Indeed, the links between general relationship functioning and sexual activities is an underinvestigated question in sexuality research despite its importance (Delamter & Hyde, 2004; Impett, Muise, & Peragine, 2014).

Finally, an important direction for research is to validate the motivational sequence in the context of sexual well-being experiences. Only two published studies so far have investigated the motivational sequence in the context of committed relationships (Brunell & Webster, 2013; Patrick et al., 2007). Replicating this research is an essential step in demonstrating the generalizability of this theoretical axiom in this critical life domain. Additionally, validating SDT's motivational sequence can meaningfully extend research on the quality of sexual motivation as a whole. In a recent review of research on the quality of sexual motivation Muise (2017) noted that an important limitation of this research was a poor understanding of its antecedents. This is not only problematic for the state of scientific knowledge on the quality of sexual motivation, but also for the practical implications of this research given that knowledge of

its antecedents is essential for the development of effective interventions. Therefore, the motivational sequence proposed by SDT has the potential to provide a parsimonious yet flexible model for research on the antecedents and consequences of the quality of sexual motivation.

Research Objectives

The overarching goal of this research program is to investigate the contributions of autonomous and controlled sexual motivation to sexual well-being. This will be achieved by a series of five studies organized in four manuscripts.

Manuscript 1 – “Doing it” for the right reasons: Validation of a measurement of intrinsic motivation, extrinsic motivation, and amotivation for sexual relationships. The purpose of this research is to further validate the Sexual Motivation Scale (SexMS), an instrument developed for the purpose of measuring the six types of self-regulation proposed by SDT (Deci & Ryan, 2000) in the context of sexual activities. In Study 1, we provide a robust test of the factorial structure of the SexMS by examining the behaviour of its items in confirmatory factor analysis. Additionally, we examine the reliability of its subscales using internal consistency analyses. We establish its convergent validity by examining correlations among the subscales and whether they produce a simplex pattern in which the correlations between sexual regulations that are posited to be adjacent on the self-determination continuum should be stronger than between those that are posited to be non-adjacent. Finally, we examine the measurement invariance of the SexMS as a function of gender and relationship type (i.e., committed versus casual). Then, in Study 2, we replicate the findings of Study 1 for factorial validity and reliability in addition to examining the discriminant and concurrent validities of the SexMS in an independent sample.

Manuscript 2 – Not All Reasons for Sex Are Equal: Motivational Antecedents and Well-Being Consequences of Autonomous and Controlled Sexual Motivation. The objective of this study is to better understand individual differences in autonomous and controlled motivation by investigating the breath of their motivational antecedents and well-being consequences at three levels of psychological functioning: sexual, relational, and global. Specifically, we examine whether global and relational motivation predict autonomous and controlled sexual motivation. We also determine whether autonomous and controlled sexual motivation contribute to relational and global well-being beyond the associations of global and relational motivation. Finally, we examine whether these associations are best represented by a heterarchical structure in which the more specific levels of functioning are partially nested within the broader levels of functioning, hence operating independently from one another. We also explore the possibility that relational processes are more closely associated with the quality of sexual motivation than broad personality dispositions by examining whether sexual motivation is more proximal to the relational level than to the global level in this heterarchical structure.

Manuscript 3 – The ebb and flow of sexual well-being: The contribution of basic psychological needs and autonomous and controlled sexual motivation to daily variations in sexual well-being. The purpose of this study is to validate the relevance of the motivational sequence proposed by SDT in the context of daily variations in sexual well-being. That is, we examine whether sexual motivation is more autonomous and less controlled on days when people's experience more quality interactions with their partner, as captured by higher daily basic needs satisfaction. We also examine whether people enjoy better sexual experiences on days when their sexual motivation is more autonomous and less controlled. Finally, we examine

whether the quality of sexual motivation is a mechanism in the association between the quality of partnered interactions and daily sexual well-being.

Manuscript 4 – It takes two to tango: Associations between basic needs satisfaction, autonomous and controlled sexual motivation, and sexual well-being in heterosexual couples. The purpose of this study is to explore the associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual well-being from a dyadic perspective. A first objective of this study is to validate the relevance of SDT's motivational sequence for couples' sexual well-being. Thus, we examine whether basic needs satisfaction during sexual activities and the quality of sexual motivation in one partner contributes to the sexual well-being of the other partner. We also validate the main proposition of relationships motivation theory, which posits that all three needs make a unique contribution to optimal functioning in close relationships (Deci & Ryan, 2014).

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CHAPTER TWO

“Doing It” for the Right Reasons: Validation of a Measurement of Intrinsic Motivation, Extrinsic

Motivation, and Amotivation for Sexual Relationships

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Abstract

This investigation examined the psychometric properties of the Sexual Motivation Scale (SexMS), a measure of the six types of self-regulation proposed by SDT in the context of sexual relationships: intrinsic motivation, extrinsic motivation, and amotivation. We analyzed the construct validity of the SexMS in two studies (Study 1: $N = 1,070$, Study 2: $N = 575$). Results from a confirmatory factor analysis indicated that the SexMS can adequately reproduce the correlated six-factor structure posited by SDT. Findings from measurement invariance analyses as a function of gender and relationship type (i.e., casual and committed), tests for internal consistency, and correlational analyses all provided support for the reliability and the validity of the SexMS. Importantly, self-determined sexual regulation was associated with positive sexual health and well-being outcomes, whereas the inverse was found for non-self-determined sexual regulation. Additionally, participants who scored within the problematic range of sexual function showed a greater endorsement of non-self-determined sexual regulation and a lower endorsement of self-determined sexual regulation than those who scored in the non-problematic range. Overall, the SexMS provides a valuable tool to investigate sexuality within a SDT framework and a fine-grained measurement for the examination of the motivational processes associated with sexual health and well-being.

Keywords: sexual motivation, sexual motives, self-determination theory, sexual health, sexual well-being, scale validation

“Doing It” for the Right Reasons: Validation of a Measurement of Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Sexual Relationships

A New Measurement of Intrinsic Motivation, Extrinsic Motivation, and Amotivation for Sexual Relationships

Human sexuality is a core dimension of the self and a driving force in our lives that has the potential to both promote and undermine well-being (e.g., Byers & Rehman, 2014; Diamond & Huebner, 2012; Impett, Muise, & Peragine, 2014). One crucial factor in our understanding of how sexuality leads to either positive or negative consequences for our well-being is sexual motivation, or the reasons why we engage in sexual relationships (Byers & Rehman, 2014; Impett et al., 2014). In the present article, we propose that self-determination theory (SDT; Deci & Ryan, 2000) can be used as a lens to examine how sexual motivation is associated with positive or negative outcomes. SDT is a meta-theory of motivation that defines six motivational orientations posited to differ in their quality, thus bearing different consequences for psychological functioning. As SDT research is expanding its breadth to the domain of intimate relationships (see Knee, Hadden, Porter, & Rodriguez, 2013; LaGuardia & Patrick, 2008), we feel that motivational processes related to sexuality can meaningfully contribute to this emerging body of literature given the mounting evidence on the key role of sexuality in the determination of well-being (for reviews, see Byers & Rehman, 2014; Diamond & Huebner, 2012; Impett et al., 2014). Yet, there are currently few instruments available to measure the six types of motivation posited by SDT (see Jenkins, 2003, for a 5-factor measure of sexual motivation and Vrangalova, 2015, for a 3-factor measure of motivation for casual sexual relationships). In this paper, we introduce the Sexual Motivation Scale (SexMS), a new tool designed to measure the different

types of motivation proposed by SDT and their associations with positive and negative sexual outcomes.

Self-determination theory. According to SDT, optimal functioning depends on the extent to which a person's behaviour is self-determined or, in other words, autonomous (Deci & Ryan, 2000). Specifically, autonomy in the context of SDT is experienced when one's behaviour is genuinely coherent with one's self (de Charms, 1968). It is contrasted to heteronomy which is experienced when one's behaviour is controlled by internal or external pressures (Ryan, 1993). SDT explains how people regulate their behaviour by positioning these two experiences as poles on a continuum of relative self-determination.

Intrinsic motivation is the most autonomous type of motivation and involves engaging in behaviours for their own sake and because of the inherent pleasure they provide. These behaviours are fully volitional and genuinely endorsed by the self. Engaging in sexual activities because they are fun or because they provide pleasant sensations, for instance, denotes intrinsic motivation. We also perform behaviours not because they are inherently pleasurable, but because they represent a means to an end. To account for these experiences, SDT proposes four types of extrinsic motivation varying in the extent to which they are experienced as autonomous (Deci & Ryan, 1985, 2000). *Integrated regulation* is the most autonomous form of extrinsic motivation; the behaviour is fully internalized and endorsed by the self, meaning that it is coherently and harmoniously integrated with other aspects of the self. With respect to sexuality, this would be exemplified by engaging in sexual activities because they express an integral and meaningful part of one's identity. *Identified regulation* is also experienced as autonomous yet to a lesser extent than integrated regulation as the behaviour is perceived as personally significant, but it is not integrated with one's values and identity. Engaging in regular sexual activities because they

are a normal and healthy part of life is an example of an identified sexual motive. With *introjected regulation*, behaviours are regulated by internal pressures, such as to maintain or enhance one's self-worth, or to avoid anxiety, guilt or shame. As such, they are not experienced as autonomous. These motives are typically exemplified by engaging in sexual activities to validate certain aspects of the self, such as to prove that one is a good lover. The least autonomous type of extrinsic motivation, *external regulation*, characterizes behaviours controlled by external pressures, namely receiving rewards or avoiding punishments imposed by others. Engaging in sexual activities to avoid conflicts with a partner is an example of external sexual regulation. The least self-determined regulation is *amotivation* which designates a complete absence of motivation due to either a lack of control or efficacy over the behaviour. Amotivation is an impersonal form of motivation due to an absence of intention in the regulation of behaviour. It is thus highly distinct from the other types of motivation, all of which involve some degree of intention.

The existence of the continuum of relative self-determination is usually demonstrated by determining whether a simplex pattern of correlations underlies the six types of self-regulation (Ryan & Connell, 1989). A simplex pattern is an ordered arrangement of correlations in which the variables that are more conceptually similar display stronger correlations than the variables that are less conceptually similar (Guttman, 1954). In the context of SDT, this means that self-regulations that are hypothesized to be adjacent on the continuum of self-determination should correlate more strongly and more positively than those that are further apart. Evidence for simplex patterns has been found for several SDT-based instruments measuring motivation in different life domains (e.g., Blais, Sabourin, Boucher, & Vallerand, 1990; Gagné et al., 2010, Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013; Ryan & Connell, 1989; Vallerand et al., 1992).

As a theory of optimal functioning, a central axiom of SDT is that the quality of our motivation matters for our well-being. Specifically, greater self-determined motivation (i.e., intrinsic motivation and integrated and identified regulations) relative to non-self-determined motivation (i.e., introjected and external regulations and amotivation) tends to be associated with more positive outcomes and fewer negative outcomes (Deci & Ryan, 2000; Vallerand, 1997). The opposite is true for experiencing greater non-self-determined motivation relative to greater self-determined motivation. These associations have been demonstrated using a variety of methodologies and in multiple domains (for reviews see Guay, Ratelle, & Chanal, 2008; Knee et al., 2013; Mahoney, Ntoumanis, Mallett, & Gucciardi, 2014; Ng et al., 2012; Standage & Ryan, 2012). Accordingly, framing sexual motivation in terms of self-determination can provide important insights on the factors associated with either positive or negative sexual outcomes.

SDT-based sexuality research is scant, but the results of available studies lend support to the notion that self-determination matters for sexual well-being. Specifically, self-determined sexual motivation is positively associated with sexual self-schemas, sexual self-esteem, sexual vitality, orgasm frequency, positive sexual affect, sexual pleasure, sexual satisfaction, and experiencing feelings of autonomy, competence, and relatedness during sex (Boislard-Pépin, Green-Demers, Pelletier, Chartrand, & Séguin Lévesque 2002; Brunell & Webster, 2013; Jenkins, 2003; Vrangalova, 2015). Its correlates also span beyond the domain of sexuality as greater self-determined sexual motivation is associated with broader psychological functioning, such as fewer physical symptoms, more positive affect, less negative affect, lower symptoms of depression and anxiety, greater life satisfaction and vitality, and with positive relational outcomes, such as greater intimacy, commitment, passion, and satisfaction (Brunell & Webster, 2013; Jenkins, 2003; Vrangalova, 2015).

From a theoretical perspective, more specifically from the vantage point of the hierarchical model of intrinsic and extrinsic motivation (HMIEM; Vallerand, 1997), motivation exists at the global, contextual, and situational levels. Sexual motivation can be measured both at the contextual level (i.e., a dispositional motivation that is specific to the context of sexuality) and at the situational level (i.e., motivation for sexual activities on a day-to-day basis). The HMIEM predicts that sexual motivation at the contextual level can be a predictor of the ways people approach their sexual activities in general and a predictor of one's motivation on a day-to-day basis (Vallerand, 1997). It would also predict that situational sexual motivation can be influenced by both sexual motivation at the contextual level and by other characteristics of the situation that could be salient at a specific moment (Vallerand, 1997).

Importantly, the HMIEM posits that motivation at a given level will be associated with well-being outcomes at that same level (Vallerand, 1997). Sexual motivation at the contextual level should therefore be the best predictor of contextual sexual outcomes while situational sexual motivation should be the best predictor of sexual outcomes experienced at a specific point in time. Therefore, measuring sexual motivation at the contextual level is likely to be better suited for longitudinal investigations of sexual health and well-being than sexual motivation at the situational level. Overall, examining sexual motivation from a situational perspective is an important component of the motivational underpinnings of sexual behaviour as the nature of the reasons to engage in sexual activities are modulated by a host of contextual factors (e.g., current mood, health status, and quality of the interaction with the sexual partner on that day). However, investigating sexual motivation as an individual difference is important as well given its potential to explain both between-person variations in sexual health and well-being and within-person variations in sexual motivation.

Development of the Sexual Motivation Scale. The SexMS is a measurement of sexual motivation that assesses the reasons for which a person engages in sexual relationships in general (Green-Demers, Séguin, Chartrand, & Pelletier, 2002). The items of the SexMS were initially developed through focus groups in which men and women were asked to list the reasons for which they engaged in sexual relationships. Eighty-seven items were retained and adapted to correspond to the six types of motivation posited by SDT. This initial version showed good psychometric properties: Exploratory factor analyses suggested a six-factor structure, the correlations among the subscales formed a quasi-simplex pattern, and an adequate reliability coefficient was found for each subscale (Green-Demers et al., 2002). Additionally, good concurrent validity was demonstrated as the self-determined subscales were positively associated with positive sexual outcomes (i.e., sexual competence, importance of sexuality, and sexual satisfaction), whereas the non-self-determined subscales were positively associated with negative sexual outcomes (i.e., sexual anxiety and sexual depression).

This initial version of the SexMS was eventually reduced to 24 items in order to increase its validity and brevity by selecting the items with the strongest factor loadings and best face validity. Namely, many items were removed because they encapsulated goals rather than motives (e.g., increasing the intimacy of a relationship). The goal of the present study was to validate the 24-item version of the SexMS as there was a need to formally examine its psychometric properties. In Study 1, we focused on establishing factorial validity, measurement invariance, convergent validity within the subscales, and reliability. In Study 2, we replicated the findings pertaining to factorial validity in a separate sample and we further examined the construct validity of the SexMS by testing its discriminant and concurrent validities.

Study 1

The main objective of Study 1 was to establish the factorial validity of the SexMS through a confirmatory factor analysis (CFA). As SDT posits six types of motivation defined by incremental degrees of autonomy and that are correlated to each other (Deci & Ryan, 2000), we expected a correlated six-factor model to present a good fit to the data. Factorial structure as a function of gender and relationship type (i.e., casual versus committed) was also examined to determine whether the measure performed similarly across these groups given their relevance in sexuality research. In addition, we provided evidence for the convergent validity of the SexMS by examining correlational patterns among the subscales. We expected to find a simplex pattern among the six subscales, such that those representing motivation that are adjacent to each other on the continuum of self-determination would show stronger correlations than those that are not adjacent to each other. We also conducted a reliability analysis for each subscale. Finally, we explored similarities and differences for gender and relationship type in SexMS subscale scores as previous studies have found differences in sexual motivation among these groups (e.g. Armstrong & Reissing, 2015; Brunell & Webster, 2013; Hatfield, Luckhurst, & Rapson, 2010). It is important to note that these analyses were exploratory as SDT makes no prediction regarding differences in the structure of motivation as a function of gender and relationship type.

Method.

Participants and procedure. Respondents were recruited through a participant pool at a Canadian university and were compensated with one credit toward the course they were taking. They were required to be at least 17 years of age, currently sexually active with a casual or committed partner, and fluent in English. The sample consisted of 1,133 university students (895 females and 238 males). The mean age of participants was 19.91 years ($SD = 4.00$, range = 17–50). The ethnic heritage composition of the sample was as follows: 74% European, 8% Asian,

6% African, 3% Middle Eastern, 1% Hispanic, 4% mixed ethnic heritage, fewer than 1% participants reported being aboriginal, and 3% did not report their ethnic heritage. Most participants identified as heterosexual (93%), a minority identified as gay (2%), lesbian (1%), or bisexual (4%), and less than 1% reported “other” for sexual orientation. The majority of participants were in a committed relationship at the time of the study (82%). Average relationship length was 20.11 months ($SD = 26.24$) for participants who were in a committed relationship. The procedures of the study involved completing an online questionnaire hosted at a time and place of the students’ choice. Informed consent was obtained from all participants. The Ethics Review Board of the researchers’ university approved all the procedures involved in this study.

Measure. The SexMS as it is presented in this study is the most recent version of an instrument that was designed to measure the six types of sexual motivation outlined by SDT (Green-Demers et al., 2002). Each subscale is composed of four items (see Table 1) rated on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). The following instructions were given with the measure: “There are many reasons why people have sexual relationships. Please indicate to what extent each of the statements below corresponds to your motives for having sexual relationships in general by checking the appropriate number”.

Results and discussion.

Data preparation. Data were screened and prepared following the guidelines recommended by Tabachnick and Fidell (2001) for multivariate analyses and by Kline (2010) for structural equation modelling (SEM). We first dealt with missing values and outliers. Multivariate outliers were removed from the database ($n = 63$) and the final analyses were performed on data from 1070 participants. We then screened the data for normality. As the data

did not meet the assumption of multivariate normality, we used a bootstrap procedure based on 5000 samples with replacements to provide less biased p values (i.e., Bollen-Stine p values; Bollen & Stine, 1990) and standard errors (Nevitt & Hancock, 2001).

Confirmatory factor analysis. Results suggested that the correlated six-factor model performed adequately (see Table 2). Although fit indices were slightly below the optimal cut-off of $\geq .95$ (Hu & Bentler, 1999), we did not attempt to improve the model's fit through re-specification in order to avoid creating a good fitting, but data-driven model at the expense of generalizability (see Kline, 2010). All factor loadings were significant and performed well (see Table 1). Average extracted variance ranged between .53 and .70, suggesting good convergent validity among the items composing each subscale.

To provide a more stringent test of the theorized model underlying the SexMS, we compared our hypothesized model to two alternative models: An uncorrelated six-factor model to provide a test of the associations among the factors and a model in which integrated and identified items loaded on the same factor given that obtaining a solution in which these factors were distinct has been problematic in some validation studies of SDT-based measures (e.g., Jenkins, 2003). Both models showed a poorer fit in comparison to the correlated six-factor model (see Table 2).

We also tested the validity of a model in which the three types of self-determined sexual motivation and the three types of non-self-determined sexual motivation each loaded on a second-order factor given that the six types of regulation are often modelled as aggregates. The fit of this model was passable, albeit the fit indices were below the recommended optimal values (see Table 2). As was the case with the hypothesized model, we refrained from re-specifying this model in order to preserve its generalizability.

Measurement invariance. Next, the model was tested for measurement invariance as a function of gender and relationship type (see Table 3). We focused on CFI differences (ΔCFI) to establish measurement invariance given that the conventionally used likelihood ratio test based on chi-square differences between models tends to be excessively stringent with larger samples (Kline, 2010). The results from a simulation study suggested that if the value of a ΔCFI indicates a group invariance when sample sizes exceed 200 cases per group, it is likely that any differences that exist between the groups are negligible, even when the likelihood ratio test is significant (Meade, Johnson, & Braddy, 2008). The researchers recommended reporting both likelihood ratio tests and ΔCFI values, and to use $\Delta\text{CFI} \leq .002$ to establish measurement invariance. For gender, the configural model had a good fit in women and in men, $\chi^2(474) = 1518.78, p < .001$, RMSEA = .045 (90% CI [.043, .048]), CFI = .937, TLI = .93, NFI = .91. Measurement invariance was also found for factor loadings and structural covariances, but not for measurement errors. These results suggest that the SexMS functions similarly, although not identically in men and women.

Regarding relationship type, the results for the configural model showed a good fit for committed relationships and for causal relationships, $\chi^2(474) = 1522.37, p < .001$, RMSEA = .046 (90% CI [.043, .048]), CFI = .936, TLI = .93, NFI = .91. However, measurement invariance was not found for factor loadings, structural covariances, and measurement errors. Taken together, these results suggest that although the factor structure of the SexMS is similar for those in a committed relationship and those in a casual relationship, the factor loadings, associations between the factors, and measurement errors likely differ in these two groups.

Correlations, reliability, and mean comparisons. We determined whether the associations between the subscales of the SexMS followed a simplex pattern by performing a

correlational analysis using both subscale composite scores and factorial scores obtained from the CFA (Table 4). The results revealed a simplex pattern as types of sexual regulations hypothesized to be adjacent on the continuum of self-determination were more strongly and positively associated with each other than to those hypothesized to be non-adjacent.

Reliability was analyzed by computing a Cronbach's alpha coefficient for each subscale (see Table 5). Overall, the subscales of the SexMS demonstrated good to excellent reliability. Next, the scores on the SexMS as a function of gender and relationship type were compared using a MANOVA (see Table 3). For gender, men endorsed the integrated, introjected, external, and amotivation items more strongly than women. With the exception of external regulation, which showed a medium effect size, gender differences were small in magnitude. For relationship type, participants involved in a casual relationship endorsed the introjected, external, and amotivated items more strongly than those in a committed relationship; these differences were small in magnitude, though differences for introjected regulation and amotivation approached the medium range. In sum, there were some differences as a function of gender and relationship type in this sample and they pertained mainly to non-self-determined types of sexual regulation.

Study 2

The objective of Study 2 was to further investigate the construct validity of the SexMS by examining its discriminant validity and its concurrent validity. To establish discriminant validity, we sought to demonstrate that the construct measured by the SexMS was distinct from other motivational constructs. Accordingly, we examined correlational patterns between the SexMS and measures of global and relational motivation. Global motivation refers to a person's motivation for performing everyday activities in general (Deci & Ryan, 2000; Vallerand, 1997).

Theoretically, domain-specific types of motivation should be associated with global motivation.

According to the HMIEM, motivation is organized following a hierarchical structure wherein domain-specific motivation, or motivation at the contextual level, is embedded within motivation at the global level (Vallerand, 1997). Furthermore, global motivation and contextual motivation are posited to influence each other through top-down and bottom-up effects (Vallerand, 1997). We therefore expected that sexual motivation would be related to yet distinct from global motivation and this would be shown by small to medium-ranged correlations ($r \leq .50$). Relational motivation refers to the reasons for which a person maintains a relationship with their partner (Blais et al., 1990). As sexual activities are influenced by the relational context in which they occur (e.g., Impett et al., 2014), it is not surprising to find congruence between one's relational motivation and one's sexual motivation. For instance, research using the approach-avoidance framework of motivation showed that stronger approach relational motives were associated with stronger approach sexual motives (Impett, Strachman, Finkel, & Gable, 2008). We therefore expected that sexual motivation would be related to yet distinct from relational motivation and this would also be demonstrated by small to medium-ranged correlations ($r \leq .50$).

To provide evidence for the concurrent validity of the SexMS, correlations between the SexMS and three sexual health and well-being outcomes were examined: sexual function, sexual satisfaction, and sexual distress. As SDT posits that more self-determined types of regulation should be associated with better functioning compared to non-self-determined types of regulation (Deci & Ryan, 2000), we expected that self-determined types of sexual regulation would be positively correlated with healthier sexual function and sexual satisfaction, and negatively correlated with sexual distress. In contrast, we expected that non-self-determined types of sexual

regulation would be negatively correlated with healthier sexual function and sexual satisfaction, and positively correlated with sexual distress. We also explored the interplay between sexual motivation and sexual problems by comparing means for each type of sexual regulation for those who scored above versus below the established cut-offs for the presence of sexual dysfunctions on the sexual function measures used in this study. We expected that those who scored in the non-problematic range of sexual function would report stronger endorsement of self-determined types of sexual regulation compared to those who scored in the problematic range. Alternatively, we expected that those who scored in the problematic range of sexual function would report stronger endorsement of non-self-determined types of sexual regulation than those who scored in the non-problematic range.

Method.

Participants and procedures. The participants in Study 2 were a separate sample of 590 students (449 females and 141 males; mean age = 20.58, $SD = 4.11$, range = 17–58) recruited using the procedure described in Study 1 in addition to class presentations and posters placed in various campus locations. The composition of the sample in terms of ethnic heritage was as follows: 73% European, 8% African, 6% Asian, 2% Hispanic, 4% Middle Eastern, 5% mixed ethnic heritage, 1% aboriginal, and 1% did not report their ethnic heritage. For sexual orientation, most participants identified as heterosexual (93%), and a minority identified as gay (1%), lesbian (1%) or bisexual (5%), and 1% reported “other” as their sexual orientation. The majority of participants were in a committed relationship at the time of the study (80%). Average relationship length for those in a committed relationship was 21.66 months ($SD = 27.23$).

Measures. In addition to the SexMS (see Study 1 for a description), the following measures were used in this study.

Global motivation. The Global Motivation Scale (GMS; Pelletier et al., 2013; Sharp, Pelletier, Blanchard, & Lévesque, 2003) measures global motivation from a SDT perspective by asking the respondent why they perform activities and behaviours in general (i.e., “In general, I do things...”). This instrument contains six subscales (intrinsic, integrated, identified, introjected, external, and amotivation) and 18 self-report items that are rated using a 7-point Likert-scale ranging from 1 (*not at all*) to 7 (*completely agree*). In this study, the reliability coefficients for the GMS subscales ranged between .60 and .85.

Relational motivation. The Couple Motivation Questionnaire (CMQ; Blais et al., 1990; Knee, Lonsbary, Canevello, & Patrick, 2005) is a 21-item self-report instrument that measures the extent to which motives for being in a relationship are self-determined using six subscales, one for each type of regulation posited by SDT. Participants were instructed to think about the reasons for which they were in a relationship with their current sexual partner and rated the items using a Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). In this study, the reliability coefficients for the CMQ subscales ranged from .58 to .84.

Sexual satisfaction. Sexual satisfaction was measured using the New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010). This 20-item self-report scale evaluates the degree of sexual satisfaction with respect to five dimensions of sexuality: (a) sexual sensations, (b) sexual presence, (c) sexual exchange, (d) emotional connection/closeness, and (e) sexual activity. Items are answered using a 5-point Likert scale ranging from 1 (*not at all satisfied*) to 5 (*extremely satisfied*). In this study, the reliability coefficient for the NSSS was .93.

Sexual distress. Sexual distress was measured using the seven gender-neutral items of the Female Sexual Distress Scale (FSDS; Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). This scale measures the extent to which a person experiences distress about their sexuality in

general and/or regarding their sexual functioning, for example, feeling “embarrassed about sexual problems”. Items are rated with a Likert scale ranging from 0 (*never*) to 4 (*always*). In this study, the reliability coefficient for this adaptation of the FSDS was .86.

Sexual function. Female sexual function was measured using the Female Sexual Function Index (FSFI; Rosen et al., 2000), a 19-item self-report questionnaire that measures six domains of sexual function (i.e., desire, orgasm, lubrication, arousal, satisfaction, and pain). A higher score on the FSFI denotes better sexual function, with a clinical cut-off score of ≤ 26.55 suggesting the presence of a female sexual dysfunction (Wiegel, Meston, & Rosen, 2005). The satisfaction subscale was not used as we used the NSSS instead (Štulhofer et al., 2010). Following the guidelines provided by the authors of the FSFI (Rosen et al., 2000), data from women who reported no sexual activity (arousal, lubrication, and orgasm subscales: $n = 7$) or no intercourse (pain subscale: $n = 14$) in the last four weeks were excluded from these analyses as these response categories do not convey the reasons for which these women were not engaging in sexual activities, hence providing limited information on their sexual functioning. Reliability coefficients for the FSFI in this study ranged between .80 and .96. Male sexual function was assessed using the abridged version of the International Index of Erectile Function (IIEF-5; Rosen, Cappelleri, Smith, Lipsky, & Peña, 1999), a 5-item scale designed to measure the presence and severity of erectile dysfunction, with a cut-off score of ≤ 21 to suggest the presence of erectile dysfunction. In this study, the reliability coefficient for the IIEF-5 was .94.

Results and discussion.

Data preparation. Data were prepared using the same procedure described in Study 1. We first dealt with missing values and outliers. Fifteen cases were identified as multivariate outliers and removed from the database; thus, the remaining analyses were performed on 575

participants. Screening for normality revealed the presence of skew and kurtosis on several variables and as such, we used a bootstrap procedure to obtain less biased p values and standard errors; 5000 samples with replacements were used for the bootstrap procedure.

Preliminary analyses. We first conducted a CFA using the correlated six-factor model and the second-order factor model to replicate the results from Study 1. Both models showed a good fit in this sample, providing further support for the factorial validity of the SexMS (see Table 1). We then computed descriptive statistics and reliability coefficients for each subscale (see Table 5). Reliability coefficient in this sample ranged from good to excellent. Results from a MANOVA suggested that the men in this sample endorsed identified, introjected, and external sexual regulations items to a greater extent than women. Participants in a casual relationship also endorsed intrinsic, introjected, and amotivated sexual regulations items to a greater extent than participants in a committed relationship. Next, we examined the correlations between the subscales. For the most part, the subscales replicated a simplex pattern, providing additional evidence for a continuum of relative self-determination underlying the subscales.

Main analyses. As predicted, most correlations between the subscales of the SexMS and their counterparts on the GMS and on the CMQ were significant, in the expected direction, and within the expected magnitude (Table 6). The correlations between the SexMS subscales and the CMQ subscales were also stronger than the correlations between the SexMS and the GMS. Contrary to our expectations, identified sexual regulation was not related to identified global motivation and integrated sexual regulation was not related to integrated global motivation. Collectively, these results suggest that the SexMS measures a construct that is distinct yet related to global and relational motivation.

With respect to concurrent validity, correlational patterns between the different types of sexual regulation and sexual health and well-being outcomes were for the most part significant and in the expected directions in women (see Table 7). Correlations with positive sexual health and well-being outcomes increased in magnitude as sexual motives became more self-determined. Conversely, correlations with poorer sexual health and well-being outcomes increased in magnitude as sexual motives became less self-determined.

In men, a different pattern emerged as self-determined types of sexual regulation were mainly correlated with positive sexual health and well-being outcomes, whereas non-self-determined types of sexual regulation showed an opposite pattern as they mainly correlated with negative sexual health and well-being outcomes (see Table 8). However, correlations did show a pattern of incremental change in magnitude as a function of self-determination, such that sexual outcomes became increasingly positive as sexual regulation became more self-determined and increasingly negative as sexual regulation became less self-determined. Contrary to our prediction, the correlation between introjected sexual regulation and sexual distress was similar in magnitude to the correlation between external sexual regulation and sexual distress.

Finally, mean comparisons between those who scored above versus below the cut-offs for sexual function problems revealed that the SexMS detected differential associations between sexual motivation and sexual functioning (see Table 9). Specifically, there was a stronger endorsement of self-determined sexual regulations and weaker endorsement of non-self-determined sexual regulations in women who scored within the non-problematic range of sexual function in comparison to those who scored within the problematic range. These differences ranged from small to large and increased in magnitude moving toward the poles of the self-determination continuum. In men, a similar pattern was found, although no significant

differences were found for integrated, identified, and introjected sexual motives. Taken together, these results provide initial evidence for the concurrent validity of the SexMS, namely that it can detect both quantitative and qualitative differences in sexual outcomes related to sexual motivation.

General Discussion

The aim of the current research was to investigate the psychometric properties of the 24-item version of the SexMS. In Studies 1 and 2, findings from the CFA suggest that the SexMS is a measurement of all six types of sexual regulation posited by SDT. The results also suggest that the subscales can be aggregated into two broad types of sexual regulation in studies seeking to provide a molar analysis of sexual motivation. In addition, findings from the analysis of measurement invariance indicate that the SexMS measures the same factors as a function of gender and relationship type. However, differences in measurement errors were found for gender, and differences for factor loadings, factor covariances, and measurement errors were found for relationship type. As most of these differences were small, comparisons of SexMS scores among these groups may be done, albeit with some caution.

We also investigated the convergent, discriminant, and concurrent validities of the SexMS. We found evidence for a quasi-simplex pattern, providing general support for a continuum of self-determination underlying the subscales of the SexMS, and hence for convergent validity. Discriminant validity was examined by determining the extent to which the SexMS measured a construct that differed from other types of motivation, namely global and relational motivation. As expected, most correlations between the subscales of the SexMS and their counterparts on the GMS and the CMQ were significant, and their magnitude suggested that the SexMS measured a concept that is distinct yet related to global and relational motivation.

Interestingly, integrated and identified sexual regulations were not related to their respective counterparts on the GMS. This may be a reflection of the fact that one's sexuality, given its very private nature, may be less salient than other aspects of the self (Garcia & Carrigan, 1998). This may be especially true for those who do not belong to sexual minorities as the legitimacy of their sexual self is rarely contested. Perhaps many people do not reflect about the importance of their sexuality and its contribution to their identity to the same extent as they reflect about their general sense of self, and this might be reflected into the absence of correlations that we observed. Clearly, further research is needed to better understand this question.

Another interesting finding was the magnitude of the correlations of the SexMS with the CMQ being greater than those with the GMS. According to the HMIEM, motivation at the global level is associated with domain-specific motivation, such as sexual motivation (Vallerand, 1997). However, because partnered sexual activities are inextricably tied to the broader relational context in which they occur (e.g., Impett et al., 2014), it is not surprising that sexual motivation showed a stronger association with relational motivation than with global motivation. Thus, sexual motivation may be more proximal to relational motivation than to global motivation within the self. Overall, these patterns of findings suggest that sexual motivation is not isolated from other domains and levels of motivation within the self and as such, it will be important to further investigate the interplays between sexual, relational, and global motivation.

Concurrent validity was investigated by examining correlational patterns between the subscales of the SexMS, sexual function, sexual satisfaction, and sexual distress. We found intriguing patterns of results suggesting that gender may moderate the associations between sexual motivation and sexual well-being. In women, the different types of sexual regulation appeared fully integrated with sexual well-being as self-determined types of sexual regulation

were positively associated with positive indicators of sexual well-being and negatively associated with negative ones, and the inverse was observed for non-self-determined types of sexual regulation. In contrast, the associations between sexual motivation and sexual well-being appeared more compartmentalized in men as self-determined types of sexual regulation were mainly associated with positive sexual well-being outcomes, whereas non-self-determined types of sexual regulation were mainly associated with negative ones.

Importantly, mean comparisons of sexual motivation for those who scored above and below the cut-offs for clinical problems in sexual function suggest that the SexMS can detect differences in sexual health. It is likely that sexual motivation and sexual function, and other health and well-being outcomes are tied together through a reciprocal relationship. On one hand, problems with sexual function may be experienced as a loss of autonomy given that the body is not responding as one would want it to. Heteronomy may also increase as sexual function problems may lead to greater perceived or actual pressures to perform “normally” imposed by oneself and/or others. On the other hand, a greater endorsement of non-self-determined sexual motives necessarily involves a management of internal and external pressures. These pressures may lead to cognitive distractions during sex, such as concerns about adequate sexual performance, which ultimately could impair sexual function. Overall, these results indicate that SexMS has the capacity to detect incremental changes in the magnitude of associations between sexual motivation and sexual health as these associations became stronger moving to either pole of the self-determination continuum. Therefore, the SexMS provides a fine-grained measurement of the magnitude and direction of the associations between sexual motivation and sexual outcomes.

Internal consistency coefficients for all six SexMS subscales were within acceptable ranges in both studies. Differences in SexMS scores between genders and relationship types also emerged. Compared to women, men showed a stronger endorsement of integrated, introjected, external, and amotivated sexual regulations. A gender difference pertaining to integrated sexual regulation is particularly interesting as it may be a reflection of a sexual double standard that still prevails in North American society and in which women can be stigmatized for being sexually permissive (Bordini & Sperb, 2012). Viewing sexuality as an integral part of one's self may be more difficult for some women, especially if they perceive that certain aspects of their sexuality are socially reprehensible (e.g., engaging in casual sex, masturbating).

With respect to gender differences in non-self-determined sexual regulations, studies conducted thus far have found mixed results. Brunell and Webster (2013) found higher scores for non-self-determined types of sexual regulations in men, whereas Vrangalova (2015) and Jenkins (2003) did not find any gender differences. Interestingly, non-SDT studies have found that men are more likely to endorse motivation that could be qualified as non-self-determined, such as status enhancement, recognition, and peer conformity (for a review, see Hatfield et al., 2010). A possible explanation for these findings is that sexual motivation in some men may be influenced by a hegemonic masculinity ideology that equates being a "real man" with sexual performance and sexuality with status (Levant, 1997). This ideology may be experienced as pressuring, thus leading men to endorse non-self-determined sexual regulations to a greater extent than women, who are not held to the same expectations regarding their sexuality.

This is also the first SDT study to document differences in sexual motivation as a function of relationship type. Participants in a causal sexual relationship reported a slightly higher endorsement of intrinsic, introjected, external, and amotivated sexual regulations. That

intrinsic sexual regulation was more strongly endorsed by those in a casual sexual relationship is not surprising given that previous studies using other frameworks of sexual motivation have found that pleasure tends to be the most commonly cited motive for casual sex (e.g., Armstrong & Reissing, 2015; Garcia & Reiber, 2008; Li & Kenrick, 2006).

However, it is less clear why non-self-determined motives were more strongly endorsed by those involved in a casual relationship. One possible explanation is that casual and committed sexual relationships serve different purposes and those served by casual relationships may foster more non-self-determined sexual motivation. For instance, casual sexual relationships are viewed by some as a means to evaluate or enhance one's self-worth as a sexual partner (Li & Kenrick, 2006), therefore fostering more introjected sexual regulation. Further, the fact that casual sexual relationships are commonly viewed as a pathway to initiate a committed relationship (e.g., Garcia & Reiber, 2008; Li & Kenrick, 2006) may contribute to a greater endorsement of external sexual motives. Finally, the association between casual relationships and substance use (Claxton, DeLuca, & van Dulmen, 2015) may foster a context where sexual amotivation is more likely to occur. Indeed, a substantial proportion of people report that their casual sexual encounters were unintentional due to alcohol or drug use (Garcia & Reiber, 2008), and behaviours that are unintentional are amotivated by definition because there is no motivation to perform the behaviour in the first place.

Overall, given the paucity of theoretical explanations and research within SDT regarding gender and relationship type differences in sexual motivation, our conclusions about the meaning of these differences are speculative and must therefore be interpreted with caution. Additional theoretical developments and empirical evidence are critical to clarify this question. It is also

important to note that as these differences were small in magnitude for the most part, we cannot know whether they were actually meaningful or if they were a statistical artifact.

Limitations and future directions. Although the results of the present studies suggest that the SexMS has good psychometric properties, the validity of the scale could benefit from additional research. First, future studies conducted with other ethnicities, age groups, socioeconomic classes, and with sexual minorities would provide important information on the validity of the SexMS in those populations. Second, this study validated the SexMS at the contextual level, but it could easily be adapted to situational-level investigations of sexual motivation. Validation of the SexMS for the measurement of situational sexual motivation is therefore an important next step. Third, the SexMS is meant to be a theory-driven instrument for research on the roles that intrinsic motivation, extrinsic motivation, and amotivation play in sexual well-being. Therefore, it would be important to determine if these types of sexual motivation can provide insight into sexual health and well-being over and above other types of sexual motivation that are based in different conceptual frameworks, such approach and avoidance motivation or motives that focus on the biological aspects of sexual relationships. Fourth, as the findings from the concurrent validity analysis are correlational, longitudinal studies are necessary to better understand the direction of the associations between sexual motivation and sexual outcomes. Finally, temporal reliability for the SexMS needs to be established.

In conclusion, the SexMS provides a valuable instrument for the measurement of sexual motivation and we hope that it will contribute to both a better understanding of motivational processes related to sexuality and a much needed expansion of SDT-based research on the interplay between close relationships and human sexuality.

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Table 1.1

Standardized Factor Loadings

Subscale	Factor Loadings Study 1	Factor Loadings Study 2
Intrinsic		
Because sex is fun	.78(.75, .81)	.72(.65, .78)
Because I enjoy sex	.87(.84, .89)	.86(.81, .89)
For the pleasure I feel when my partner stimulates me sexually	.77(.73, .80)	.74(.68, .79)
Because sex is exciting	.86(.84, .89)	.87(.83, .91)
Integrated		
Because sexuality brings so much to my life	.80(.77, .83)	.79(.74, .83)
Because sexuality is a key part of who I am	.77(.74, .80)	.78(.74, .82)
Because sexuality is a meaningful part of my life	.84(.81, .87)	.84(.80, .87)
Because sexuality fulfills an essential aspect of my life	.87(.85, .89)	.85(.81, .88)
Identified		
Because sexuality is a normal and important aspect of human development	.64(.58, .68)	.58(.50, .66)
Because I feel it's important to experiment sexually	.80(.76, .83)	.79(.74, .83)
Because I think it's important to learn to know my body better	.68(.64, .73)	.68(.72, .83)
Because I feel it's important to be open to new experiences	.79(.75, .82)	.78(.62, .73)
Introjected		
To prove to myself that I am sexually attractive	.81(.78, .84)	.87(.77, .55)
To show myself that I am sexually competent	.82(.79, .85)	.83(.78, .87)
To prove to myself that I am a good lover	.82(.79, .85)	.83(.79, .87)
To prove to myself that I have sex-appeal	.88(.85, .90)	.81(.82, .91)
External		
Because my partner demands it of me	.68(.63, .73)	.75(.68, .80)
To avoid conflicts with my partner	.81(.77, .84)	.80(.75, .84)
Because I don't want to be criticized by my partner	.82(.78, .85)	.82(.76, .87)
To live up to my partner's expectations	.70(.66, .75)	.67(.60, .73)
Amotivation		
I don't know; I feel it's not worth it	.75(.69, .80)	.76(.56, .78)
I don't know; it feels like a waste of time	.86(.82, .89)	.86(.69, .87)
I don't know; actually, I find it boring	.88(.85, .92)	.80(.79, .91)
I don't know; sex is a disappointment to me	.84(.80, .87)	.68(.67, .83)

Note. Study 1: $N = 1,070$, Study 2: $N = 575$; numbers in parentheses are 95% bias-corrected percentile confidence interval.

Table 1.2

Model Fit Statistics for the SexMS

Model	χ^2	<i>df</i>	RMSEA	CFI	TLI	NFI	$\Delta\chi^2$
Hypothesized Model Study 1	1238.36	237	.063	.94	.93	.93	-
Hypothesized Model Study 2	671.43	237	.057	.95	.94	.92	-
Uncorrelated Six-Factor Model	3649.63	252	.112	.80	.78	.79	2411.27
Five-Factor Model	1601.22	342	.072	.92	.92	.92	362.86
Second Order Factor Model Study 1	1705.51	247	.074	.91	.90	.90	-
Second Order Factor Model Study 2	933.37	242	.070	.92	.91	.89	-

Note. Study 1: $N = 1,070$; Study 2: $N = 575$. χ^2 = Model Chi-Square Test; *df* = degrees of freedom for Model Chi-Square Test; RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; $\Delta\chi^2$ = Likelihood ratio test. *p* values for model chi-square were estimated using the Bollen-Stine bootstrap procedure. All chi-square tests and likelihood ratio tests are significant at $p < .001$, *p* values were estimated using the Bollen-Stine bootstrap procedure.

Table 1.3

Measurement Invariance for Gender and Relationship Type

	Gender				Relationship Type			
	$\chi^2(df)$	$\Delta\chi^2(df)$	CFI	ΔCFI	$\chi^2(df)$	$\Delta\chi^2(df)$	CFI	ΔCFI
Configural Model	1518.78(474)	-	.937	-	1522.37(474)	-	.936	-
Factor Loadings	1561.70(498)	42.91(24)	.936	.001	1607.01(498)	84.65(24)	.933	.003
Structural Covariances	1598.47(513)	79.69(39)	.935	.002	1618.90(513)	96.52(39)	.933	.003
Measurement Errors	1658.77(537)	139.98(63)	.932	.005	1725.41(537)	203.04(63)	.928	.005

Note. All chi-square tests and likelihood ratio tests significant at $p < .001$. Gender: men $n = 223$, women $n = 847$; relationship type: committed $n = 878$, casual $n = 192$.

Table 1.4

Correlations among the SexMS Subscales

Scale	1.	2.	3.	4.	5.	6.
Study 1						
1. Intrinsic	-	.62***	.59***	.24***	.05	-.35***
2. Integrated	.69	-	.68***	.36***	.20***	-.14***
3. Identified	.68	.79	-	.41***	.18***	-.13***
4. Introjected	.25	.40	.47	-	.58***	.25***
5. External	-.01	.20	.18	.64	-	.46***
6. Amotivated	-.40	-.16	-.14	.26	.57	-
Study 2						
1. Intrinsic	-	.59***	.60***	.17*	-.05	-.39***
2. Integrated		-	.70***	.34***	.15**	-.16***
3. Identified			-	.40***	.14***	-.14**
4. Introjected				-	.61**	.24***
5. External					-	.45***
6. Amotivated						-

Note. Study 1: $N = 1,070$; Study 2: $N = 575$; * $p < .05$, ** $p < .01$, *** $p < .001$. For Study 1, values above the diagonal represent correlations between subscale composite scores and values below the diagonal represent inter-factor correlations. All inter-factor correlations are significant at $p < .001$, with the exception of the correlation between the intrinsic and external subscales.

Table 1.5

Mean Comparisons and Reliability Coefficients for SexMS Subscales

Scale	Men		Women		<i>F</i>	<i>d</i>	Committed		Casual		<i>F</i>	<i>d</i>	α
Study1	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Intrinsic	5.98	1.03	5.84	1.09	.40	.13	5.87	1.11	6.04	.91	2.07	-.16	.89
Integrated	4.47	1.37	4.16	1.48	4.48*	.22	4.23	1.48	4.31	1.36	.27	-.06	.89
Identified	4.90	1.25	4.97	1.28	1.41	-.06	4.91	1.30	5.15	1.16	2.50	-.19	.81
Introjected	3.56	1.61	3.04	1.54	13.53***	.33	3.03	1.54	3.69	1.61	22.16***	-.41	.90
External	2.73	1.31	2.11	1.18	35.70***	.50	2.19	1.21	2.44	1.35	5.69*	-.19	.83
Amotivated	1.48	.76	1.33	.64	12.74***	.21	1.30	.60	1.64	.86	47.02***	-.46	.89
Study2	Men		Women		<i>F</i>	<i>d</i>	Committed		Casual		<i>F</i>	<i>d</i>	α
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Intrinsic	5.98	1.05	5.81	1.08	1.39	.16	5.80	1.11	6.08	.84	4.34*	-.28	.87
Integrated	4.34	1.44	4.20	1.50	.71	.09	4.22	1.46	4.30	1.52	.02	-.05	.89
Identified	4.83	1.20	4.92	1.28	1.12	-.07	4.85	1.27	5.12	1.21	2.2	-.21	.80
Introjected	3.44	1.71	3.04	1.59	6.08**	.24	3.05	1.60	3.50	1.68	6.98**	-.27	.90
External	2.58	1.37	2.09	1.19	14.08***	.38	2.20	1.28	2.27	1.16	.85	-.06	.84
Amotivated	1.48	.81	1.38	.67	2.58	.13	1.35	.67	1.62	.81	2.58**	-.36	.85

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. *M* = mean, *SD* = standard deviation, *F* = Fisher's ratio, *d* = Cohen's d, α = Cronbach's alpha.
 Study 1: men $n = 223$, women $n = 847$; casual relationship $n = 192$, committed relationship $n = 878$. Study 2: men $n = 138$, women $n = 437$ casual $n = 113$, committed $n = 462$.

Table 1.6

Correlations between the SexMS, the GMS, and the CMQ

Subscales	Global Motivation						Relational Motivation					
	IM	IN	ID	INT	EX	AM	IM	IN	ID	INT	EX	AM
Intrinsic	.10 [*]	-.01	-.03	.00	.02	-.05	.29 ^{***}	.05	.17 ^{***}	-.01	-.01	.00
Integrated	.09 [*]	.08	.01	.07	.04	.04	.23 ^{***}	.11 ^{**}	.30 ^{***}	.15 ^{***}	.14 ^{**}	.07
Identified	.13 ^{**}	.09 [*]	.00	.11 [*]	.11 [*]	.01	.22 ^{***}	.08	.30 ^{***}	.13 ^{**}	.09 [*]	.10 [*]
Introjected	.06	.03	-.09 [*]	.28 ^{***}	.23 ^{***}	.21 ^{***}	-.07	-.11 [*]	.10 [*]	.40 ^{***}	.32 ^{***}	.27 ^{***}
External	-.04	.05	-.08	.23 ^{***}	.19 ^{***}	.27 ^{***}	-.14 ^{**}	-.06	.09 [*]	.49 ^{***}	.45 ^{***}	.33 ^{***}
Amotivation	-.02	.00	-.08	.15 ^{***}	.09	.26 ^{***}	-.34 ^{***}	-.21 ^{***}	-.07	.25 ^{***}	.26 ^{***}	.41 ^{***}

Note. $N = 575$; IM = intrinsic; IN = integrated; ID = identified; INT = introjected; EX = external; AM = amotivation.

Table 1.7

Correlations between the SexMS and Sexual Outcomes in Women

SexMS Subscale	SD	SS	DS	AR	LB	OR	PA
Intrinsic	-.24***	.42***	.38***	.36***	.24***	.26***	.29***
Integrated	-.09	.35***	.37***	.22***	.15**	.17***	.22***
Identified	-.06	.27***	.28***	.16**	.06	.08	.16**
Introjected	.30***	-.11*	.06	-.11	-.17***	-.13**	-.06
External	.32***	-.16**	-.14**	-.27***	-.23***	-.15**	-.17***
Amotivated	.40***	-.39***	-.26***	-.37***	-.34***	-.26***	-.31***

Note. * $p < .05$, ** $p < .01$, *** $p < .001$; SD = sexual distress $n = 423$; SS = sexual satisfaction, $n = 423$; DS = sexual desire, $n = 423$; AR = sexual arousal, $n = 423$; LB = lubrication, $n = 423$; OR = orgasm, $n = 423$; PA = sexual pain, $n = 430$.

Table 1.8

Correlations between the SexMS and Sexual Outcomes in Men

SexMS Subscale	Sexual Distress	Sexual Satisfaction	Sexual Function
Intrinsic	-.14	.34***	.20*
Integrated	.09	.27**	.04
Identified	.13	.21**	-.06
Introjected	.31***	.04	-.12
External	.29***	.03	-.19*
Amotivated	.40***	-.27**	-.40***

Note. $n = 138$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1.9

Mean Comparison of SexMS Subscales Scores for Problematic Versus Non-Problematic Ranges of Sexual Function

Subscale	Women				Men							
	Problematic		Non-Problematic		<i>F</i>	<i>d</i>	Problematic		Non-Problematic		<i>F</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Intrinsic	5.17	1.18	6.01	.98	46.09***	.77	5.30	1.29	6.09	.94	10.36**	.69
Integrated	3.46	1.32	4.44	1.48	31.28***	.69	3.89	1.35	4.41	1.40	2.25	.38
Identified	4.59	1.22	5.03	1.28	8.22**	.42	4.76	1.08	4.84	1.23	.06	.07
Introjected	3.42	1.53	2.95	1.60	5.98*	.30	3.54	1.47	3.43	1.72	.07	.07
External	2.50	1.32	1.98	1.12	13.55***	.42	3.22	1.67	2.48	1.33	4.81*	.49
Amotivated	1.86	.93	1.23	.50	70.83***	.84	2.32	1.23	1.35	.63	27.78***	.99

Note. Women: problematic range $n = 85$, non-problematic range $n = 336$; men: problematic range $n = 19$, non-problematic range $n =$

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

CHAPTER THREE

Not All Reasons for Sex Are Equal: Motivational Antecedents and Well-Being Consequences of

Autonomous and Controlled Sexual Motivation

Emilie E. Gravel, Elke D. Reissing, & Luc G. Pelletier

Abstract

In this study, we used self-determination theory (Deci & Ryan, 2000), the hierarchical model of intrinsic and extrinsic motivation (Vallerand, 1997), and principles of heterarchical modelling (e.g., Milyavskaya, Philippe, & Koestner, 2013) to investigate the motivational antecedents and well-being consequences of autonomous and controlled sexual motivation at three levels of psychological functioning: sexual, relational, and global. We also examined whether these processes were organized following a heterarchical structure, in which the sexual and relational levels of functioning were partially embedded within the global level of functioning, thus operating independently from one another. In a sample of 828 university students, we found that global and relational motivation were associated with individual differences in autonomous and controlled sexual motivation. The associations involving relational motivation were stronger than the associations involving global motivation. Additionally, autonomous and controlled sexual motivation predicted individual differences in sexual, relational, and global well-being. Specifically, autonomous sexual motivation was positively associated with sexual and global well-being as well as negatively associated with relational well-being; however, we found evidence that this association may have been the result of a suppression effect. In contrast, controlled sexual motivation was negatively associated with sexual and global well-being, but was not associated with relational well-being. For the most part, the associations between sexual motivation and well-being were strongest at the sexual level, followed by the relational level, and then by the global level. The results also indicated that the antecedents and consequences of autonomous and controlled sexual motivation followed a heterarchical structure as the global level shared a direct and unmediated association with the sexual level. However, the magnitude of the associations suggest that in this structure, the sexual level was closer to the relational level

than to the global level. Overall, broad personality dispositions and relationship processes may shape autonomous and controlled sexual motivation, but relationship processes may be more influential. Moreover, the consequences of autonomous and controlled sexual motivation may reach beyond sexual well-being and extend to relational and global well-being. Implications for well-being interventions are discussed.

Keywords: sexual motivation, self-determination, well-being, satisfaction, relationships

Not All Reasons for Sex Are Equal: Motivational Antecedents and Well-Being Consequences of Autonomous and Controlled Sexual Motivation

Declines in sexual satisfaction tend to be common in long-term relationships and as the years go by, many couples struggle to maintain passion in their relationship (e.g., Byers, 2005; McNulty, Wenner, & Fisher, 2016). This situation can be particularly taxing for both the person and the relationship given that satisfying sexual experiences not only play a critical role in the development and maintenance of strong relational bonds (e.g., Birnbaum & Finkel, 2015; Schoenfeld, Loving, Pope, Huston, & Štulhofer, 2017), but also in overall well-being and happiness (e.g., Laumann et al, 2006). In recent years, researchers are increasingly turning to sexual motivation as a framework to identify the factors that contribute to the maintenance and decline in sexual well-being, more specifically by examining the quality of motives for engaging in sexual activities (for a recent review, see Muise, 2017). This growing body of research demonstrates that enhancing sexual well-being is not simply a question of engaging in sexual activities more often, and thus of increasing the quantity of motivation for sex. Rather, the quality of one's reasons to engage in sexual activities is just as important for positive sexual experiences. Indeed, different reasons for engaging in sexual activities with a partner can involve different consequences for sexual well-being (Muise, 2017).

So far, much of the research on the quality of sexual motivation has been devoted to understanding its associations with sexual health and well-being (for reviews, see Cooper, Barber, Zhaoyang, Talley, 2011; Muise, 2017). Despite the rapid growth of this research area, one question that has received less attention is the manner in which the quality of sexual motivation is integrated with broader psychological functioning. Notably, there is a need to clarify the contributions of personality dispositions and relationship processes to individual

differences in the quality of sexual motivation. Furthermore, there is need to clarify whether the quality of sexual motivation contributes to well-being beyond the sexual domain; specifically, whether it is associated with relational and global well-being. In the present study, we used self-determination theory (SDT; Deci & Ryan, 2000), the hierarchical model of intrinsic and extrinsic motivation (HMIEM; Vallerand, 1997), and principles of heterarchical modelling (Milyavskaya, Philippe, & Koestner, 2013) to investigate the breadth of the motivational antecedents and well-being consequences of the quality of sexual motivation.

Self-Determination Theory

SDT is a motivational framework of optimal development, well-being, and functioning. According to SDT, human growth and flourishing depend on the degree to which a person's behaviours are self-determined. Behaviours are self-determined when they genuinely emanate from the self (Deci & Ryan, 1985, 2000). In contrast, behaviours are non-self-determined when they result from controlling pressures and expectations, or from a lack of intention to behave (Deci & Ryan, 1985, 2000).

In SDT, the manner in which people regulate their everyday behaviours can be captured by two broad motivational orientations: autonomous and controlled motivation (Deci & Ryan, 1985, 2000; Vansteenkiste, Zhou, Lens, & Soenens, 2004). *Autonomous motivation* refers to behaviours that are genuinely endorsed and self-congruent; hence these behaviours are well integrated with a person's overall self (Deci & Ryan, 1985). Autonomous behaviours are performed because they are inherently pleasurable and interesting, they are congruent with deeply held values and identities, or they are recognized as important for achieving a desired goal. In contrast, controlled motivation lacks this genuine ownership. Instead, controlled behaviours are either not integrated or poorly integrated with the self because they result from

pressuring demands and expectations (Deci & Ryan, 1985). These pressures can be external or internal. External pressures concern the pursuit of rewards or the avoidance of negative outcomes imposed by others, such as gaining approval or avoiding conflicts. Internal pressures concern the management of ego involvements, such as the avoidance of guilt and shame or attempting to validate one's self-worth.

A core axiom of SDT is that autonomous motivation is an optimal form of motivation as it enhances well-being and functioning, whereas controlled motivation is a non-optimal form of motivation as it is detrimental to well-being and functioning. These propositions have been extensively validated for nearly five decades using a variety of methodologies in different cultures (e.g., Chirkov, Ryan, Kim, & Kaplan, 2003) and in multiple life domains, such as close relationships (e.g., Knee, Hadden, & Baker, 2016), education (e.g., Guay, Ratelle, & Chanal, 2008), sports and exercise (e.g., Standage & Ryan, 2012), work (e.g., Gagné & Deci, 2005), health (e.g., Ng et al., 2012), and more recently, sexuality (e.g., Gravel, Pelletier, & Reissing, 2016, see Manuscript 1).

The Structure of Motivation in the Self

Autonomous and controlled motivation operate at different levels of psychological functioning that vary in their degree of specificity. The most common approach to represent associations between different levels of functioning in personality and social psychology has been *hierarchical modeling*. In hierarchical models, a psychological construct is organized such that the bottom of the hierarchy represents the most specific and concrete level of operation, whereas the top of the hierarchy represents the most global and abstract level of operation (e.g., Vallerand, 1997). An important characteristic of hierarchical models is that the more specific levels are fully nested within the more global levels, much like a Babushka Russian doll.

Furthermore, each level within a hierarchical model influences the other levels through either bottom-up (from specific to global) or top-down effects (from global to specific). Because lower levels are perfectly nested within higher levels, adjacent levels exert a direct effect on each other, whereas non-adjacent levels can only exert an indirect effect. That is, they are fully mediated through more proximal levels.

Within SDT, most studies investigating motivation from a multilevel perspective have been grounded in the hierarchical model of intrinsic and extrinsic motivation (HMIEM; Vallerand, 1997). The first premise of the HMIEM is that motivation exists at three levels of generality. *Global motivation* is located at the broadest level and refers to a general tendency to behave in an autonomous or controlled manner. *Contextual motivation* is located at the intermediate level and refers to motivational orientations for a specific life domain (e.g., sexuality, committed relationships, health, etc.). *Situational motivation* is located at the most specific level and refers to motivation for a behaviour at a particular point in time (e.g., sexual motivation for one's most recent sexual encounter).

Next, the HMIEM proposes that top-down effects between these levels are important antecedents of motivation. This premise entails that if a person is autonomous at the global level, they are more likely to be autonomous at the contextual and situational levels. Following SDT (Deci & Ryan, 2000), the HMIEM also proposes that autonomous motivation leads to positive consequences, whereas controlled motivation leads to negative consequences (Vallerand, 1997). With respect to the magnitude of these consequences, the HMIEM posits a specificity hypothesis in which the main predictor of an outcome at a given level should be motivation at the corresponding level (Vallerand, 1997). For example, global motivation should be the main predictor of global well-being, whereas sexual motivation should be the main predictor of sexual

well-being. It is important to note that the specificity hypothesis deviates from the predictions of a standard hierarchical model. The specificity does not rule out the possibility that outcomes at one level can be directly influenced by motivation at other levels; these effects would simply be weaker. In contrast, a standard hierarchical model would predict that outcomes at one level cannot be directly influenced by motivation at other levels, but only indirectly influenced due to the fact that levels are assumed to be fully nested.

An SDT Approach to Sexual Motivation

Although SDT is a well-established theory in many life domains, few studies based in this framework have investigated sexual motivation. Only one study has explored the correlates of sexual motivation at the sexual level. Using a cross-sectional design, Boislard-Pépin, Green-Demers, Pelletier, Chartrand, and Séguin-Lévesque (2002) found that higher self-determined sexual motivation was associated with more sexual satisfaction and perceptions of sexual competence. Three studies have explored the associations between sexual motivation and broader psychological functioning. Brunell and Webster (2013) demonstrated that higher self-determined sexual motivation was associated with higher levels of relational and general well-being. Additionally, in a longitudinal study on the association between motives for casual sex and well-being in university students, Vrangalova (2015) showed that those who reported stronger non-self-determined motives were more depressed and anxious, experienced more physical symptoms, and poorer self-esteem. Self-determined motives did not significantly predict well-being outcomes. Finally, Gravel, Pelletier, and Reissing (2016) found that global and relational motivation (i.e., the reasons for maintain a relationship) were associated with individual differences in the extent to which sexual motivation was self-determined or non-self-determined. Furthermore, the correlations between relational motivation and sexual motivation

were stronger than associations between global motivation and sexual motivation, suggesting that relational processes were a stronger correlate of the quality of sexual motivation than broader personality dispositions.

Toward a Structural Model of Autonomous and Controlled Sexual Motivation

Collectively, these studies suggest that the self-determination of sexual motivation is not a compartmentalized process within self, strictly operating within the sexual level. Rather, the available evidence suggests that given its associations with personality dispositions and relational processes, the self-determination of sexual motivation is integrated with broader psychological functioning (Brunell & Webster, 2013; Gravel et al., 2016). An important direction for research is to integrate the findings from previous studies in a unified model describing the structure of these motivational antecedents and well-being consequences. This model would address four questions pertaining to the nature of the associations between the quality of sexual motivation and psychological functioning at the sexual, relational, and global level.

First, although there is evidence that individual differences in the quality of sexual motivation are associated with relational and global motivation, it is not clear whether their contributions are comparable in magnitude. In the study conducted by Gravel and colleagues (2016), correlations involving global and relational motivation were different in magnitude, but they were not formally tested for statistical differences. Although the HMIEM provides a useful framework to delineate the magnitude of associations between different levels of motivation, it does not readily address questions pertaining to the magnitude of top-down effects between two strongly interrelated contexts, as is the case with relationships and sexuality (Impett, Muise, & Peragine, 2014). However, based on the strong connections between these two levels, it is

reasonable to expect that relational motivation should exert a stronger effect than global motivation on sexual motivation.

Second, given that relationships and sexuality share important associations, it is important to determine whether sexual motivation is best understood as a contextual motivation that is fully nested within relation motivation or a contextual motivation in its own right that can operate independently from relational motivation. If sexual motivation is fully nested within relational motivation, then global motivation would not exert a top-down direct effect on sexual motivation, but only a mediated effect through relational motivation. However, if sexual motivation operates independently from relational motivation, then global motivation would exert a direct top-down effect on sexual motivation. The HMIEM (Vallerand, 1997) does provide insights on this question.

Besides hierarchical modeling, there is another approach to modelling multilevel psychological processes that has been less commonly used in personality and social psychology: heterarchical modeling (e.g., Milyavskaya, Philippe, & Koestner, 2013). Heterarchical models share some fundamental characteristics of hierarchical models in that psychological processes are organized following levels of increasing generality and top-down effects operate across levels (e.g., Berntson, & Cacioppo, 2008). However, where heterarchical models fundamentally differ is in the relation between levels of organization as each level is considered to be partially nested within the other, thus operating independently from them (e.g., Berntson & Cacioppo, 2008). This implies that in a heterarchical model, non-adjacent levels can exert a direct, non-mediated influence on one another (Berntson & Cacioppo, 2008).

Although the sexual level shares important associations with the relational level (Impett et al., 2014), we believe that sexuality is best understood as a life domain in its own right and for

this reason, sexual motivation cannot be reduced to interpersonal processes; it is also rooted in intrapersonal processes in important ways. For example, sexual passion – a strong motivation for and valuation of sexual activities – is independent of relationship status; thus, it can emerge within the person and in the absence of a partner (e.g., Philippe, Vallerand, Bernard-Desrosiers, Guilbault, & Rajotte, 2017). A heterarchical model – in which the sexual level can operate independently from the relational level – should provide a better representation of the associations between the sexual, relational, and global level than a hierarchical model – in which the sexual level is fully nested within the relational level and cannot operate independently from it. Thus, global motivation should exert a direct top-down effect on sexual motivation as opposed to exerting only a mediated effect through relational motivation, which would be the case if sexual motivation was fully nested within relational motivation.

Another aspect to consider is the nature of the association between global and relational motivation in their contribution to sexual motivation; that is, whether global and relational are linked in their top-down effects on sexual motivation. According to the HMIEM, the strongest antecedent of motivation at a given level in the hierarchy should be motivation at the adjacent level, and the effects of more distal levels should be mediated by the effects from more proximal levels (Vallerand, 1997). Therefore, as relational motivation should be more proximal to sexual motivation, it has the potential to behave as a mechanism in the contribution of global motivation to sexual motivation. From a broader perspective, this would demonstrate that one way in which personality dispositions contribute to the quality of sexual motivation is by influencing the quality of the broader relationship context in which partnered sexual activities occur.

A final aspect to consider is the breadth of the contribution of the quality of sexual motivation to well-being. Although previous studies showed associations between the quality of

sexual motivation and well-being at the global and relational level (Brunell & Webster, 2013; Vrangalova, 2015; for approach-avoidance sexual motivation, see also Impett, Peplau, & Gable, 2005), the contributions of global and relational motivation were not taken into account in these studies. As a result, it remains unclear whether the quality of sexual motivation makes a unique contribution to global and relational well-being, or whether the associations found in these studies were simply confounded by an unmeasured shared variance between sexual, relational, and global motivation. If this were true, we should expect the contributions of sexual motivation to global and relational well-being to disappear once the contributions of global and relational motivation are taken into account. This would also be in line with a hierarchical model in which the lower levels in the hierarchy cannot exert a direct influence on outcomes located at higher levels. However, if sexual motivation does indeed contribute to well-being beyond the sexual level, the HMIEM (Vallerand, 1997) would predict that its strongest association would be with sexual well-being, followed by relational well-being, and then by global well-being. This would also be in line with a heterarchical model of sexual motivation, in which the sexual motivation would operate independently from the relational and the global level.

The Present Study

In this cross-sectional study, we used both the HMIEM (Vallerand, 1997) and principles of heterarchical modelling (Milyavskaya et al., 2013) to better understand the structure of motivational antecedents and well-being consequences of autonomous and controlled sexual motivation (see Figure 2.1 a). Hypotheses 1 to 6 pertain to the motivational antecedents of autonomous and controlled sexual motivation.

H1: Autonomous global motivation will be positively associated with autonomous relational and sexual motivation.

H2: Controlled global motivation will be positively associated with controlled relational and sexual motivation.

H3: Autonomous relational motivation will be positively associated with autonomous sexual motivation.

H4: Controlled relational motivation will be positively associated with controlled sexual motivation.

H5: The contribution of relational motivation to sexual motivation will be larger than the contribution of global motivation.

H6: A portion of the association between global motivation and sexual motivation will be mediated by relational motivation.

Hypotheses 7 to 9 pertain to the well-being consequences of autonomous and controlled sexual motivation.

H7: Autonomous sexual motivation will be positively associated with sexual, relational, and global well-being.

H8: Controlled sexual motivation will be negatively associated with sexual, relational, and global well-being.

H9: The contribution of sexual motivation to well-being will be the strongest for sexual well-being, followed by relational well-being, and then by global well-being.

Method

Participants and Procedure

A total of 853 university students (684 women and 169 men; $M_{\text{age}} = 19.93$, $SD = 4.14$) were recruited using a participant pool at a Canadian university in the context of a larger online study on sexual motivation (see Manuscript 1, Study 1; Gravel et al., 2016). Eligibility criteria

were: (a) being at least 17 years old, (b) currently sexually active with a committed partner of at least three months, and (c) fluent in English. The ethnic heritage of participants was as follows: 2% African, 6% Asian, 76% European, 4% Hispanic, 6% Middle Eastern, 4% mixed ethnic heritage, and 5% did not report their ethnic heritage. In terms of sexual orientation, 4% were bisexual, 2% were gay or lesbian, 93% were heterosexual, and less than 1% of participants reported “other”. Average relationship length was 23.37 months ($SD = 30.97$).

Measures

Global motivation. The Global Motivation Scale (GMS; Pelletier, Rocchi, Vallerand, Deci, & Ryan, 2013; Sharp, Pelletier, Blanchard, & Lévesque, 2003) is an 18-item instrument that measures the six forms of motivation proposed by SDT (i.e., intrinsic, integrated, identified, introjected, external, and amotivation; for a detailed discussion, see Deci & Ryan, 1985; 2000). Each item corresponds to a reason for performing behaviours in general (e.g., autonomous item: “because they reflect what I value most in life; controlled item: “because I would beat myself up for not doing them”). Items are answered using a Likert scale ranging from 1 (*not agree at all*) to 7 (*strongly agree*). Results from confirmatory factor analysis of the GMS suggested that a six-factor structure corresponding to each type of motivation presented a good fit with the data (Sharp et al., 2003). Internal consistency for each subscale was adequate, with alpha coefficients ranging from .66 to .89 (Sharp et al., 2003). Separate measures of autonomous and controlled global motivation were created by averaging all autonomous items (i.e., intrinsic, integrated, and identified) into one scale and all controlled items (i.e., introjected and external) into another scale (Pelletier & Sarrazin, 2007). In this study, reliability coefficients for the GMS were .81 for the autonomous scale and .76 for the controlled scale.

Relational motivation. The Couple Motivation Questionnaire (CMQ; Blais et al., 1990; Patrick, Knee, Canevello, & Lonsbary, 2007) is a 21-item instrument measuring the extent to which a person's reasons for being in a committed relationship are intrinsic, integrated, identified, introjected, external, or amotivated. Items are answered using a Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*). Separate measures of autonomous and controlled relational motivation were created using the same procedure used for the GMS. Sample items include "because I value the way my relationship with my partner allows me to improve as a person" (autonomous relational motivation) and "because I need to be in a relationship with my partner to feel important" (controlled relational motivation). As the factorial validity of the scale has not been previously established, we conducted a principal component analysis of the CMQ items. Results suggested that the autonomous and controlled relational motivation items loaded on distinct factors which explained 31.96% and 16.43% of the variance, respectively. The CMQ has demonstrated adequate reliability in previous studies, with alpha coefficients ranging from .75-.80 (Blais et al., 1990; Patrick et al., 2007). In this study, reliability coefficients for the CMQ were .88 for the autonomous relational motivation scale and .74 for the controlled relational motivation scale.

Sexual motivation. The Sexual Motivation Scale (SexMS; Gravel et al., 2016) is a 24-item instrument that measures the extent to which a person's reasons for engaging in sexual activities are intrinsic, integrated, identified, introjected, external, or amotivated. Items are answered using a Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). Results from a validation study suggest that the SexMS has an excellent factorial validity as it can reproduce the factor structure predicted by SDT and that its subscales possess good to excellent reliability (Gravel et al., 2016). Separate measures of autonomous and

controlled sexual motivation were created using the same procedure used for the GMS. Sample items include “because sexuality brings so much to my life” (autonomous sexual motivation) and “because I don’t want to be criticized by my partner” (controlled sexual motivation). In this study, reliability coefficients for the SexMS were .92 for the autonomous sexual motivation subscale and .80 for the controlled sexual motivation subscale.

Sexual well-being. We evaluated sexual well-being by measuring the presence of sexual satisfaction and the absence of sexual distress (for a discussion, see Stephenson & Meston, 2010). Sexual satisfaction was measured using the New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010), a 20-item instrument measuring five dimensions of sexual satisfaction: (a) sexual sensations (e.g., “the intensity of my sexual arousal”), (b) sexual presence (e.g., “my focus and concentration during sexual activity”), (c) sexual exchange (e.g., “the balance between what I give and what I receive in sex”), (d) emotional connection/closeness (e.g., “my partner’s emotional opening up during sex”), and (e) sexual activity (e.g., “the variety of my sexual activities”). Items are answered using a Likert scale ranging from 1 (*not at all satisfied*) to 5 (*extremely satisfied*). Confirmatory factor analysis showed that a two-factor structure represented the best fitting model, with one factor representing the participant’s experiences and sensations and the other representing the participant’s perceptions of satisfaction with their partner (Štulhofer et al., 2010). The NSSS has also demonstrated good reliability, with an internal consistency ranging from .90 to .96 and test-retest reliability ranging from .72 to .84 (Štulhofer et al., 2010). In this study, the reliability coefficient for the NSSS was .93.

Sexual distress was measured using the seven gender-neutral questions from the Female Sexual Distress Scale (FSDS; Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). This scale evaluates the extent to which a person experiences distress about their sexuality (e.g., feeling

“sexually inadequate” and “having regrets about your sexuality”). The items are answered with a Likert scale ranging from 0 (*never*) to 4 (*always*). The items were recoded such that higher scores denoted lower sexual distress. A principal component analysis of these seven items produced a one-factor solution explaining 56.58% of the variance for this sample. In this study, the reliability coefficient for this scale was .89.

Relational well-being. The Relationship Assessment Scale (RAS; Hendrick, Dycke, & Heindrick, 1998) is a 7-item measure of the extent to which a person values their partner and their relationship (e.g., “How much do you love your partner?”) and the overall relationship (“To what extent has your relationship met your original expectations?”). Items are answered using a Likert scale ranging from 1 (*low satisfaction*) to 5 (*high satisfaction*). In the validation study of the RAS, principal component analysis produced a one-factor structure and its alpha coefficient was .86 (Heindrick et al., 1998). In this study, the RAS had a reliability coefficient of .84.

Global well-being. Global well-being was measured by evaluating positive and negative affect, life satisfaction, and psychological well-being. Affect was measured using the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegan, 1988). The PANAS is a 20-item scale measuring the extent to which a person experienced ten positive (e.g., interest, excitement, pride) and ten negative (e.g., shame, fear, irritability) emotions over the past week. Items are answered using a Likert scale ranging from 1 (*not at all*) to 7 (*extremely*). In a validation study, principal component analysis showed a two-factor structure representing a negative affect actor and a positive affect factor; results from the reliability analysis suggested alpha coefficients of .86 and .87 for positive affect and negative effect, respectively (Watson et al., 1988). The items for the negative affect scale were recoded such that higher scores denoted

lower negative affect. In this study, the reliability coefficient was .85 for both the positive affect and the negative affect subscales.

We used the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985) to evaluate quality of life. The SWL is a 5-item instrument that uses a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Sample items include “The conditions of my life are excellent” and “In most ways my life is close to my ideal”. Results from principal axis factor analysis suggested a one-factor solution, good internal reliability (reliability coefficient = .87) and good temporal stability (test-retest coefficient = .82; Diener et al., 1985). In this study, the reliability coefficient for the SWLS was .89.

Psychological well-being was measured with the 42-item version of the Psychological Well-Being Scales (PWBS; Abbott, Ploubidis, Huppert, Wadsworth, & Croudace, 2006; Ryff, 1989), which assesses autonomy (e.g., “I judge myself by what I think is important, not by the values of what others think is important”), self-acceptance (e.g., “My attitude about myself is probably not as positive as most people feel about themselves”), environmental mastery (“I have difficulty arranging my life in a way that is satisfying to me”), personal growth (e.g., “For me, life has been a continuous process of learning, changing and growth”), positive relations with others (e.g., “People would describe me as a giving person, willing to share my time with others”), and purpose in life (e.g., “Some people wander aimlessly through life, but I am not one of them”). Items are answered using a Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). To date, a six-factor solution has been difficult to reproduce across studies through confirmatory factor analysis (for a review, see Abbott et al., 2006). Reliability analyses showed that alpha coefficients for the six subscales ranged from .82 to .90 (Schmutte & Ryff, 1997). For this study, the alpha reliability coefficient for the total scale was .92.

Frequencies of sexual activities. Participants were asked to report how frequently they engaged in the following sexual activities over the last week: masturbation, manual sex, oral sex, vaginal sex, anal sex, and the use of sex toys. An index of sexual frequency was created by taking the sum of the frequency of these six activities. This measure was used as a control variable.

Analytical Strategy

Structural equation modelling (SEM) was used to evaluate the hypotheses. Preliminary analyses were performed using SPSS 22 and SEM was performed with AMOS 18 using maximum likelihood estimation. Due to the complexity of the model, we used parceling to create indicators for the model's latent variables, a strategy which improves parameter estimation in structural models (see Little, Cunningham, Shahar, & Widaman, 2002). A detailed discussion on the parceling procedure used in this study is provided in Appendix A.

In order to achieve adequate model specification, associations that were not part of the hypotheses were included in the model due to their theoretical and empirical relevance (for a discussion, see Kline, 2010). We modelled associations between relational motivation and well-being at the sexual and global level given the links between relationship processes and sexuality (Impett et al., 2014) and the interplay of motivational factors related to close relationships and global well-being (Weinstein & DeHaan, 2014). We modelled covariances between autonomous and controlled motivation at the global level and between the error terms of autonomous and controlled motivation at the sexual and relational levels, and between autonomous and controlled forms of motivation across levels (e.g., between global autonomous motivation and controlled relational motivation) given that the two motivational orientations tend to be associated with one another (Deci & Ryan, 2000). Finally, we modelled covariances between the error terms of the

well-being variables given the associations between well-being at the sexual, relational, and global level (for reviews, see Byers & Rehman, 2014; Diamond & Huebner, 2012).

We used a two-step modelling procedure to test the adequacy of the model (for a discussion, see Kline, 2010). This procedure involves first testing a measurement model (i.e., a model containing all possible associations between the latent variables) followed by testing a structural model (i.e., the hypothesized model). Thus, the measurement model tests all possible covariances between the latent variables simultaneously to determine if the model fits the data well. If the fit of the measurement model is adequate, one then proceeds to estimate the fit of the structural model.

We evaluated model fit using the following indices: the chi square to *df* ratio (χ^2/df), the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). χ^2/df values below 3, RMSEA and SRMR values below .08, and CFI and TLI values above .90 are generally indicative of an adequate model fit (for a discussion, see Garson, 2015).

Next, we examined the fit of two alternative models to provide an additional test of the adequacy of the hypothesized model. In the first alternative model (see Figure 2.1 b) the associations between the different levels of motivation were removed, testing the relevance of top-down associations between global, relational, and sexual motivation. In the second alternative model (see Figure 2.1 c), the associations between sexual motivation and well-being at the relational and global level were removed, testing whether the well-being correlates of autonomous and controlled sexual motivation extended beyond the sexual level. Given that the alternative models were nested within the hypothesized model, we used the chi-square difference

test to determine the best fitting model, with a significant chi-square test suggesting that the model with the largest chi-square value presents a poorer fit with the data (Kline, 2010).

Lastly, as previous studies found gender differences in the self-determination of sexual motivation (Brunell & Webster, 2013), we compared the invariance of our model in women and men by testing whether their regression paths, covariances, and error terms could be considered similar. We used confirmatory fit index differences (ΔCFI) to establish measurement invariance because the commonly used likelihood ratio test based on chi-square differences between models is markedly stringent with larger samples (Kline, 2010). Findings from a simulation study suggest using $\Delta\text{CFI} \leq .01$ to establish measurement invariance between groups when sample sizes are unequal (Chen, 2007). We also controlled for potential confounding effects of frequency of sexual activities and relationship length. Finally, to compare the relative magnitude of regression coefficients (see H5 and H8), we used critical ratios for differences between parameters (CR) provided by AMOS and which follow a standard normal distribution.

Results

Preliminary analyses. Data cleaning procedures are presented in Appendix B and descriptive statistics and mean comparisons are presented Table 2.1. Some gender differences emerged among the study's variables. On average, women were more autonomous and less controlled in their relational motivation, they were also less controlled in their sexual motivation, reported stronger sexual satisfaction, and experienced more negative affect in comparison to men. Cohen's d values suggested that these differences were small to medium in magnitude. Correlations are presented in Table 2.2 and their coefficients indicated that associations between the study variables were in the expected direction.

Evaluation of model fit. As shown in Table 2.3, the fit of measurement model was adequate and as such we proceeded to test the structural model. The results demonstrated that the model presented a good fit with the data, providing support for the notion that global and relational motivation predicted sexual motivation, and that sexual motivation predicted well-being outcomes at different level of generality, as proposed by SDT and the HMIEM.

We then compared our model against two alternative models in order to provide a more stringent test of its adequacy (see Table 2.3). In the first alternative model, direct paths between the different levels of motivation were removed. The chi-square difference test was significant, $\Delta \chi^2(12) = 518.79, p < .001$, suggesting that modelling a heterarchical structure among the three levels of motivation was a better representation of the patterns in the data. In the second alternative model, we removed the associations between sexual motivation and well-being at the global and relational level. The chi-square difference test was significant, $\Delta \chi^2(4) = 36.24, p < .001$, suggesting that the well-being consequences of sexual motivation extended beyond the sexual level and thus also followed a heterarchical structure.

Next, we explored the invariance of the model with respect to gender (see Table 2.3). Results showed that with the exception of measurement residuals, the values of the Δ CFIs were smaller or equal to .01 for measurement paths, structural paths between latent variables, covariances, and structural residuals, and measurement residuals, suggesting that the model had a similar fit in women and men. Therefore, for both women and men, our model provided a good representation of motivational antecedents and well-being consequences of autonomous and controlled sexual motivation.

Antecedents of sexual motivation. We found support for the majority of hypotheses (see Table 2.4 and Figure 2.2). Global autonomous motivation shared a significant positive

association with relational and sexual autonomous motivation (H1), and global controlled motivation shared a significant positive association with relational controlled motivation (H2). Contrary to our prediction, the association between controlled global motivation and controlled sexual motivation was not significant (H2). Finally, autonomous relational motivation shared a significant positive association with autonomous sexual motivation (H3), and controlled relational motivation shared a significant positive association with controlled sexual motivation (H4).

Next, we investigated the relative contributions of global and relational motivation to sexual motivation. As predicted, critical ratios for differences between parameters revealed that autonomous relational motivation was a stronger predictor of autonomous sexual motivation than autonomous global motivation (H5), $CR = 3.41, p < .001$, and that controlled relational motivation was a stronger predictor of controlled sexual motivation than controlled global motivation, $CR = 8.03, p < .001$.

We then examined whether relational motivation was a mediator in the association between global and sexual motivation (H6). Autonomous global motivation shared a significant and positive indirect association on autonomous sexual motivation, $B = .09, SE = .02, 95\% CI [.05, .14]$, and controlled global motivation shared a significant and positive indirect association on controlled sexual motivation, $B = .23, SE = .04, 95\% CI [.16, .31]$. Therefore, relational motivation was a mediator in the association between global and sexual motivation.

Consequences of sexual motivation. For the most part, the results supported the hypotheses (see Table 5 and Figure 2.2). Sexual motivation was significantly associated with well-being at the sexual, relational, and global level (H7). Specifically, higher autonomous sexual motivation and lower controlled sexual motivation predicted higher sexual well-being

(H8). Controlled sexual motivation was not associated with relational well-being and surprisingly, autonomous sexual motivation was negatively associated with relational well-being. We suspected that this may have been the result of a suppression effect, in which the addition of a variable to a model changes the direction of an association between two other variables and which are not uncommon in SEM (see Kline, 2010). Furthermore, correlations suggested a positive association between autonomous sexual motivation and relational well-being. Thus, we attempted to locate a potential suppressor variable by removing all global and relational motivation variables from the model, and then re-introducing each of them one at a time until we observed a change in the association between autonomous sexual motivation and relational well-being. Upon removing global and relational motivation from the model, the association between autonomous sexual motivation and relational well-being became positive, $B = .20$, $SE = .03$, $p < .001$. We then added autonomous relational motivation and the association between autonomous sexual motivation and relational well-being became nonsignificant, $B = -.06$, $SE = .03$, $p = .05$. When controlled relational motivation was added to the model, the association became significant and negative, $B = -.10$, $SE = .03$, $p = .001$. Thus, there was a possibility that autonomous and controlled relational motivation may have been suppressor variables in the association between autonomous sexual motivation and relational well-being.

We then examined the associations between autonomous and controlled sexual motivation and global well-being. Higher autonomous sexual motivation and lower controlled sexual motivation predicted higher global well-being. Finally, when we added relationship length and frequency of sexual activities to the model to control for potential confounding effects, all the associations between autonomous and controlled motivation and the well-being variables remained significant.

When comparing the relative magnitude of the association between autonomous and controlled sexual motivation and the well-being variables, we found partial support the hypotheses (H9). The association between autonomous sexual motivation and sexual well-being was stronger than its association with relational well-being ($CR = -7.55, p < .001$) and its association with global well-being ($CR = -3.89, p < .001$). The association between autonomous sexual motivation and relational well-being was also stronger than its association with global well-being ($CR = 4.41, p < .001$). However, the association between controlled sexual motivation and sexual well-being was similar in magnitude to its association with global well-being ($CR = -1.64, p = .10$). We did not conduct comparison involving the association between controlled sexual motivation and relational well-being as it was non-significant.

Discussion

To the best of our knowledge, this is first study to examine the structure of motivational antecedents and well-being consequences of autonomous and controlled sexual motivation. Overall, the results suggested that these two motivational orientations toward sexual activities operate within a heterarchical structure that extends beyond the sexual domain as they shared associations with broader psychological functioning. Furthermore, the results suggested that autonomous sexual motivation was part of an overall pattern of optimal functioning, whereas controlled sexual motivation was part of an overall pattern of non-optimal functioning.

Antecedents and Consequences of Sexual Motivation

Consistent with previous research (Gravel et al., 2016), global and relational motivation predicted individual differences in the quality of sexual motivation. Specifically, people with a stronger general disposition to behave autonomously and a stronger autonomous orientation toward their relationship were more likely to engage in sexual activities for autonomous reasons.

In contrast, people with a stronger controlled orientation toward their relationship were more likely to engage in sexual activities for controlled reasons.

Our findings also demonstrated that individual differences in autonomous and controlled sexual motivation were linked to important well-being consequences at the sexual and global level. Specifically, people who endorsed more autonomous reasons to engage in sexual activities reported better sexual experiences and overall quality of life. For people who endorsed more controlled reasons to engage in sexual activities, the opposite pattern was found as they reported lower sexual and global well-being. These trends are consistent with previous SDT studies which demonstrated that the well-being correlates of the self-determination of sexual motivation extended beyond the sexual domain and reached the global level of psychological functioning (Brunell & Webster, 2013; Gravel et al., 2016; Vrangalova, 2015). Importantly, these associations held beyond those of global motivation and our hypothesized model showed a superior fit in comparison to an alternative model in which the associations involving sexual motivation and global well-being were removed. Therefore, this study is the first to demonstrate that quality of sexual motivation makes a unique contribution to global well-being.

However, findings were less clear with respect to the association between the quality of sexual motivation and relational well-being. First, we found that controlled sexual motivation was not associated with relational well-being. This is not surprising given that four items in the controlled sexual motivation measure pertained directly to pressures stemming from the partner, possibly resulting in a substantial shared variance between controlled relational motivation and controlled sexual motivation. As such, a potential association between controlled sexual motivation and relational well-being may have disappeared by accounting for the contribution of relational motivation.

Additionally, we found a negative association between autonomous sexual motivation and relational well-being, contrasting with an extensive body of evidence on the benefits of autonomous motivation (for a review, see Ryan & Deci, 2017). Our findings suggested that this association may have been the result of a suppressing effect produced by autonomous and controlled relational motivation. Indeed, the association between autonomous sexual motivation and relational well-being became positive once these variables were removed from the model. Interpretation of suppressing effects is complex as they can be the product of a statistical artifact or a substantive effect (Kline, 2010). At this point, it is difficult to determine the exact nature of this result and both explanations are plausible. Regarding the possibility of a substantive effect, one explanation may be that a particular motivational profile (i.e., a specific combination of the three variables; for instance, high autonomous and controlled relational motivation combined with high autonomous sexual motivation) was associated with poorer relationship quality and was sufficiently represented in the sample to produce the association we observed. It is also important to state that the negative association between autonomous sexual motivation and relational well-being may have been caused by other factors than a suppressing effect, such as an unknown unmeasured confounder.

A Structural Understanding of Sexual Motivation

The present study is the first to integrate antecedents and consequences of sexual motivation in a theoretical framework delineating the structure of their organization. Overall, the results suggest that a heterarchical approach may better capture the complex patterns of associations between the sexual, relational, and global level than a hierarchical approach. Indeed, contrary to a standard hierarchical model in which more specific levels are fully nested within the more general levels, the patterns observed in this study for both antecedents and

consequences suggested that sexual motivation is best represented as partially nested into the global and relational level.

Of particular importance was the pattern of results suggesting that the sexual level shared direct association with the global level, showing that sexual level was not fully nested within relational level. Sexual motivation thus appears to be located in a domain in its own right that operates at the same level of generality as relation motivation, while sharing a strong association with the relational level. More broadly, these results suggest that despite the close associations between the sexual and relational domains, the manifestations of the sexual self cannot be reduced strictly to relational processes as it unfolds through a complex interaction of both intrapersonal and interpersonal factors.

Although the results suggesting that a heterarchical model may be more appropriate than a hierarchical model to describe the structure of sexual motivation, some assumptions of the HMIEM remain highly relevant to our understanding of the antecedents of sexual motivation. First, our hypothesized model including top-down effects between the global, relational, and sexual levels showed a superior fit in comparison to a model in which these top-down effects were removed. This result is consistent with the proposition of the HMIEM that there are top-down effects from broader levels of motivation to more specific levels of motivation (1997). Second, our results demonstrated that relational motivation was a stronger predictor of sexual motivation than global motivation, suggesting that the sexual level was more proximal to the relational level than the global level in the hierarchical structure. Again this result is consistent with the HMIEM, which predicts that the effects between two adjacent levels should be stronger than the effects between non-adjacent levels (Vallerand, 1997). A final piece of evidence came from mediation analyses which suggested that relational motivation mediated the association

between global and sexual motivation. This is also consistent with the HMIEM which predicts that the effect of motivation from more distal levels should be mediated by motivation from more proximal levels (Vallerand, 1997), and with our proposition that the sexual level should be more proximal to the relational level than the global level.

Findings for the well-being consequences of sexual motivation were less consistent with the propositions of the HMIEM. Results suggested that the strength of the associations involving autonomous sexual motivation diminished when moving from the sexual level to the relational level and from the relational level to the global level. This is consistent with the HMIEM, which predicts that the consequences of motivation at a given level should be the strongest for outcomes located at the same level. These results are also consistent with our prediction that the sexual level should be closer to the relational level than to the global level in the hierarchy. Contrary to prediction, the associations between controlled sexual motivation and well-being at the sexual and global level were similar in magnitude. Given that bad events tend to have a stronger impact than good ones (for a review, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001), it is possible that the negative sexual well-being consequences (i.e., lower sexual satisfaction and higher sexual distress) associated with high controlled sexual motivation may produce a considerable spill-over effect on global well-being. Further investigations the consequences of controlled sexual motivation will be important in clarifying this question.

Theoretical Contributions

Our results converge with an extensive body of research on critical role of the self-determination of behaviour for optimal psychological functioning (e.g., Ryan & Deci, 2017). Specifically, this study contributes to the growth of research demonstrating the relevance of SDT as a framework of the quality of sexual motivation (Boislard-Pépin et al., 2002; Brunell &

Webster, 2013; Gravel et al., 2016). In this study, we integrated the findings from previous studies in a unified model and we extended them by showing that a heterarchical structure provides a useful model of the motivational antecedents and well-being consequences of the self-determination of sexual motivation. This is a timely contribution given that a major gap in the literature on the quality of sexual motivation is a paucity of research on its antecedents (Muise, 2017). In this study, we demonstrated that people's overarching dispositional motivation and their motivational orientation toward their relationship may contribute to individual differences in optimal and non-optimal sexual motivation. Additionally, we adapted the HMIEM to better account for some important particularities of sexuality as a life domain. A limitation of the HMIEM was that its predictions regarding the magnitude of the associations between different levels and contexts of motivation did not clearly address situations in which close connections exist between two life domains, as is the case for committed relationships and sexuality. We demonstrated that the sexual level should be considered more proximal to the relational level than to the global level. This finding is an important theoretical development for the HMIEM as few studies have explored the properties of the model in situations involving closely intertwined life domains. This adaptation enhances the generalizability HMIEM to the domains of sexuality and committed relationships, thus allowing for more accurate hypothesis generation in future research.

This study also contributes to sexuality research by demonstrating that self-determination is an important dimension of the quality of sexual motivation. We demonstrated that autonomous sexual motivation may be considered an optimal type of sexual motivation as it was associated with an overall pattern of positive psychological functioning at the sexual, relational, and global levels. In contrast, controlled sexual motivation may be considered a non-optimal type of sexual

motivation as it was associated with an overall pattern of poorer psychological functioning. Thus, although sexual activities can make a meaningful contribution to committed relationships (e.g., Birnbaum & Finkel, 2015) and quality of life (Laumann et al., 2006), the reasons why people engage in them may be critical in determining the nature of their outcomes. Overall, our results suggest that by considering the extent to which sexual motivation is autonomous or controlled, we may extend our understanding of the processes which determine for whom and when engaging in sexual activities results in either benefits or costs for well-being.

From a broader perspective, we demonstrated that sexuality is an important and integral dimension of the self as our findings indicated that the quality of sexual experiences were associated with broader psychological functioning. This study addressed an important gap in sexuality research as studies on sexual well-being tend to be domain specific, and hence focus on processes that occur within the sexual level, with considerably less attention being devoted to the manner in which sexuality is integrated with other levels of psychological functioning. By highlighting the complex connections that exist among the sexual, relational, and global level of psychological functioning, our study lends important support to calls for a better integration of sexuality in health, personality, and social psychology research (Byrne, 1976; Diamond & Huebner, 2012).

Practical Implications

Increasing awareness of the potential benefits or costs associated with different types of sexual motivation may assist people in fostering the conditions that are most conducive to positive sexual experiences. Engaging in sexual activities for reasons that are genuinely in line with the self, such as to experience pleasure, to express meaningful feelings, or to enjoy the health benefits of sexual activities may help people derive stronger well-being from their sexual

experiences. Conversely, engaging in sexual activities for controlled reasons, such as to avoid conflicts with a partner or to prove one's worth as a sexual partner may not necessarily result in positive outcomes and may reduce the well-being they can derive from their sexual experiences.

Our study also provides novel insights on potential factors that may shape the quality of sexual motivation. Our findings suggested that one's motivational orientation toward their relationship was an important predictor. Specifically, maintaining a relationship for autonomous reasons may be critical for promoting autonomy with respect to sexual activities. The findings also suggested that a global orientation toward autonomy or control reverberated to the different domains of the self, potentially setting the stage for the emergence of optimal and non-optimal forms sexual motivation. Moreover, one mechanism underlying this association may reside in an influence of global motivation on relational motivation. Thus, finding more pleasure and meaning in everyday activities, and focusing on the ways in which one's relationship provides important opportunities for growth and for sharing the pleasures of everyday life may foster more autonomous reasons to engage in sexual activities.

Limitations and Future Directions

The results from this study must be interpreted in light of some limitations. First, solid conclusions regarding the direction of the associations cannot be formulated with the use of a cross-sectional design. We refer to the distinct parts of our model as antecedents and consequences on a theoretical basis, but the associations we investigated are likely bidirectional. Thus, experimental and longitudinal studies are needed to provide more rigorous support for the directions of the associations found in this study. A second limitation is that the results may have been affected by common method bias. All the data was collected using self-report measures tapping into the same broad constructs (i.e., motivation and well-being) measured at different

levels, in different domains, and at the same time. Taking measurements at different times, from different sources (e.g., the partner), and with different types of measures (e.g., using scenarios) may help to minimize the variance contributed by this methodology in future research. The generalizability of the results is also limited by the composition of the sample. The study was conducted with a sample primarily composed of privileged (i.e., educated, heterosexual, and of European descent) emerging adult women. We cannot conclude at this point whether the direction and magnitude of the associations observed in this study would be similar in other groups that were underrepresented in the sample.

We propose two broad directions for future research on autonomous and controlled sexual motivation. First, research should examine the contribution of the partner to the determination of autonomous and controlled sexual motivation and their outcomes. As members of a couple are interdependent, it is important to understand the ways in which self-determination in one partner influences the sexual experiences of the other partner. Second, in this study we focused on individual differences in autonomous and controlled sexual motivation. However, motivation can also fluctuate from one sexual encounter to another (Vallerand, 1997). Therefore, an important direction is to investigate within-person variations in autonomous and controlled sexual motivation and how they contribute to daily variations in well-being.

Conclusion

This study contributes to the growth of knowledge on autonomous and controlled sexual motivation by shedding light on the complex structure of their motivational antecedents and well-being consequences. The findings suggest that a global disposition toward autonomy or control as well as an orientation toward autonomy and control with respect to one's relationship may play key roles in the quality of sexual motivation. In turn, a general tendency to be

autonomous or controlled with respect to sexual activities may entail important consequences not only for sexual well-being, but also for an overall sense of well-being. Collectively, the findings support the notion that not all reasons to have sex are created equal as some are more conducive to well-being than others. From a broader perspective, this investigation of the structure of sexual motivation suggests that sexuality is far from being compartmentalized aspect of the self; rather, it permeates other important aspects of people's lives because it is woven to other domains of the self in intricate ways.

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Table 2.1

Descriptive Statistics and Mean Comparisons by Gender

Variable	Total		Men		Women		<i>F</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Global Motivation								
Autonomous	4.89	.79	4.93	.83	4.88	.78	.53	.06
Controlled	3.66	.88	3.71	.90	3.64	.88	.83	.08
Relational Motivation								
Autonomous	5.21	.96	4.99	.98	5.26	.98	10.37**	.28
Controlled	2.76	1.21	3.05	1.33	2.68	1.18	12.15**	.31
Sexual Motivation								
Autonomous	4.92	1.14	5.07	1.10	4.89	1.16	2.99	.16
Controlled	2.64	1.24	2.98	1.32	2.56	1.21	15.53***	.34
Well-Being								
Sexual Satisfaction	3.92	.63	3.83	.64	3.95	.63	4.52*	.19
Sexual Distress	.78	.78	.74	.78	.77	.78	.63	.04
Relational Satisfaction	4.26	.68	4.19	.66	4.27	.67	2.57	.12
Life Satisfaction	5.00	1.19	4.82	1.18	5.01	1.19	2.34	.16
Positive Affect	3.59	.69	3.64	.70	3.59	.69	3.04	.07
Negative Affect	3.64	.73	3.75	.76	3.62	.73	4.59*	.17
Psychological	4.42	.57	4.38	.55	4.43	.57	1.94	.09

Note. *N* = 828. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2.2

Correlations between Latent Variables

Variable	1.	2.	3.	4.	5.	6.	7.	8.	9.
1 Autonomous global motivation	-								
2. Controlled global motivation	.34 ^{***}	-							
3. Autonomous relational motivation	.24 ^{***}	.05	-						
4. Controlled relational motivation	.04	.27 ^{***}	.11 [*]	-					
5. Autonomous sexual motivation	.25 ^{***}	.14 ^{***}	.40 ^{***}	.20 ^{***}	-				
6. Controlled sexual motivation	.09 [*]	.24 ^{***}	-.04	.61 ^{***}	.37 ^{***}	-			
7. Sexual well-being	.14 ^{***}	-.04	.51 ^{***}	-.18 ^{***}	.30 ^{***}	-.20 ^{***}	-		
8. Relational well-being	.07	-.09 [*]	.66 ^{***}	-.33 ^{***}	.09 [*]	-.33 ^{***}	.61 ^{***}	-	
9. Global well-being	.38 ^{***}	-.16 ^{***}	.35 ^{***}	-.23 ^{***}	.16 ^{***}	-.26 ^{***}	.46 ^{***}	.46 ^{***}	-

Note. $N = 828$. ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$.

Table 2.3

Model Fit Statistics

Model	χ^2	<i>df</i>	χ^2/df	RMSEA	CFI	TLI	NFI
Measurement model	751.26	288	2.60	.05	.97	.96	.95
Structural Model	756.30	292	2.59	.05	.97	.96	.95
Alternative Models							
1. Top-Down Effect Removed	1275.09	304	4.19	.06	.94	.93	.92
2. No Effect of Sexual Motivation on	792.54	296	2.68	.05	.97	.96	.95
Relational and Global Well-being							
Gender Invariance Models							
1. Unconstrained	1114.03	584	-	.03	.966	.96	.93
2. Measurement Weights	1136.93	602	-	.03	.965	.96	.93
3. Structural Weights	1176.74	624	-	.03	.964	.96	.93
4. Structural Covariances	1177.99	627	-	.03	.964	.96	.93
5. Structural Residuals	1194.35	639	-	.03	.964	.96	.93
6. Measurement Residuals	1228.32	666	-	.03	.963	.96	.92

Note. $N = 828$. All chi-square tests were significant at $p < .001$. CFI values are reported with three decimals for testing the invariance of the model with respect to gender models using ΔCFI . Models are considered invariant with respect to gender if $\Delta CFI \leq .01$.

Table 2.4

Direct Effects between Motivation at the Global, Relational, and Sexual Level

Antecedents	Autonomous Relational			Controlled Relational		
	Motivation			Motivation		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Global motivation						
Autonomous	.23***	.04	.24 (.16, .33)	-.05	.05	-.05 (-.14, .04)
Controlled	-.03	.03	-.03 (-.11, .05)	.25***	.04	.29 (.20, .37)
	Autonomous Sexual			Controlled Sexual		
	Motivation			Motivation		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Global motivation						
Autonomous	.17***	.05	.15 (.06, .23)	.11	.06	.07 (-.01, .14)
Controlled	.03	.04	.03 (-.05, .12)	.08	.05	.06 (-.02, .14)
Relational motivation						
Autonomous	.41***	.04	.35 (.28, .42)	-.20**	.06	-.12 (-.19, -.05)
Controlled	.15***	.04	.14 (.07, .22)	.89***	.08	.60 (.53, .67)

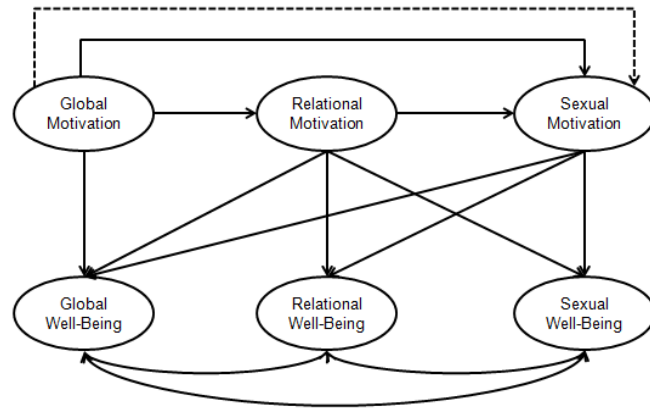
Note. $N = 828$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2.5

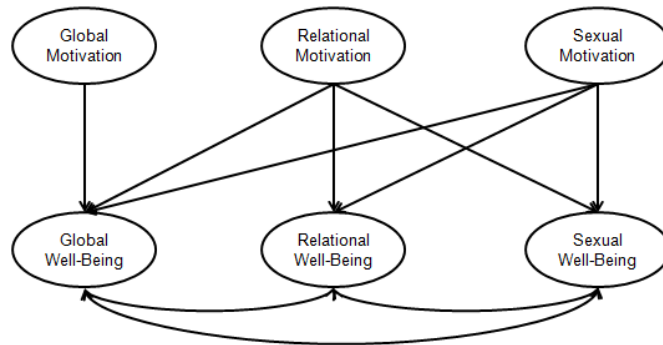
Effects of Motivation on Well-Being at the Sexual, Relational, and Global Level

Motivation	Well-Being								
	Sexual			Relational			Global		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Global									
Autonomous	–	–	–	–	–	–	.23***	.02	.42 (.35, .49)
Controlled	–	–	–	–	–	–	-.11**	.02	-.25 (-.32, -.17)
Relational									
Autonomous	.38***	.04	.43 (.36, .51)	.69***	.04	.74 (.66, .81)	.13***	.02	.23 (.15, .31)
Controlled	-.13***	.04	-.17 (-.27, -.08)	-.29***	.04	-.35 (-.45, -.25)	-.05	.02	-.10 (-.20, .00)
Sexual									
Autonomous	.16***	.03	.22 (.13, .30)	-.10***	.03	-.12 (-.20, -.04)	.04*	.02	.09 (.00, .17)
Controlled	-.08**	.03	-.15 (-.27, -.04)	-.03	.03	-.05 (-.15, .06)	-.08***	.03	-.20 (-.30, -.10)

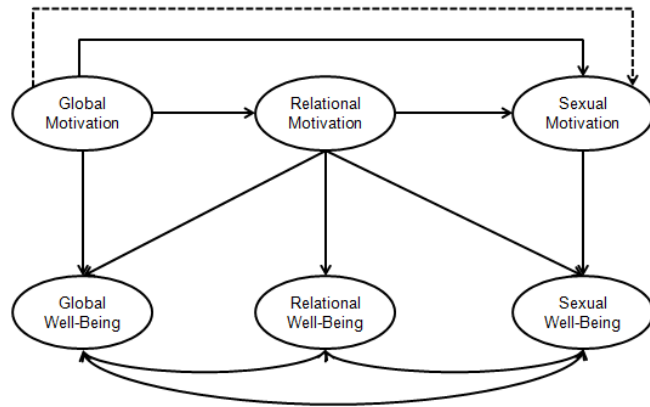
Note. $N = 828$. * $p < .05$, ** $p < .01$, *** $p < .01$. Values in parentheses are 95% bias-corrected confidence intervals for the standardized regression coefficients.



a) Hypothesized Model



b) Alternative Model 1: No Top-Down Effects between Global, Relational, and Sexual Motivation



c) Alternative Model 2: No Effect of Sexual Motivation on Relational and Global Well-Being

Figure 2.1. Models of motivational antecedents and well-being consequences of sexual motivation. Solid lines represent a direct effect and dashed lines represent an indirect effect.

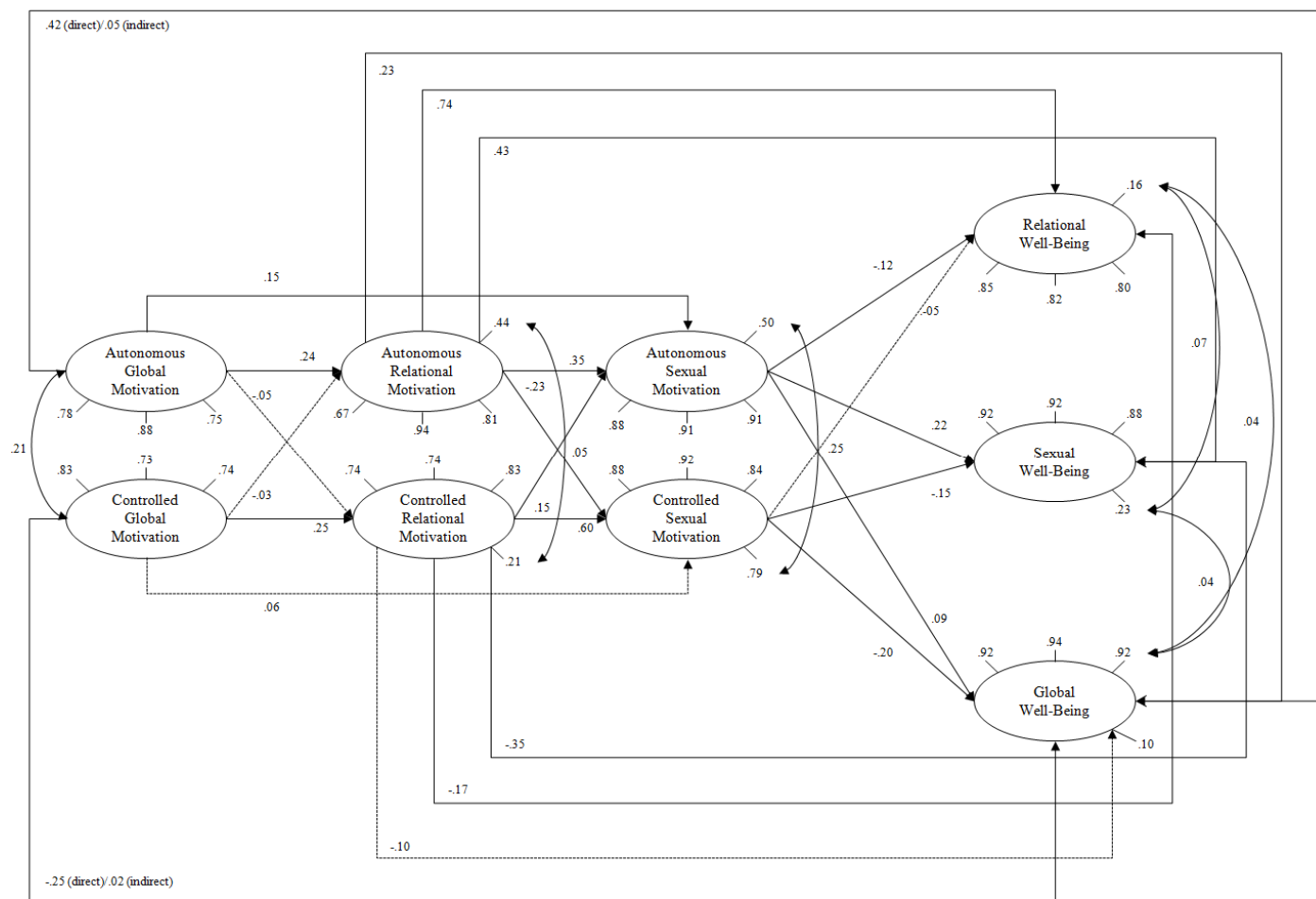


Figure 2.2. Unstandardized path coefficients for motivational antecedents and well-being consequences of sexual motivation. Solid lines are significant at $p < .05$ and dashed lines are non-significant.

CHAPTER FOUR

The Ebb and Flow of Sexual Well-Being: The Contributions of Basic Psychological Needs and

Autonomous and Controlled Sexual Motivation to Daily Variations in Sexual Well-Being

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Abstract

In this study, we used self-determination theory (SDT; Deci & Ryan, 2000) to better understand variations in the quality of sexual experiences from one sexual encounter to the next. We examined whether engaging in sexual activities for reasons that are genuinely in line with the self (i.e., autonomous) as opposed to pressured (i.e., controlled) were associated with variations in daily sexual well-being. We also sought to identify the circumstances associated with changes in the reasons to engage in sexual activities by considering the extent to which daily interactions with a partner satisfied the basic psychological needs for autonomy, competence, and relatedness. University students ($N = 113$) participated in a 21-day study of daily experiences. Findings demonstrated that on days when reasons to engage in sexual activities were more autonomous and less controlled, participants experienced higher sexual well-being (i.e., higher sexual satisfaction, more positive sexual affect, and less negative sexual affect). Furthermore, on days on when interactions with the partner were more positive, as evidenced by better needs satisfaction, reasons to engage in sexual activities were more autonomous and this was associated with higher sexual well-being. These associations held above the contributions of gender, relationship length, frequency of sexual activities, and relational satisfaction. Daily basic needs satisfaction was not linked to daily controlled sexual motivation. Contributions to research on sexual well-being and implications for enhancing daily sexual well-being are discussed.

Keywords: sexual motivation, sexual satisfaction, sexual well-being, basic psychological needs, self-determination theory

The Ebb and Flow of Sexual Well-Being: The Contributions of Basic Psychological Needs and Autonomous and Controlled Sexual Motivation to Daily Variations in Sexual Well-Being

Sexual activities can enhance quality of life and relationships by fostering positive emotions and strengthening interpersonal bonds (e.g., Diamond & Huebner, 2012; George, Norris, Nguyen, Masters, & Davis, 2014; Muise, Kim, McNulty, & Impett, 2016). However, research is beginning to show that the positive associations between frequency of sexual activities and well-being are more limited than previously expected. Rather, the quality of sexual activities may be a better predictor of their benefits on well-being. For instance, research showed a curvilinear relationship between frequency of sexual activities and overall well-being. Beyond an average frequency of one sexual event in a week, sexual frequency did not predict increases in overall well-being (Muise, Schimmack, & Impett, 2016). In a study where couples were randomly assigned to a condition in which they were asked to double their weekly sexual frequency over a 90-day period or to a control condition, couples who were asked to increase their sexual frequency did not report increases in well-being at the end of the study (Loewenstein, Krishnamurti, Kopsic, & McDonald, 2015). The experimental task actually produced an adverse effect as couples in the increased frequency condition reported a decrease in positive mood, sexual desire, and sexual enjoyment. In a longitudinal study of married couples, sexual satisfaction emerged as a better predictor of long-term relational satisfaction than frequency of sexual activities (Schoenfeld, Loving, Pope, Huston, & Štulhofer, 2017). Therefore, in light of these findings, a critical research agenda is the identification of the factors that predict the quality of sexual experiences. To better understand this question, an increasing number of studies examine the quality of sexual motivation, or the reasons for engaging in sexual activities (for a review, see Muise, 2017). Despite the growth of this research, the circumstances that foster

optimal and non-optimal sexual motivation have received less attention (Muise, 2017). In this study, we used self-determination theory (SDT; Deci & Ryan, 2000) to examine whether sexual motives that are genuine as opposed to pressured explained daily variations in sexual well-being. Furthermore, as partnered sexual activities are fundamentally embedded in the broader context of the relationship in which they occur, we examined whether the quality of daily interactions between partners influenced the association between sexual motivation and sexual well-being.

Self-Determination Theory

At its core, SDT proposes that optimal functioning and well-being are a function of the extent to which close relationships support or hinder three basic psychological: autonomy, competence, and relatedness (Deci & Ryan, 2000). Autonomy refers to having a sense of choice when acting, feeling volitional, and having genuine ownership over one's actions as opposed to being controlled by pressures and expectations (Deci & Ryan, 1985). Competence relates to feeling effective in one's environment and that one possesses the necessary skills to enact change or achieve desired goals (Deci, 1975). Finally, relatedness refers to the need to be cared for and connected to others (Ryan, 1995).

Satisfaction of these basic needs plays a central role in daily experiences of well-being. Evidence from experiential studies suggested that "good days" can be understood as those on which people feel more autonomous, competent, and related to others; on these days, participants reported increased well-being (Sheldon, Ryan, & Reis, 1996; Reis, Sheldon, Gable, Roscoe, & Ryan, 2000). Consequently, the extent to which close others satisfy basic psychological needs on a given day can be considered an important indicator of the quality of daily interpersonal interactions and a determinant of well-being outcomes (Deci & Ryan, 2000).

Another central proposition of SDT is that the quality of one's reasons for performing a behaviour influences its outcomes. In SDT, this is understood as the extent to which a person is self-determined. That is, whether their reasons for behaving are genuinely in line with themselves as opposed to being the result of controlling pressures (Deci & Ryan, 1985, 2000). The self-determination of behaviour can be captured by two broad motivational orientations: autonomous and controlled motivation (e.g., Deci & Ryan, 1985, 2000; Vansteenkiste, Zhou, Lens, & Soenens, 2005). Autonomous motivation is characterized by genuine choice and ownership over one's action; it is manifested in behaviours are pursued because they are inherently pleasurable and interesting, they resonate with deeply held values and identities, or they are recognized as personally important in achieving an outcome (Deci & Ryan, 1985). In contrast, controlled motivation is the result of pressuring demands and expectations (Deci & Ryan, 1985). These pressures can be external, such as seeking rewards and avoiding negative consequences imposed by others. They can also be internal, such as avoiding guilt and shame or enhancing self-worth (Deci & Ryan, 1985).

In SDT, autonomous motivation is considered an optimal motivational orientation, whereas controlled motivation is considered a non-optimal motivational orientation (Deci & Ryan, 2000). Indeed, extensive research conducted in multiple life domains and with different methodologies consistently demonstrates that autonomous motivation is associated with higher well-being and better functioning, while controlled motivation tends to be associated with poorer well-being and functioning (for reviews, see Gagné & Deci, 2005, for work; Guay, Ratelle, & Chanal, 2008, for education; Knee, Hadden, & Baker, 2016, for relationships; Ng et al., 2012, for health; and Standage & Ryan, 2012, for sports and exercise).

These associations are particularly relevant to an understanding of daily fluctuations in well-being in the context of close relationships. For instance, one study on motivation for helping a romantic partner suffering with chronic pain showed that on days when reasons to help were more autonomous (e.g., enjoyment, commitment) rather than controlled (e.g., avoiding guilt or criticism), the supporting partner experienced more positive affect, less exhaustion, and engaged in conflict with their partner (Kindt, Vansteenkiste, Loeys, & Goubert, 2016). Autonomous and controlled motivation can thus provide insights on the circumstances associated with daily variations in positive and negative experiences.

According to SDT, basic needs satisfaction is a central contextual determinant of motivation quality. In close relationships, supporting a partner's basic psychological needs facilitates the emergence of autonomous motivation, whereas thwarting them typically leads to controlled motivation (Deci & Ryan, 2014). Basic needs satisfaction and motivation thus form a motivational sequence delineating the antecedents and consequences of motivation (Deci & Ryan, 2000; Vallerand, 1997). This model is particularly useful in understanding the manner in which the context of a relationship interacts with a person's motivation to produce daily variations in positive or negative experiences. For instance, in one study examining the quality of conflict resolution in committed relationships, people who experienced more basic needs satisfaction from their partner reported more autonomous reasons for maintaining the relationship (Patrick, Knee, Canevello, & Lonsbary, 2007). In turn, this was associated with better conflict resolutions, as evidenced by better post-disagreement satisfaction and stronger commitment after a conflict with their partner.

SDT Research on Sexual Well-Being

By addressing both the antecedents and consequences of motivation, the motivational sequence proposed by SDT provides a powerful framework to explain *why* and *when* people experience variations in the quality of their sexual experiences. Cross-sectional studies suggest that engaging in sexual activities for autonomous or controlled reasons are associated with important individual differences in sexual health and well-being. Stronger autonomous sexual motivation tends to be associated with better sexual functioning, stronger sexual satisfaction, and less sexual distress (Boislard-Pépin, Green-Demers, Pelletier, Chartrand, & Séguin Lévesque, 2002; Gravel, Pelletier, & Reissing, 2016, see Manuscript 1; Gravel, Reissing, & Pelletier, 2017, see Manuscript 2). In contrast, controlled sexual motivation tends to be associated with more problems with sexual response, less sexual satisfaction, and stronger feelings of sexual distress (Gravel et al., 2016; Gravel, et al., 2017).

To the best of our knowledge, only two studies have examined basic needs satisfaction and the self-determination of sexual motivation in the context of daily sexual activities. In a 21-day study of daily experiences, Smith (2010) showed that people reported higher sexual well-being on days when they experienced more basic needs satisfaction during sexual activities. In two studies of daily sexual experiences, Brunell and Webster (2013) tested a variation of the motivational sequence. Sexual motivation was measured using an index of relative self-determination in which scores on a measure of sexual amotivation (i.e., lack of intention to engage in sexual activities) and controlled sexual motivation were subtracted from scores on a measure of autonomous sexual motivation. They found that on days when sexual motivation was relatively more autonomous, people reported more basic needs satisfaction during sexual activities and this was associated with stronger relational and psychological well-being.

Next Directions for SDT Perspectives on Daily Sexual Well-Being

As SDT research on daily sexual well-being is in its beginnings, important questions about the contributions of basic needs satisfaction and autonomous and controlled sexual motivation remain to be addressed. First, no study to date has examined the role of autonomous and controlled sexual motivation in daily experiences of sexual well-being. As autonomous and controlled motivation are theoretically distinct constructs which capture optimal and non-optimal motivational orientations (Deci & Ryan, 2000), their investigation provides an important opportunity to isolate the differential processes that underlie positive and negative sexual experiences.

Another important direction for research is to identify the antecedents of daily variations in autonomous and controlled sexual motivation. This question is not only relevant for SDT research, but also for research on the quality of sexual motivation. Indeed, most research on daily sexual motives has examined this construct as a predictor, but much less research has examined their antecedents (Muisse, 2017). Given that targeting the quality of sexual motivation offers a promising line of intervention for enhancing sexual well-being, it is critical to identify the factors that are conducive to optimal and non-optimal forms of sexual motivation. In light of evidence from SDT research on global (e.g., Reis et al., 2000; Sheldon et al., 1996), relational (e.g., Patrick et al., 2007), and sexual (Brunell & Webster, 2013; Smith, 2007) well-being, we propose that the quality of a couple's non-sexual interactions, as evidenced by the extent to which they satisfy basic psychological needs, may offer new insights on the circumstances that shape daily variations in the quality of sexual motivation and sexual well-being. Additionally, given that few studies have investigated the manner in which broader relationship processes shape the quality of sexual experiences in couples, examining these associations contributes to a much-needed

integration of relationship science to sexuality research (Christopher & Sprecher, 2000; Impett, Muise, & Peragine, 2014).

The Present Study

The goal of this study was to validate the motivational sequence proposed by SDT in the context of daily variations in sexual well-being. We predicted that on days when autonomous sexual motivation would increase and controlled sexual motivation would decrease, sexual well-being derived from partnered sexual activities would increase. Furthermore, we predicted that these associations would be influenced by the quality of non-sexual interactions between partners, as evidenced by the extent to which these would satisfy basic psychological needs. Therefore, we predicted that on days when participants would experience more autonomy, competence, and relatedness during interactions with their partners, their sexual motivation would be more autonomous and less controlled and this would be associated with better experiences of sexual well-being. To strengthen confidence in our results, we also tested whether our predictions would hold beyond the contributions of gender, frequency of sexual activities (i.e., the number of times participants engaged in sexual activities over the course of the study), relationship length, and relationship satisfaction to sexual well-being (Byers & Rehman, 2014; Impett et al., 2014; Muise et al., 2016).

Method

Participants and Procedure

The sample consisted of 113 university students (women = 100, men = 13) in a committed relationship and aged between 18 and 35 ($M_{\text{age}} = 20.48$, $SD = 3.23$). The ethnic heritage composition of the sample was as follows: 1% First Nations, 4% Asian, 80% European, 3% Hispanic, 3% Middle Eastern, 5% mixed ethnic heritage, and 4% did not report their ethnic

heritage. In terms of sexual orientation, 7% were bisexual, 1% was gay, 2% were lesbian, 87% were heterosexual, 2% reported “other”, and 1% did not report a sexual orientation. Average relationship duration was 24.45 months ($SD = 30.90$).

Participants were recruited through a psychology department participant pool, posters placed in different campus locations, and snowball sampling. Eligibility criteria for participation in the study was to be (a) at least 18 years of age, (b) currently engaging in partnered sexual activities (c) with a committed partner (d) of at least three months (e) and who resided in the same city as the participant. Interested participants were initially invited to an interview at the researchers’ laboratory to be screened for eligibility and provided with the instructions regarding their participation in the study (see Appendix Q). Specifically, participants were asked to complete a 30-minute baseline survey on the first day of their participation and a 5-minute diary survey for the subsequent 21 consecutive days each night prior to going to sleep. Emails were sent every morning at 9:00 a.m. to remind participants to complete the diary from the day before if they had not done so already. In total, participants submitted 2697 diaries, each participant completing an average of 18.59 diaries (of 21; $SD = 7.16$) and engaged in sexual activities on average 6.50 ($SD = 3.34$) times over the course of the study.

Measures

Daily-level measures.

Basic needs satisfaction in relationships. We used the Basic Needs Satisfaction in Relationships Scale (BNSRS; La Guardia, Ryan, Couchman, & Deci, 2000) to measure the extent to which participants perceived that their partner satisfied their needs for autonomy, competence, and relatedness during daily interactions. The BNSRS consists of nine items, three for each need. The items are answered using a Likert scale ranging from 1 (*not at all true*) to 7

(*very true*). For the daily diary questionnaire, we used an abbreviated version of the BNSRS in which the instructions and items were modified slightly to reflect daily interactions, rather than interactions in general. We also included one item for each basic need, for a total of three items (autonomy: “when I was with my partner, I felt free to be who I am”; competence: “when I was with my partner, I felt like a competent person”; relatedness: “when I was with my partner, I feel loved and cared about”). We used this procedure for the BNSRS and the other measures in the daily questionnaire in order to minimize participant burden and attrition (Bolger, Davis, & Rafaeli, 2003). In this study, results from a principal component analysis of these items revealed a one-factor solution that explained 70.36% of the measure variance. The reliability coefficient for this daily version of the BNSR was .79. Both principal component analysis and reliability coefficients were computed using residuals from participants means on the study variables across days, such that the mean item score for a given participant was subtracted from item scores for each day for that participant. This procedure was used to isolate the relationships between the items of the scale for a given participant from the variation in item scores between participants, as such, what is obtained are reliability and validity of the scale within the participants across days; it was performed as well with the other daily measures described below.

Sexual motivation. The Sexual Motivation Scale (SexMS; Gravel, Pelletier & Reissing, 2016) was used to measure autonomous and controlled reasons to engage in daily sexual activities. The SexMS is a 24-item measure of the three types of motivation proposed by SDT in the context of sexual activities: Intrinsic motivation, four types of extrinsic motivation (i.e., two autonomous types: integrated and identified regulations, and two controlled types: introjected and external regulations), and amotivation (for a detailed discussion, see Deci & Ryan, 1985; 2000). In this study, we abbreviated this scale by selecting two items for each type of motivation,

excluding amotivation as we focused on autonomous and controlled sexual motivation.

Participants were given the following instruction: “There are many reasons why people have sex. Please to what extent each of the statements below corresponds to the reason(s) why you had sex today”. Items for each type of motivation were as follows: “because I enjoy sex” and “because sex is exciting” (intrinsic motivation), “because sexuality brings so much to my life” and “because sexuality is a meaningful part of my life” (integrated regulation), “because sex is important to me” and “because I feel it’s important to experiment sexually” (identified regulation), “to show to myself that I am sexually competent” and “to prove to myself that I am sexually attractive” (introjected regulation), and “to avoid conflicts with my partner” and “because I didn’t want to be criticized by my partner” (external regulation). Instructions were also modified slightly as to ask participants to reflect on the reasons why they engaged in partnered sexual activity on a specific day, as opposed to in general: “Please indicate to what extent each statement describes your overall interaction with your partner today by indicating how true it is for you”. Each item was answered using a Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). We created an autonomous sexual motivation measure and a controlled sexual motivation measure by averaging autonomous and controlled items into two different scales (see Pelletier & Sarrazin, 2007). In this study, results from a principal component analysis using a varimax rotation suggested a two-factor solution in which the autonomous and controlled items loaded on separate factors. The Autonomous Sexual Motivation Factor explained 32.27% in the measure’s variance and the Controlled Sexual Motivation Factor explained 16.12% in the measure’s variance. The reliability coefficients for this daily SexMS measure were .78 for the autonomous sexual motivation measure and .67 for the controlled sexual motivation measure.

Sexual well-being. In this study, we followed classic definitions of subjective well-being (Diener, 1984) to guide our operationalization of sexual well-being by measuring sexual satisfaction, positive sexual affect, and negative sexual affect. Our aim in using this definition was to achieve a more complete view of sexual well-being by capturing both its cognitive and affective components as well as positive and negative indicators. Five items were developed for the purpose of this study through a consultation with sexuality and well-being researchers: one item measuring sexual satisfaction (“Overall, sex was satisfying”), two items measuring positive sexual affect (“I felt positive emotions during sex” and “I felt positive emotions after sex”), and two items measuring negative sexual affect (“I felt negative emotions during sex” and “I felt negative emotions after sex”). Participants were given the following instruction: “The following statements describe different aspects related to the quality of a sexual interaction. Thinking about the sexual interaction you engaged in today, please indicate to what extent you agree with each statement”. They then indicated their level of agreement with these items using a Likert scale ranging from 1 (*not at all*) to 7 (*totally*). Positive and negative sexual affect were created by averaging the items in separate scales.

Baseline measure.

Relational satisfaction. The Relationship Assessment Scale (RAS; Hendrick, Dycke, & Hendrick, 1998) was used to evaluate relational satisfaction as a control variable. Participants were asked to rate seven statements regarding their general relationship satisfaction using a Likert scale ranging from 1 (*low satisfaction*) to 5 (*high satisfaction*). Sample items include “How much do you love your partner?” and “How good is your relationship compared to most?”. In a validation study of the RAS, principal component analysis revealed a one-factor structure

and results from a reliability analysis suggested an alpha coefficient of .86 (Heindrick et al., 1998). In this study, the RAS had a reliability coefficient of .87.

Analytical Strategy

As the goal of this study was to investigate the quality of sexual experiences, only the data from days on which participants engaged in a sexual encounter were included in the analyses; sexual encounters were defined as engaging in one or many of the following sexual activities: manual sex, oral sex, penile-vaginal sex, anal sex, and the use of sex toys. Given the nested structure of the data (i.e., days, or Level 1 data, nested within participants, or Level 2 data), main analyses were performed using multilevel modelling with HLM 7. Preliminary analyses and data preparation were conducted using SPSS 22 and HLM 7. The data was first cleaned and prepared following general requirements of multivariate and multilevel statistics using (Garson, 2013; Tabachnick & Fidell, 2001). Then, we conducted the main analyses in three stages. First, we examined the respective contribution of daily basic needs satisfaction and daily sexual motivation to daily sexual well-being. These models were first analyzed with slopes modelled as random, meaning that slopes were allowed to vary between participants. When random effects were non-significant, the models were then re-specified and these paths were modelled as fixed to simplify estimation. We then tested the mediating effect of daily sexual motivation in the associations between daily basic needs satisfaction and daily sexual well-being. Given that the mediation effects involved only Level 1 predictors and that we were interested in isolating the predictors of daily personal variations in sexual well-being, a 1-1-1 mediation analysis was performed (for details, see Zhang, Zyphur, & Preacher, 2009). With 1-1-1 mediation analysis, within-person variance must be partitioned from between-person variance to prevent a confounding of their respective contributions. We thus used person-mean centring of

Level 1 predictors when we analyzed our model HLM7, in which the person's mean score across days is subtracted from their score for each day, as to have them reflect an association between a person's daily deviation from their mean score across days and their daily score on the outcome variables. The means across days for all predictors were also entered in the model as Level 2 predictors to account for between-person variations in the outcome. Then, we derived a 95% confidence interval for the mediation effect, we used the Monte Carlo Method for Assessing Mediation (MCMAM) with 20,000 repetitions using an online calculator (Selig & Preacher, 2008) in which we entered the values from the regression coefficients obtained from hierarchical modelling. Next, we tested potential alternative explanations for our associations by adding gender, relational well-being, relationship length, and frequency of sexual activities (i.e., the number of times participants engaged in sexual activities over the course of the study) to determine if the associations held beyond the contributions of these potential confounders.

Results

Preliminary Analyses

Data cleaning and preparation procedures are presented in Appendix C. Descriptive statistics and correlations between study variables are presented in Tables 3.1 and 3.2, respectively. We computed the intraclass correlation (ICC) for each sexual well-being indicator (see Table 3.1), an index of the percentage of between-group variance for a given outcome which provides an indication as to whether multilevel analysis is justified. Generally, an ICC below 10% suggests that between-group variation is too little to warrant multilevel modelling. In this study, the ICC ranged between .44 and .71, suggesting that a substantial proportion of variance in sexual well-being was between-group and thus warranted the use of multilevel modelling.

Main Analyses

Direct effects of daily basic needs satisfaction and sexual motivation on daily sexual well-being are presented in Table 3.3 and Figure 3.1. As expected, on days when participants reported better basic needs satisfaction during interactions with their partner and stronger autonomous sexual motivation, they experienced higher levels of sexual well-being (i.e., higher sexual satisfaction, more positive, and less negative sexual affect). In contrast, on days when participants reported more controlled sexual motivation, they experienced lower sexual satisfaction, less positive sexual affect and more negative sexual affect.

We then tested the mediating effect of sexual motivation to better understand the potential mechanisms linking relational processes to sexual well-being. We found partial support for our hypotheses. The association between daily basic needs satisfaction and autonomous sexual motivation was significant, $B = .31$, $SE = .07$, $p < .001$, and in turn, daily autonomous sexual motivation mediated the association between daily basic needs satisfaction and all three indicators of sexual well-being (see Table 3.3 and Figure 3.1). This finding suggested that on days when participants experienced more needs satisfaction in their interaction with their partner, their reasons for engaging in sexual activities were more autonomous and this was associated with higher sexual well-being. Contrary to predictions, daily basic needs satisfaction was not associated with daily controlled sexual motivation, $B = .05$, $SE = .05$, $p = .29$, and none of the indirect effects involving daily controlled sexual motivation were significant, sexual satisfaction: 95% CI = [-.03, .01]; positive affect: 95% CI = [-.03, .01]; negative affect: 95% CI = [-.04, .01].

Next, we conducted a series of analyses to rule out potential confounding effects of gender, relationship length, relationship satisfaction, and frequency of sexual activities. We

modelled each of these variables as Level 2 predictors. None of the associations changed in statistical significance following with the inclusion of the control variables (see Table 3.3).

Discussion

This study was the first to examine the associations between daily variations in autonomous and controlled sexual motivation and sexual well-being. We showed that these two motivational orientations make a distinct contribution to within-person variations in the quality of sexual experiences. Specifically, people enjoyed better sexual experiences on days when they engaged in sexual activities for more autonomous reasons, whereas sexual experiences were less enjoyable and potentially unpleasant on days they engaged in sexual activities for more controlled reasons. Importantly, these results held beyond the contributions of gender, relationship length, relationship well-being, and frequency of sexual activities. These findings converge with an emerging body of research suggesting that autonomous sexual motivation may entail benefits for well-being, whereas controlled sexual motivation may entail costs (Boislard-Pépin et al., 2002; Brunell & Webster, 2013; Gravel et al., 2016; Gravel, Reissing, et al., 2017; Vrangalova, 2015). These results contribute to a growing literature suggesting that the quality of one's reasons to engage in sexual activities is a critical factor in determining why and when people either experience positive and negative sexual experiences (Muise, 2017). We extend this literature by demonstrating that autonomy and control are important dimensions of the quality of sexual motivation as they capture distinct processes underlying the determination of positive or negative sexual experiences.

From a broader perspective, the findings converge with an extensive body of research which suggests that autonomous and controlled motivation represent optimal and non-optimal forms of self-regulation, respectively (Gagné & Deci, 2005; Guay et al., 2008; Knee, et al. 2016;

Ng et al., 2012; Standage & Ryan, 2012). Additionally, they contribute to an emerging body of research which demonstrates that SDT is a valuable framework to understand the circumstances associated with thriving and withering in close relationships (Knee et al., 2016). Given that positive sexual experiences have the potential to enhance quality of life and relationships (e.g., Diamond & Huebner, 2012; George et al., 2014; Muise et al., 2016), our findings extend this literature by showing that autonomous and controlled motivational orientations matter for the quality of sexual experiences in committed relationships.

Another key contribution of this study was an examination of the contribution of broader relationship processes to the quality of sexual motivation and sexual well-being. So far, much of the research on the quality of sexual motivation has focused on outcomes, with less attention devoted to antecedents (Muise, 2017). In this study, we sought to address this gap by determining whether basic needs satisfaction was a characteristic of daily partnered interactions that was more or less conducive to optimal and non-optimal sexual motivation. The findings suggested on days when participants experienced better needs satisfaction when interacting with their partner, their sexual motivation was more autonomous. Moreover, the quality of daily interactions between partners was directly associated with sexual well-being, such that on days when participants experienced better need satisfaction, their sexual encounters were more pleasurable and satisfying. Autonomous sexual motivation was a mechanism in this association. Therefore, positive interactions between partners were associated with better sexual experiences in part because these interactions were associated more autonomous sexual motivation.

These results converge with previous research showing that interactions between partners that better satisfy basic psychological needs are important determinants of daily positive functioning in committed relationships (Patrick et al., 2007). In the context of sexual activities,

SDT research has focused on the extent to which basic needs are met during sexual encounters and their associations with sexual, relational, and psychological well-being (Brunell & Webster, 2013; Smith, 2010). We extend this work by suggesting that basic psychological needs satisfaction during everyday interactions with one's partner may support optimal sexual motivation and sexual well-being. By focusing on broader relationship processes, this study contributes to build bridges between close relationship research and sexuality research, two areas of scientific inquiry that have evolved independently (Christopher & Sprecher, 2000; Impett et al., 2014).

Contrary to predictions, we did not find a significant negative association between basic needs satisfaction and controlled sexual motivation. One explanation is that need thwarting (i.e., feeling controlled, incompetent, and rejected), which was not measured in this study, may be more important for variations in controlled sexual motivation than need satisfaction. Researchers have begun to question the relevance of need satisfaction as a concept and a measurement for adequately capturing non-optimal or maladaptive motivational processes, such as controlled motivation (e.g., Bartholomew, Ntoumanis, Ryan, Bosch, & Thøgersen-Ntoumani, 2011). Controlled motivation often emerges as a compensation mechanism in response to needs thwarting (Deci & Ryan, 2000) and this process appears to be fundamentally different than what is captured by low scores on needs satisfaction measures (Bartholomew et al., 2011). Future research should measure both need satisfaction and thwarting in order to provide a fuller picture of the processes surrounding basic psychological needs provision in the context of partnered sexual activities.

Limitations and Future Directions

The results from this study must be interpreted in light of some limitations. First, we cannot be certain of the directions of the associations investigated in this study as all measurements were taken at the same time. Manipulating the saliency of autonomous and controlled sexual motivation, and basic needs satisfaction in future studies may help to clarify whether these processes are causally related to daily variations in sexual well-being. All items used in the questionnaire were self-report and the similarity in the wording of the items may have contributed to a common method bias. Using partner reports on their perceptions of the participant's experiences and developing scales that have more varied item wording may help diminish the bias incurred by the use of common methods. Additionally, reporting on basic needs satisfaction and sexual motivation after engaging in sexual activities may have created a halo effect about the partner and the relationship, potentially biasing the reports. Closely monitoring one's sexual activities may have also increased sexual thoughts, which in turn could have increased frequency of sexual activities, thereby influencing sexual well-being reports. Composition of the sample was also an issue given that we relied on a convenience sample of privileged (i.e., educated, heterosexual, and of European descent) emerging adult women. Notably, given that only a limited number of men participated in the study, the results from the gender moderation analysis were underpowered and the results may have differed in a larger sample of men. However, given that to the best of our knowledge, this was the first study to examine daily variations in autonomous and controlled sexual motivation our primary goal was to validate associations between these two motivational orientations and daily experiences of sexual well-being. Given the complexity of the associations between gender and sexual behaviour, gender differences and similarities in autonomous and controlled sexual motivation

and the mechanisms that underlie them deserve to be the primary focus of a separate investigation. Finally, although the focus of this study was on partnered sexual activities, responses of the partner were not measured. The use of dyadic frameworks in future research will be necessary to clarify whether basic needs satisfaction and autonomous and controlled sexual motivation in one partner influence experiences of sexual well-being in the other partner.

Some important directions for future research emerge from the results of this study. First, future studies on daily variations in autonomous and controlled sexual motivation should clarify the mechanisms linking autonomous and controlled sexual motivation to sexual well-being. SDT research on broader relationship functioning demonstrates that autonomous relational motivation is associated with a more flexible and less defensive interpersonal style (for a review, see Knee et al., 2016), suggesting that autonomous motivation may be linked to better communication skills. Future studies should investigate whether autonomous and controlled sexual motivation are associated with differences in the effectiveness of negotiations of sexual likes and dislikes, and whether better dyadic communication fosters autonomous sexual motivation. Another direction for future research is to further investigate the connections between daily sexual activities and broader relationship functioning. One interesting avenue would be to determine whether reasons to maintain a relationship with a partner influence the extent to which daily sexual motivation are autonomous or controlled, and the magnitude of their variations from one sexual encounter to the other. Finally, another avenue for future investigation would be to determine whether people experience changes in daily overall relationship satisfaction as a result of the extent to which their reasons to engage in daily sexual activities are autonomous or controlled.

Implications for Sexual Well-Being

In light of the importance of sexual well-being for relationship thriving and overall quality of life (e.g., Diamond & Huebner, 2012; George, et al., 2014; Muise et al., 2016), some key implications for enhancing daily sexual well-being arise from this study. First, developing a better awareness of one's reasons to engage in sexual activities may foster conditions that are more conducive to positive sexual experiences. Specifically, couples may benefit from engaging in sexual activities for autonomous reasons such as to experience pleasure or to express the meaningfulness of connecting to one another in a sexual way. Conversely, couples may choose to avoid engaging in sexual activities when they feel pressured. Indeed, it may be tempting to think that engaging in sexual activities, albeit for pressured reasons, is better than not engaging in sexual activities at all. After all, the lower sexual satisfaction associated with controlled sexual motivation does not necessarily entail that a dissatisfying sexual encounter occurred. However, given that our study and others suggested that higher scores on negative indicators of sexual well-being, such as negative sexual affect and sexual distress, are associated with higher controlled sexual motivation (Gravel et al., 2016; Gravel, Reissing, et al., 2017; Gravel, Pelletier, et al., 2017), some types of sexual motives may increase unpleasant sexual experiences, and not simply decrease positive ones.

Our findings also suggest that foreplay begins before sexual activities occur as positive interactions between partners may be critical in fostering not only optimal sexual motivation, but more pleasurable and satisfying sexual encounters. The findings from this study illuminate key characteristics of interpersonal interactions that may set the stage for more positive sexual experiences. Specifically, providing one's partner with the freedom to make their own choices and supporting their decisions, celebrating their strengths, and engaging in daily gestures that

communicate caring and kindness may help couples to create an interpersonal climate in that is more conducive to sexual well-being.

Conclusion

As sexual activities are associated in important ways to fulfilling relationships and quality of life, it is important to understand the factors that support and hinder sexual well-being experiences. In this study, we demonstrated that daily variations in the reasons for which people engage in sexual activities are associated with different consequences for their sexual well-being. When people's reasons to engage in sexual activities were more autonomous and less controlled, their sexual experiences were more enjoyable. Furthermore, daily interactions with one's partner in which one feels more autonomous, competent, and related may contribute to set the stage for more positive sexual experiences by fostering more autonomous reasons to engage in sexual activities.

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Table 3.1

Descriptive Statistics for Daily Measures

Variable	Mean	<i>SD</i>	Range	ICC
Basic Needs Satisfaction	6.42	0.76	1.67–7.00	–
Autonomous Motivation	5.48	1.12	1.17–7.00	–
Controlled Motivation	2.48	1.08	1.00–6.50	–
Satisfaction	6.08	1.13	1.00–7.00	.44
Positive affect	6.18	1.04	1.00–7.00	.70
Negative affect	1.38	0.88	1.00–7.00	.71

Note. $N = 113$. ICC = intraclass correlation coefficient.

Table 3.2

Associations between Needs Satisfaction, Motivation, and Daily Sexual Well-Being

Outcome	Hypothesized models				VE
	BNSP	BNSP-ASM	ASM	CSM	
	<i>B(SE)</i>	95%CI	<i>B(SE)</i>	<i>B(SE)</i>	
Satisfaction	.33 (.08)^{**}	[.08, .25]	.51 (.08) ^{***}	-.18 (.07) ^{**}	.23
Positive affect	.31 (.08)^{***}	[.08, .24]	.50 (.07) ^{***}	-.22 (.07) ^{***}	.38
Negative affect	-.26 (.08)^{**}	[-.14, -.03]	-.21 (.07) ^{**}	.21 (.05) ^{**}	.24
Outcome	Models with Controls				VE
	BNSP	BNSP-ASM	ASM	CSM	
	<i>B(SE)</i>	95%CI	<i>B(SE)</i>	<i>B(SE)</i>	
Satisfaction	.32 (.10)^{***}	[.09, .24]	.51 (.08) ^{***}	-.17 (.07) ^{**}	.24
Positive affect	.30 (.08)^{***}	[.09, .23]	.50 (.07) ^{***}	-.22 (.05) ^{***}	.38
Negative affect	-.24 (.08)^{**}	[-.12, -.02]	-.21 (.07) ^{**}	.17 (.07) [*]	.29

Note. $N = 113$. * $p < .05$, ** $p < .01$, *** $p < .001$. BNS = daily basic needs satisfaction; BNSP-ASM = 95% confidence interval of the mediation effect involving basic needs satisfaction and autonomous sexual motivation; ASM = daily autonomous sexual motivation; CSM = daily controlled sexual motivation; VE = variance explained.

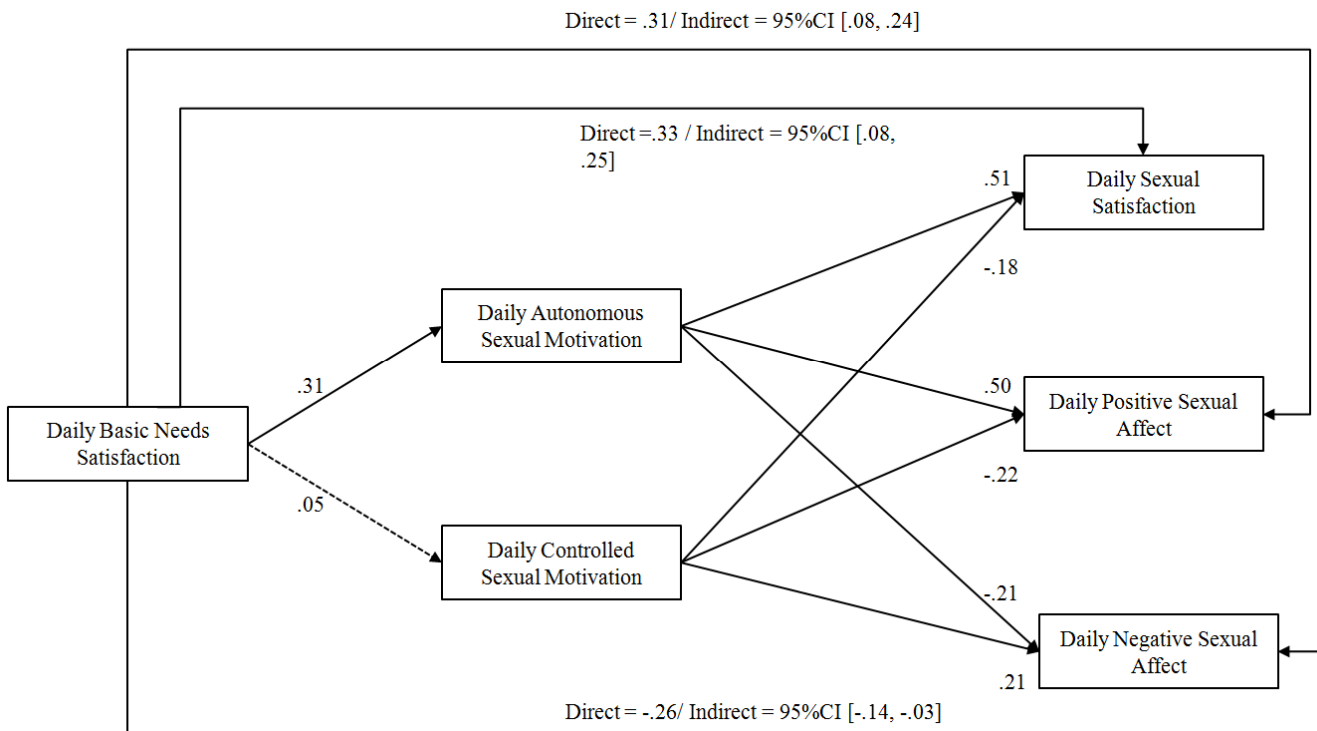


Figure 3.1. Associations between daily basic needs satisfaction, daily sexual motivation, and daily sexual well-being. Regression coefficients are unstandardized and significant at $p < .01$.

CHAPTER FIVE

It Takes Two to Tango: Associations between Basic Needs Satisfaction, Autonomous and
Controlled Sexual Motivation, and Sexual Well-Being in Heterosexual Couples

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Abstract

In this study, we examined the manners in which members of heterosexual couples influence each other's sexual well-being using self-determination theory (SDT). Specifically, we investigated whether satisfaction of the needs for autonomy, competence, and relatedness during sexual activities as well as autonomous and controlled sexual motivation in one partner influenced sexual satisfaction and sexual distress in the other partner. In a sample of 225 couples recruited in a university setting, results from path analyses suggested that greater basic needs satisfaction during sexual activities, higher autonomous sexual motivation, and lower controlled sexual motivation explained important individual differences in sexual well-being. Additionally, when modelled separately, each basic need made a unique contribution to sexual well-being. Gender differences emerged for some of these processes. Women's autonomous motivation were associated with men's sexual well-being, but not vice versa. Moreover, while all three needs made a unique contribution to women's sexual well-being, different needs played different roles in men's sexual well-being. Higher feelings of autonomy in men were associated with higher sexual distress in women and higher feelings of competence in men were associated with higher sexual satisfaction in women. However, when considered separately, feelings of autonomy, competence, and relatedness in women were not associated to sexual well-being outcomes in men. Overall, the results support the relevance of the motivational processes proposed by SDT in explaining experiences of sexual well-being in heterosexual couples. Explanations for gender differences in the motivational processes underlying sexual well-being and implications for enhancing couples sexual well-being are discussed.

Keywords: sexual motivation, satisfaction, distress, basic needs satisfaction, self-determination, relationships

It Takes Two to Tango: Associations between Basic Needs Satisfaction, Autonomous and Controlled Sexual Motivation, and Sexual Well-Being in Heterosexual Couples

Sexuality has been elegantly described by Birnbaum and Finkel (2015, p.29) as the “magnetism that holds us together” as it facilitates the initiation, development, and maintenance of the attachment bond between partners. Indeed, a growing body of research suggests that pleasurable and satisfying sexual experiences contribute to optimal relationship functioning (for a review, see Muise, Kim, McNulty, & Impett, 2016). However, declines in sexual satisfaction over time are reported by many couples involved in long-term committed relationships (e.g., Byers, 2005; McNulty, Wenner, & Fisher, 2016; Sprecher, 2002) and for some, this is associated with a general decline in overall relationship satisfaction (McNulty et al., 2016). In the present study, we propose that motives for sexual activities can provide insights on the factors that may enhance or undermine sexual well-being. Specifically, according to self-determination theory (SDT; Deci & Ryan, 2000, 2014), a relationship flourishes to the extent that partners fulfill each other’s needs for autonomy, competence, and relatedness, and that their motivation for engaging in relationship behaviours is autonomous rather than controlled. In the present study, we used this framework to better understand the ways in which partners in heterosexual couples mutually support each other’s motivation for sexual activities and sexual well-being.

Self-Determination Theory and Sexual Activities

SDT has been described as a “fundamental theory of close relationships” (La Guardia & Patrick, 2008, p. 201) as it provides a framework delineating how interactions between contextual and personal variables can either enhance or hinder optimal relationship functioning (Deci & Ryan, 2000, 2014). A major strength of SDT is that by investigating the *quality* of motivation, or the reasons to perform a behaviour, it is possible to explain why engaging in

seemingly positive relationship behaviours may or may not result positive outcomes for the relationship (La Guardia & Patrick, 2008). Hence, the quality of a couple's underlying motivation for engaging in sexual activities is assumed to play a major role in the quality of their sexual and relational outcomes.

The central premise of SDT is that well-being and thriving in a relationship depends on the extent to which a partner satisfies or undermines three psychological needs—autonomy, competence, and relatedness (Deci & Ryan, 2000). Autonomy is the need to experience a genuine sense of choice and agency about one's behaviours in the relationship (Deci & Ryan, 1985). Competence is the need to feel confident and capable when interacting with one's partner (Deci, 1975). Finally, relatedness is the need to be accepted and cared for by one's partner (Ryan, 1995). SDT has recently formalized a mechanism of optimal relationship functioning by developing a new mini-theory, relationships motivation theory (Deci & Ryan, 2014). Its main proposition is that even though relatedness is essential for optimal relationship functioning, it is nonetheless insufficient by itself; satisfaction of the needs for autonomy and competence are also essential for thriving (Deci & Ryan, 2014). Thus, each basic psychological needs plays a unique and important role in relationship functioning.

Another central proposition of SDT is that the extent to which a partner satisfies or frustrates basic psychological needs determines the quality of motivation to engage in relationship behaviours. SDT posits that the quality of motivation is reflected by the extent to which behaviours are self-determined; that is, they are fully volitional and genuinely in line with the self as opposed to being pressured by controlling demands and expectations (Deci & Ryan, 2000). When the basic needs are satisfied, the motivation to engage in relationship behaviours tends to be *autonomous*, meaning that behaviours are performed because they are pleasurable

and interesting, because they are aligned with deeply held values and identities, and/or because their outcomes are viewed as personally important (Deci & Ryan, 2000). In contrast, when basic needs are frustrated, a person's motivation to perform relationship behaviours tends to be *controlled*, meaning that behaviours are performed because of pressures that are self-imposed (e.g., avoiding guilt and shame or seeking self-validation) or imposed by others (e.g., threats, rewards, and expectations; Deci & Ryan, 2000).

Importantly, SDT stipulates that autonomous motivation is an optimal form of motivation, whereas controlled motivation is a non-optimal form of motivation (Deci & Ryan, 2000). An extensive number of studies using different methodologies and across a variety of life domains have demonstrated that autonomous motivation leads to more positive outcomes and fewer negative outcomes, whereas controlled motivation leads less positive outcomes or more negative outcomes (for reviews, see Knee, Hadden, & Baker, 2016, for relationships; Ng et al., 2012, for health; Guay, Ratelle, & Chanal, 2008, for education; Gagné & Deci, 2005, for work; and Standage & Ryan, 2012, for sports and exercise). In line with existing research, we would expect that engaging in sexual activities for autonomous reasons would promote positive sexual experiences and decrease negative ones, whereas engaging in sexual activities for controlled reasons would increase negative sexual experiences and decrease positive ones.

Taken together, the associations between basic needs satisfaction, motivation, and outcomes form a *motivational sequence* (Deci & Ryan, 2000; Vallerand, 1997) delineating the antecedents and consequences of the quality of motivation. The motivational sequence proposes that the extent to which basic needs are satisfied predicts relationship functioning by influencing the quality of motivation. In the context of sexual activities, this means that when basic needs are satisfied, the reasons to engage in sexual activities will be more autonomous and this will

enhance sexual well-being. In contrast, when basic needs are frustrated, the reasons to engage in sexual activities will be more controlled, and this will diminish sexual well-being or induce sexual ill-being.

SDT Research on Sexual Activities in Committed Relationships

SDT researchers are increasingly interested in understanding the ways in which basic needs satisfaction and the quality of motivation contribute to different aspects of optimal relationship functioning (Knee et al., 2016). However, considerably less attention has been devoted to these processes in the context of sexual activities. Nonetheless, the results from a limited number of studies suggest that the processes proposed by SDT may capture important differences in the quality of sexual experiences. In a cross-sectional study, people who perceived their partner as more autonomy-supportive and less controlling experienced stronger autonomous sexual motivation (Boislard-Pépin, Green-Demers, Pelletier, Chartrand, & Séguin Lévesque, 2002). Furthermore, those who experienced stronger autonomous sexual motivation reported higher sexual satisfaction. A 21-day study of daily experiences also provided initial support for the proposition of relationships motivation theory. The findings indicated that on days when people reported more satisfaction for each of the basic needs during sexual activities, they experienced stronger sexual well-being, as evidenced by higher sexual satisfaction, more positive sexual affect, and less negative sexual affect (Smith, 2007).

In a series of three studies using mixed methodology, Brunell and Webster (2013) examined a variation of the motivational sequence in which basic needs satisfaction during sexual activities mediated the association between autonomous sexual motivation and relational and psychological well-being. Results from a cross-sectional study (Study 1) and a 14-day study of daily experiences (Study 2) suggested that stronger autonomous sexual motivation was

associated with better basic needs satisfaction during sexual activities and this was associated with stronger psychological and relational well-being. Results from a 21-day study of daily experiences conducted with heterosexual couples (Study 3) were less consistent. Regardless of gender, stronger autonomous sexual motivation was associated with better basic needs satisfaction during sexual activities and stronger psychological and relational well-being. However, when testing the reciprocal associations between partners, the only effect that emerged was a positive association between men's autonomous sexual motivation and women's relational well-being.

Recent cross-sectional and daily experience studies have investigated the differential associations that autonomous and controlled sexual motivation share with sexual well-being. In a study of the construct validity of the Sexual Motivation Scale (SexMS), Gravel, Pelletier, and Reissing (2016, see Manuscript 1) found that stronger autonomous sexual motivation and weaker controlled sexual motivation were associated with higher sexual satisfaction, less sexual distress, and better sexual functioning. Similarly, Gravel, Reissing, and Pelletier (2017, see Manuscript 2) found that stronger autonomous sexual motivation and weaker controlled sexual motivation were associated with higher scores on a sexual well-being index (higher sexual satisfaction and lower sexual distress). Finally, in a 21-day study of daily experiences, Gravel, Pelletier, and Reissing (2017, see Manuscript 3) found that on days when people experience more basic needs satisfaction during non-sexual interactions with their partner, their sexual motivation was more autonomous. However, no association between basic needs satisfaction and controlled sexual motivation was found. Furthermore, on days when sexual motivation was more autonomous and less controlled, participants reported higher sexual well-being, as evidenced by higher sexual satisfaction, more positive sexual affect, and less negative sexual affect.

Toward a Dyadic Understanding of Self-Determination and Sexual Well-Being in Couples

These studies provide important evidence supporting the relevance of SDT's propositions in the context of sexual activities. An important direction for this research is to investigate the full motivational sequence involving both autonomous and controlled sexual motivation and the proposition of relationships motivation theory from a dyadic perspective. Indeed, understanding individual differences in sexual well-being in committed relationships requires careful consideration of the mutual influence that partners exert on each other (DeLamater & Hyde, 2004). However, most SDT studies on sexual activities in committed relationships focused on individuals rather than couples (Boislard-Pépin, 2002; Gravel et al., 2016; Gravel, Pelletier, et al., 2017; Gravel, Reissing, et al., 2017; Smith, 2017). Furthermore, the only SDT study on dyadic sexual activities focused on non-sexual well-being (Brunell & Webster, 2013). As such, no study has examined whether basic needs satisfaction during sexual activities and sexual motivation in one partner influence the sexual well-being of the other partner. Furthermore, Brunell and Webster (2013) measured sexual motivation using a relative index of self-determined sexual motivation, in which scores on a measure of controlled sexual motivation and amotivation (i.e., lack of intention to engage in sexual activities) are subtracted from scores on a measure of autonomous sexual motivation. As autonomous and controlled motivation are distinct theoretical constructs (Deci & Ryan, 2000; Vansteenkiste, Zhou, Lens, & Soenens, 2005), an important step forward for research is to investigate these motivational orientation separately as they may offer important insights on the different processes that underlie positive and negative sexual outcomes.

The Present Study

In this study, we used a dyadic design, in which data from both members of a couple were collected, to investigate the associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual well-being. We also tested relationships motivation theory's central proposition that each basic need makes a unique contribution to optimal relationship functioning (Deci & Ryan, 2014). Following SDT's predictions regarding the motivational sequence, we hypothesized that better basic needs satisfaction during sexual activities would be associated with sexual motives that are more autonomous and less controlled and this would be associated with better sexual well-being. We also predicted that basic needs satisfaction and sexual motivation in one partner would be associated with sexual well-being in the other partner. Finally, we controlled for potential confounding effects involving frequency of sexual activities, relationship length, and relational well-being.

Method

Participants and Procedure

The initial sample consisted of 227 couples composed of university students and their partner ($M_{\text{age}} = 21.47$, $SD = 4.75$) recruited through a participant pool at a large Canadian university, flyers posted on campus, and word-of mouth. To take part in the study, participants had to be (a) at least 18 years of age and (b) currently in a heterosexual relationship (c) of at least three months in duration. The sample's ethnic composition was as follows: 1.8% African descent, 14.1% Asian descent, 74.4% European descent, 0.7% Hispanic descent, 0.7% First Nations, 2.6% Middle Eastern descent, 2.9% mixed ethnic heritage, and 4.0% did not report their ethnic heritage. Average relationship length was 24.15 months ($SD = 24.00$) and ranged from 3

months to 13 years. Participants recruited through the participant pool received one credit toward their psychology course and those recruited through other means were given the opportunity to enter a draw for one of two cash prizes of \$50 and \$100.

Interested participants contacted the researchers via email. If the inclusion criteria were met, they were emailed the survey link and the procedures for the study, along with a unique numeric couple identifier. The initiating partner was asked to forward this email to their partner. Additionally, participants were instructed to complete the survey in a private setting and to abstain from discussing the study with their partner until they had both submitted the survey. All procedures involved in this study were approved by the researchers' university ethics review board and informed consent was obtained from all participants.

Measures

Sexual motivation. Participants completed the SexMS (Gravel, Pelletier, et al., 2016), a 24-item measure of the quality of sexual motivation grounded in SDT. The SexMS captures three broad types of motivation proposed by SDT in the context of sexual activities: Intrinsic motivation, four types of extrinsic motivation (i.e., two autonomous types: integrated and identified, and two controlled types: introjected and external), and amotivation (for a detailed discussion, see Deci & Ryan, 2000). Respondents are instructed to think about their reasons for engaging in sexual activities in general; for example: “because sexuality brings so much to my life” (autonomous sexual motivation) and “because my partner demands it of me” (controlled motivation). Responses are endorsed on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). Results from a validation study suggest that the SexMS has an excellent factorial validity as it can reproduce the factor structure predicted by SDT and that its subscales possess good to excellent reliability (Gravel et al., 2016). In this

study, we created measures of autonomous and controlled sexual motivation by averaging autonomous (i.e., intrinsic, integrated, and identified items) and controlled items (i.e., introjected and external items) into two separate scales (see Pelletier & Sarrazin, 2007). Reliability coefficients for the autonomous sexual motivation scale were .92 for women and .89 for men. For the controlled sexual motivation scale, reliability coefficients were .85 for both women and men.

Basic psychological needs satisfaction during sexual activities. We used Brunell and Webster's (2013) adaptation of the Basic Needs Satisfaction in a Relationship Scale (BNSRS; La Guardia, Ryan, Couchman, & Deci, 2000). This 9-item scale measures the extent to which a person perceives that their partner satisfies their needs for autonomy, competence, and relatedness during sexual activities. Items are answered using a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*very true*). The stem "when I engaged in sexual activity with my partner" was added to the instructions of the scale in order to adapt the items to the sexual context. Sample items include "when I engage in sexual activity with my partner, I feel free to be who I am" (autonomy), "when I engage in sexual activity with my partner, I often feel inadequate or incompetent" (competence), and "when I engage in sexual activity with my partner, I feel loved and cared for" (relatedness). A principal component analysis of this adaptation of the BNSRS suggested that the items could render a one-factor solution that explained 51.55% of the variance in women and 42.89% of the variance in men. Negatively worded items were recoded such that higher scores denoted higher basic needs satisfaction. In this study, reliability coefficients for the BNSRS scale for women were as follows: total = .88, autonomy = .68, competence = .86, and relatedness = .74. For men, they were as follows: total = .83, autonomy = .56, competence = .78, and relatedness = .70.

Sexual satisfaction. We used the New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010), a 20-item instrument that assesses sexual satisfaction with respect to five dimensions: (a) sexual sensations (e.g., “the intensity of my sexual arousal”), (b) sexual presence (e.g., “my focus and concentration during sexual activity”), (c) sexual exchange (e.g., “the balance between what I give and what I receive in sex”), (d) emotional connection/closeness (e.g., “my partner’s emotional opening up during sex”), and (e) sexual activity (e.g., “the variety of my sexual activities”). Items are answered using a 5-point Likert scale ranging from 1 (*not at all satisfied*) to 5 (*extremely satisfied*). Confirmatory factor analysis showed that a two-factor structure represented the best fitting model, with one factor representing the participant’s experiences and sensations and the other representing the participant’s perceptions of satisfaction with their partner (Štulhofer et al., 2010). This scale has demonstrated a good reliability, with an internal consistency ranging from .90 to .96 and test-retest reliability ranging from .72 to .84 (Štulhofer et al., 2010). The reliability coefficients for the NSSS in this study were .92 for women and .91 for men.

Sexual distress. We used the seven gender-neutral items from the Female Sexual Distress Scale (FSDS; Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). This scale measures distress regarding one’s sexuality (e.g., feeling “sexually inadequate” and “having regrets about your sexuality”) with a Likert scale ranging from 0 (*never*) to 4 (*always*). A principal component analysis suggested that these seven items could produce a one-factor solution that explained 55.50% of the variance in women and 53.13% of the variance in men. The reliability coefficient for this version of the FSDS was .87 for women and .85 for men.

Relational well-being. The Relationship Assessment Scale (RAS; Hendrick, Dycke, & Hendrick, 1998) was used to evaluate relational well-being as a control variable. Participants are

asked to rate seven statements regarding their satisfaction with their partner and the relationship overall using a Likert scale ranging from 1 (*low satisfaction*) to 5 (*high satisfaction*). Sample items include “How much do you love your partner?” and “How good is your relationship compared to most?”. Principal component analysis revealed a one-factor structure and results from a reliability analysis suggests an alpha coefficient of .86 (Heindrick et al., 1998). In this study, the RAS had a reliability coefficient of .83 for women and .86 for men.

Frequencies of sexual activities. Participants were asked to report how frequently they engaged in the following sexual activities over the last week: masturbation, manual sex, oral sex, vaginal sex, anal sex, and the use of sex toys. An index of sexual frequency was created by taking the sum of the frequency of these six sexual activities. This measure was used as a control variable.

Analytical Strategy

Given the dyadic nature of the data, we used the Actor Partner Interdependence Model (APIM; Kenny, Kashy, & Cook, 2006) as an overarching analytical strategy to test the study’s hypotheses. According to the APIM, the members of a dyad cannot be considered as independent from one another. The APIM provides an analytical tool to model this non-independence by correlating the error terms of the outcome variables and modelling covariances between the predictor variables of the two partners. Additionally, the APIM takes into account the existence of individual and mutual associations through actor and partner effects, respectively. An *actor effect* represents how a person’s score on a variable *X* predicts their score on a variable *Y*, whereas a *partner effect* models how a person’s own score on a variable *X* predicts their partner’s score on a variable *Y*. The presence of partner effects is used as evidence to demonstrate that people in close relationships are nested into an interdependent system. It is

important to note that this study focused exclusively on heterosexual couples given that in the APIM, same- and mixed-gendered couples are analytically different (i.e., distinguishable and exchangeable dyads) and for this reason require different types of statistical analyses (Kenny et al., 2006). Thus, a separate and sufficiently large sample of same-gendered couple needs to be recruited in order to investigate a model in homosexual couples. Unfortunately, this was not feasible given the inherent difficulties in recruiting a large number of homosexual couples within the limited time frame in which this study was conducted.

Path analysis was used to test the hypotheses. As SDT predicts that autonomous and controlled forms of motivation are associated (Deci & Ryan, 2000), we modelled correlations between the error terms of autonomous and controlled sexual motivations to achieve proper model specification. Additionally, some model parameters had to be constrained in order to evaluate model fit. Using the APIM in path analysis with our hypothesized model required that we model all covariances between women and men's exogenous variables and error terms which resulted in a model with zero degrees of freedom, rendering evaluation of model fit impossible (see Garson, 2015). We thus performed a preliminary analysis of the model to find parameters that were not relevant to our hypotheses (i.e., covariances between exogenous variables and error terms) and that could be constrained, thus liberating degrees of freedom. We used critical ratios for differences between parameters (CR) provided by AMOS which follow a standard normal distribution to identify parameters that could be constrained as equal. For both sexual satisfaction and sexual distress, the covariance between the error terms for women's controlled sexual motivation and men's autonomous controlled sexual motivation ($COV = -.01, SE = .01, p = .18$) and the covariance between the error terms for women and men's controlled sexual motivation ($COV = .01, SE = .00, p = .09$) were constrained to zero as they were non-significant. For sexual

satisfaction, we modelled an equality constraint for the covariance between men and women's basic needs satisfaction and the covariance between the error terms of women and men's autonomous sexual motivation ($CR = .98$ $p = .33$) as well as for the covariances between the error terms of women's autonomous and controlled sexual motivation and the covariances between the error terms of women's autonomous sexual motivation and men's controlled sexual motivation ($CR = .98$ $p = .56$). For sexual distress, we modelled an equality constraint for the covariance between the error terms for women and men's sexual distress and the covariance between the error terms for women and men's autonomous sexual motivation ($CR = 1.37$ $p = .17$) as well as for the covariance between the error for men's autonomous and controlled sexual motivation and the covariance between the error terms for women's autonomous and controlled sexual ($CR = 1.64$ $p = .10$)

We evaluated model fit using the following indices: the chi square to degrees of freedom ratio (χ^2 / df), the Root Mean Square Error of Approximation (RMSEA), the Standardized Root Mean Square Residual (SRMR), the Comparative Fit Index (CFI), and the Tucker-Lewis Index (TLI). χ^2 / df values below 3, RMSEA and SRMR values below .05, and CFI and TLI values above .90 are generally indicative of an adequate model fit (see Garson, 2015). We used a bootstrap procedure using 5000 samples with replacements to estimate the standard errors of the mediation effects.

Results

Data Preparation

No item had more than 3.4% of data missing and Little's MCAR was not significant, $\chi^2(14,593) = 14,811.36$, $p = .10$, suggesting that the pattern underlying the missing data in the sample was missing completely at random. We then used the Expectation-Maximization (EM)

algorithm to impute the missing data. Next, data were screened for univariate and multivariate outliers. Cases were considered univariate outliers if standardized scores on a variable were superior to the absolute value of 3.29 and were dealt with by modifying their score to one unit larger or smaller than the next most extreme case (Tabachnick & Fidell, 2001). Then, we identified multivariate outliers using Mahalanobis distances (Tabachnick & Fidell, 2001). A case was considered a multivariate outlier if its Mahalanobis distance associated with the linear combination of the study variables exceeded $\chi^2(8) = 26.12, p < .001$. Two multivariate outliers were found for sexual satisfaction and sexual distress, and hence their data and that of their partner were removed from the model. Data were then screened for the assumptions of path analysis. All variables presented significant skew and as such, square root transformations were thus applied to normalize their distributions.

Preliminary Analyses

Descriptive statistics are presented in Table 4.1 and correlations between the study variables are presented in Table 4.2. A MANOVA was performed to determine whether there were significant gender differences among the study variables. The omnibus test was significant, $F(7, 446) = 6.07, p < .001$ (see Table 4.1), suggesting the presence of gender differences. In comparison to women, men reported stronger autonomous and controlled sexual motivation and lower satisfaction of their need for autonomy during sexual activities. Cohen's d values suggested that these differences were small.

Main Analyses

Testing the motivational sequence. In terms of explanatory power, the model explained 51% of the variance in sexual satisfaction for both women and men, and 40% of the variance in sexual distress in women and 31% in men. Most fit indices suggested that the model had a good

fit; however, the values for the TLI and RMSEA values were not optimal; sexual satisfaction: $\chi^2(4) = 10.49, p = .03, \chi^2/df = 2.62, RMSEA = .085, 90\% CI [.022, .150], SRMR = .04, CFI = .99, TLI = .91$; sexual distress: $\chi^2(4) = 11.46, p = .02, \chi^2/df = 2.86, RMSEA = .091, 90\% CI [.031, .155], SRMR = .04, CFI = .98, TLI = .86$. We thus inspected path coefficients (see Tables 4.3 and 4.4) to probe for potential fit issues between the model and the data. We found that some associations were not significant or small in magnitude, which tends to lower the values of these indices (see Garson, 2015). Furthermore, the RMSEA can perform poorly in models with small degrees of freedom, as is the case in this study (Kenny, Kaniskan, & McCoach, 2015). The main purpose of evaluating model fit is to conduct model comparisons (e.g., Kline, 2010). Given that the main objective of this study was to evaluate structural path coefficients, we concluded that a less than adequate model fit was not problematic for a substantive evaluation of the results.

The associations between needs satisfaction during sexual activities and autonomous and controlled sexual motivation are presented in Table 4.3 and Figures 4.1 and 4.2. The findings revealed that for both women and men, higher levels of needs satisfaction during sexual activities were associated with stronger autonomous sexual motivation and weaker controlled sexual motivation. We observed only one partner effect in which better basic needs satisfaction during sexual activities in men was associated with stronger autonomous sexual motivation in women.

Next, we examined the correlates of sexual satisfaction (see Table 4.4 and Figures 4.1 and 4.2). In women, higher levels of basic needs satisfaction during sexual activities and stronger autonomous sexual motivation were linked to better sexual satisfaction. Contrary to predictions, did not find actor effects involving controlled sexual motivation or partner effect involving basic needs satisfaction in women. In men, higher levels of sexual satisfaction were predicted by their

own experience of higher basic needs satisfaction during sexual activities, by having a partner who reported more autonomous sexual motivation, and contrary to prediction, by more controlled sexual motivation. We did not find an effect involving men's own autonomous sexual motivation on their sexual satisfaction.

As a positive association between controlled sexual motivation and sexual satisfaction was inconsistent with SDT's predictions and past empirical findings, we suspected the presence of a suppression effect. These effects, which are common in mediation models, occur when the inclusion of a variable in the model changes the significance, magnitude, and/or direction of an effect (for a discussion, see Kline, 2010). To verify this possibility, we removed variables from the model one by one to locate a potential suppressing variable. We found that after removing men's basic needs satisfaction from the model, the association between controlled sexual motivation and sexual satisfaction became non-significant, suggesting that this variable may have produced a suppression effect.

Sexual motivation mediated an actor effect between basic needs satisfaction and sexual satisfaction in women, and a partner effect between basic needs satisfaction and sexual satisfaction in men. In other words, women who experienced higher levels of basic needs satisfaction during sexual activities also experienced stronger autonomous sexual motivation and this was associated with more sexual satisfaction. Women who experienced higher levels of basic needs satisfaction during sexual activities also experienced higher autonomous sexual motivation this was associated with higher sexual satisfaction in their partner.

Next, we examined the correlates of sexual distress (see Table 4 and Figures 4.3 and 4.4). We observed that higher levels of sexual distress were experienced by women and men who reported lower levels of basic needs satisfaction during sexual activities. In women, higher

controlled sexual motivation and lower autonomous sexual motivation were associated with higher levels of sexual distress. Controlled sexual motivation also mediated the association between basic needs satisfaction and sexual distress. Therefore, women who reported lower basic needs satisfaction during sexual activities also reported higher controlled sexual motivation and this was associated with higher levels of sexual distress. We found no significant partner effect involving sexual motivation or basic needs satisfaction in women. In men, we found a partner effect involving autonomous sexual motivation, such that men reported higher levels of sexual distress when their partner experienced weaker autonomous sexual motivation. We found no actor effects involving sexual motivation and no partner effects involving partner's basic needs satisfaction or controlled sexual motivation in men.

Finally, we considered alternative explanations for the results by reanalyzing the models while controlling for the potential confounding effects of relationship length, frequency of sexual activities, and relational well-being. For the most part, the inclusion of these variables did not change the significance and/or direction of the associations observed in this study. However, we found that the actor effect of autonomous sexual motivation on women's sexual distress was no longer significant after the addition of these variables in the model. This suggested that women's autonomous sexual motivation did not predict their sexual distress beyond the contribution of the control variables.

Testing relationships motivation theory. The results pertaining to the contributions of each basic psychological need to sexual well-being are presented in Table 4.5 and Figures 4.5 and 4.6. In terms of actor effects, all three needs made a unique contribution to women's sexual well-being. Women who experienced higher satisfaction of their needs for autonomy, competence, and relatedness during sexual activities also experienced higher levels of sexual

satisfaction and less sexual distress. In men, the pattern of results was less consistent. Higher satisfaction of competence and relatedness during sexual activities were associated with higher sexual satisfaction, but the association involving autonomy was not significant. In addition, higher satisfaction of autonomy and competence were associated with less sexual distress, but the association involving relatedness was not significant in men. Significant partner effects also emerged for women's sexual well-being. Higher satisfaction of competence during sexual activities in men was associated with higher sexual satisfaction in women. Contrary to expectations, higher satisfaction of autonomy during sexual activities in men was associated with higher sexual distress in women.

Discussion

The purpose of this study was to address an important gap in the SDT literature on sexual activities and committed relationships by validating the motivational sequence proposed by SDT (Deci & Ryan, 2000; Vallerand, 1997) and the proposition of relationships motivation theory (Deci & Ryan, 2014) in the context of dyadic sexual well-being. In line with SDT's predictions (Deci & Ryan, 2000; Vallerand, 1997), the findings suggest that overall, the motivational sequence explained important individual differences in sexual well-being among heterosexual couples. However, how the sequence unfolded in couples was more complex than anticipated because the processes it involved differed as a function of gender.

In women, we found a clear pattern linking satisfaction of basic needs to sexual well-being, with sexual motivation playing a role as a mediator. Specifically, when women reported more basic needs satisfaction during sexual activities, their sexual motivation was more autonomous and this was associated with better sexual satisfaction. In contrast, when women

reported less basic needs satisfaction during sexual activities, their sexual motivation was more controlled and this was associated with higher sexual distress.

In men, results were less consistent. Higher basic needs satisfaction was directly linked to higher autonomous sexual motivation, lower controlled sexual motivation, higher sexual satisfaction, and lower sexual distress. However, their sexual motivation was not a mechanism in the association between basic needs satisfaction and sexual well-being, nor was their autonomous sexual motivation associated with their sexual well-being. Contrary to prediction, we found a positive association between men's controlled sexual motivation and their sexual satisfaction.

The results also suggested that motivational processes of the partner influenced sexual well-being in men only. That is, when women experienced better needs satisfaction during sexual activities, their sexual motivation was more autonomous, and this was associated with more sexual satisfaction and less sexual distress in the male partner. In contrast, men's experiences of basic needs satisfaction and the extent to which their motives for engaging in sexual activities were autonomous or controlled did not appear to influence women's sexual well-being.

These different patterns of findings we observed in women and men may reflect gender differences in dominant sexual scripts, which ascribe women and men to communal and agentic roles, respectively. Men's dominant sexual script emphasizes sexual initiative and performance, whereas women's dominant sexual script emphasizes responsiveness to their partner's sexual needs, and grounding their sexual needs and desires in emotional and relational motives (for a review, see Sakaluk, Todd, Milhausen, & Lachowsky, and Undergraduate Research Group in Sexuality, 2014). From this perspective, our findings may suggest that some men may view their

partner's autonomous sexual motives as an indicator of the quality of their sexual performance. That is, autonomous sexual motivation may signal that the partner genuinely enjoys engaging in sexual activities, thereby validating men's sexual performance.

The finding that actor sexual motivation was a more consistent predictor of women's sexual well-being than men's is also a trend that has been found in previous research (Stephenson, Ahrold, & Meston, 2011). One explanation may be that as women often tend to be the "gatekeepers" in sexual relationships (Baumeister & Vohs, 2004) they ultimately decide when and how sexual activities occur. For this reason, the contribution of men's sexual motivation and their sexual well-being may be outweighed by the contribution of women's own sexual motivation in terms of timing, frequency, and quality of sexual experiences (Stephenson et al., 2011). Women's sexual gatekeeper role may also explain the positive association we found between men's controlled sexual motivation and sexual satisfaction and the potential suppression effect involving basic needs satisfaction. That is, although some men tend to have less influence on the occurrence of sexual activities, and as a result may experience a lower satisfaction of their need for sexual autonomy, they may still experience satisfaction from engaging in sexual activities even when their sexual motivation is more controlled.

This study is also the first to examine the main proposition of relationships motivation theory (Deci & Ryan, 2014) in the context of sexual activities using a dyadic framework. Consistent with Smith's (2007) study, our results showed that satisfaction of each basic psychological need during sexual activities made a unique contribution to experiences of sexual well-being. However, how each basic need contributed to sexual well-being differed as a function of gender. In women, all three needs were consistently and significantly linked to better sexual satisfaction and lower sexual distress. This may suggest a more integrated process linking

basic psychological needs satisfaction to sexual well-being. In contrast, more compartmentalized processes emerged in men as better satisfaction of the needs for competence and relatedness, but not autonomy, were associated with better sexual satisfaction. Additionally, lower satisfaction of the needs for autonomy and competence, but not relatedness, were associated with more sexual distress. Therefore, it appears that while all three basic psychological needs were important to men's sexual well-being, different needs played different roles in their sexual well-being.

We also found partner effects, suggesting that experiences of basic needs satisfaction in one partner may influence the sexual well-being of the other partner. The findings suggested that better satisfaction of the need for sexual competence in men was associated with better sexual satisfaction in women. One explanation for this finding is that the men who experienced better satisfaction of their need for sexual competence may have had a partner who was better at communicating their sexual preferences and this in turn may have enhanced their partner's sexual satisfaction.

We also found that better satisfaction of the need for sexual autonomy in men was associated with higher sexual distress in women. This result diverges from a large body of research on the positive outcomes of autonomy satisfaction (for a recent review, see Ryan & Deci, 2017). One explanation may reside in a trend in which women in heterosexual relationships tend to comply to a greater extent than men with unwanted or less desired sexual activities when negotiating and balancing discrepancies in the frequency and types of sexual activities (for a review, see Impett & Peplau, 2003). Engaging in sexual activities that are unwanted or less desired may be distressing for some women, depending on their motives for accommodating their partner's sexual needs in the first place (Muisse & Impett, 2016).

Collectively, this study extends a growing body of research which demonstrates the relevance of basic psychological needs satisfaction and autonomous and controlled sexual motivation in explaining positive and negative sexual experiences. The results from this study suggested that engaging in sexual activities when one genuinely desires to do so may promote more enjoyable sexual experiences in couples. In contrast, women may experience lower sexual well-being when their reasons for engaging in sexual activities are the result of pressuring demands and expectations. These results are consistent with previous studies suggesting that autonomous sexual motivation tends to be associated with more positive well-being outcomes, whereas controlled sexual motivation tends to be associated with more negative well-being outcomes (Boislard-Pépin et al., 2002; Brunell & Webster, 2013; Gravel et al., 2016; Gravel, Pelletier, et al., 2017; Gravel, Reissing, et al., 2017). Furthermore, it also appears that men may be particularly sensitive to the quality of their partner's sexual motivation. This finding differs from those found by Brunell and Webster (2013) and in which it was men's autonomous sexual motivation that predicted their partner's well-being. Finally, consistent with previous studies (Brunell & Webster, 2013; Gravel, Pelletier, et al., 2017; Smith, 2007), satisfying a partner's needs for autonomy, competence, and relatedness may foster a relational climate that is more conducive to both optimal sexual motivation and more enjoyable sexual experiences. In sum, the motivational sequence proposed by SDT and relationships motivation theory provide important insights on the motivational processes underlying experiences of sexual well-being in heterosexual couples.

Limitations and Future Directions

The results from this study should be interpreted in light of some limitations. First, the use of a correlational design precludes firm conclusions regarding the direction of the

associations found in this study. Using experimental and longitudinal designs will be useful in clarifying the directions of the associations between basic needs satisfaction, sexual motivation, and sexual well-being. Second, the generalizability of the results is limited by the use of a small sample primarily composed of privileged emerging adults (i.e., university educated, heterosexual, of European descent, and who enjoyed a high quality of life pertaining to their sexuality). As such, it is difficult to determine the extent to which our results readily generalize to groups that were underrepresented in the sample. Additionally, partner cues signalling that their sexual motives are autonomous or controlled may be subtle and difficult to detect and this may have contributed to a lack of consistent partner effects. Measuring perceptions of a partner's sexual motivation could provide an alternative method to explore partner effects pertaining to sexual motivation.

An important avenue for future research is to explore whether basic needs satisfaction and autonomous and controlled sexual motivation can explain differences in long-term maintenance, decline, or even cessation of sexual desire and satisfaction. These challenges are common in couples (e.g., Byers, 2005; Sprecher, 2002) and can deteriorate the quality of the relationship over time (McNulty et al., 2016). Given that autonomous motivation tends to be associated with more long-term maintenance of behaviour and controlled motivation with short-term maintenance only (e.g., Ng et al., 2012), it is possible that autonomous sexual motivation, but not controlled sexual motivation, may act as protective factor in declines in sexual desire and satisfaction over time.

Taken together, these results and those from previous studies (Brunell & Webster, 2013; Gravel, Pelletier et al., 2016; Gravel, Reissing, et al., 2017) also suggest important gender differences in the motivational processes proposed by SDT regarding sexuality. However, SDT

predicts that the processes linking basic needs satisfaction, motivation, and optimal functioning are universal features of human nature and as such, gender differences are not theorized to occur (Deci & Ryan, 2000). Nonetheless, evolution (e.g., Buss, 1995) and sexual socialization (e.g., Kavulanka, Weiner, & Russell, 2013; Ward, 2003) shape sex and gender differences in the domain of sexuality. Gender differences in motivational processes may thus be particularly more pronounced for sexuality than for other life domains more widely investigated by SDT (e.g., sports, education, work, health). An important direction for future research is to explore potential mechanisms (e.g., endorsement of traditional gender ideologies and sexual scripts, mating strategies, etc.) underlying these gender differences in the quality of motivation for sexual activities.

Implications

The results from this study shed light on the complexity of the factors associated with satisfying sexual activities in committed relationships and may provide useful insights for couples who seek to enhance their sexual well-being. Our findings suggest that couples should carefully consider the reasons for which they engage in sexual activities as controlled sexual motivation may undermine sexual well-being. Recent research suggests that quality may overshadow quantity in terms of the associations between sexual activities and well-being (e.g., Schoenfeld, Loving, Pope, Huston, & Štulhofer, 2017). Our study suggests that engaging in sexual activities for autonomous reasons may provide an accessible path for enhancing the quality of sexual experiences for both partners.

Satisfaction of basic psychological needs may also be key for mutually pleasurable and satisfying sexual experiences. Basic psychological needs satisfaction may allow couples to better tap each other's sexual resources. Supporting a partner's choice regarding when sexual activities

occur and what sexual acts to engage in, enhancing their sexual skills by clearly communicating sexual likes and dislikes, and being warm, accepting, and responsive when discussing sexual matters may enhance the effectiveness of sexual communication. However, supporting a partner's sexual autonomy should not come at the expense of one's own well-being. Successful sexual negotiations within couples require a delicate balance between responsiveness to a partner's sexual needs and asserting one's own needs as to ensure the well-being of both partners (Muisse & Impett, 2016).

Conclusion

This study was the first to investigate the associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivations, and sexual well-being in heterosexual couples. We demonstrated that SDT offers a promising framework to understand the motivational processes that fuel both positive and negative sexual experiences in committed relationships. Supporting a partner's basic psychological needs during sexual activities and engaging in sexual activities for reasons that are genuinely in line with the self as opposed to pressured may pave the way for sexual experiences that are mutually pleasurable and satisfying for both members of a couple.

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Table 4.1

Descriptive Statistics and Mean Differences by Gender

Variable	Women		Men		<i>F</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Basic needs satisfaction						
Overall	6.26	0.76	6.17	0.74	2.02	0.19
Autonomy	6.37	0.78	6.14	0.88	9.01**	-0.28
Competence	5.98	1.06	5.96	1.00	0.80	-0.02
Relatedness	6.43	0.79	6.39	0.76	0.28	0.05
Autonomous motivation	5.14	1.12	5.46	1.01	11.32**	0.32
Controlled motivation	2.44	1.10	2.80	1.20	10.92**	0.31
Sexual satisfaction	4.01	0.64	3.98	0.64	0.18	0.03
Sexual distress	0.72	0.72	0.63	0.68	1.51	0.11

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 225$.

Table 4.2

Correlations between Study's Variables

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Women										
1. Basic needs satisfaction	-									
2. Autonomous motivation	.43***	-								
3. Controlled motivation	-.32***	-.07	-							
4. Sexual satisfaction	.68***	.45***	-.21**	-						
5. Sexual distress	-.60***	-.30***	.36***	-.60***	-					
Men										
6. Basic needs satisfaction	.38***	.32***	-.03	.35***	-.20**	-				
7. Autonomous motivation	.12	.24**	.08	.08	-.02	.29***	-			
8. Controlled motivation	.05	-.11	.09	.05	.02	.13	-.30***	-		
9. Sexual satisfaction	.38***	.40***	-.09	.45***	-.31***	.67***	.28***	.06	-	
10. Sexual distress	-.19**	-.25***	.07	-.25***	.24**	-.50*	.02	.30***	-.52***	-

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. BNS = Basic needs satisfaction; AM = Autonomous motivation; CM = Controlled motivation; SS = Sexual satisfaction; SD = Sexual distress; W = women; M = men. $N = 225$.

Table 4. 3

Associations between Basic Needs Satisfaction during Sex and Sexual Motivation

	Women				Men			
	Autonomous Motivation		Controlled Motivation		Autonomous Motivation		Controlled Motivation	
	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>
Needs Satisfaction								
Actor	.46*** (.30, .61)	.08	-.47*** (-.65, -.29)	.09	.35*** (.18, .52)	.03	-.24* (.44,-.05)	.10
Partner	.25** (.08, .42)	.08	.14 (-.06, .32)	.09	.01 (-.17, .17)	.08	-.10 (-.29, .11)	.10

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Results are from the model for sexual satisfaction. $N = 225$.

Table 4.4

Direct and Indirect Effects of Basic Needs Satisfaction and Sexual Motivation on Sexual Well-Being

Variable	Women				Men			
	Satisfaction		Distress		Satisfaction		Distress	
	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>
Needs satisfaction								
Direct								
Actor	.33*** (.25, .41)	.03	-.47*** (-.61, -.32)	.06	.37*** (.30, .44)	.03	-.47*** (-.60, -.34)	.07
Partner	.07 (-.01, .14)	.03	.03 (-.06, .10)	.06	.02 (-.05, .10)	.03	.08 (-.22, .06)	.07
Indirect								
Actor	.05* (.02, .10)	.02	-.11*** (-.19, -.05)	.04	.00 (-.02, .04)	.02	.02 (-.05, .09)	.03
Partner	.00 (-.04, .03)	.02	-.01 (-.06, .05)	.03	.06* (.02, .11)	.02	.07 (.00, .19)	.04
Autonomous motivation								
Actor	.09*** (.04, .14)	.03	-.09* (-.16, -.01,)	.05	.01 (-.05, .06)	.03	-.09 (-.20, .01)	.05
Partner	-.04 (-.10, .02)	.03	-.03 (-.13, .07)	.05	.08** (.01, .11)	.03	-.13** (-.23, .03)	.05
Controlled motivation								
Actor	-.02 (-.03, .07)	.02	.16*** (.07, .25)	.04	.06** (.03, .13)	.02	.09 (.00, .18)	.04
Partner	.03 (-.07, .02)	.02	.01 (-.07, .08)	.04	.04 (-.01, .09)	.02	.05 (-.03, .13)	.04

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. $N = 225$.

Table 4.5

Associations between Basic Needs Satisfaction and Sexual Well-Being

Need	Women				Men			
	Satisfaction		Distress		Satisfaction		Distress	
	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>	<i>B</i> (95% CI)	<i>SE</i>
Autonomy								
Actor	.10 [*] (.00, .21)	.02	-.28 ^{***} (-.47, -.10)	.07	.06 (-.02, .13)	.03	-.13 [*] (-.28, -.05)	.06
Partner	-.05 (-.12, .01)	.03	.13 [*] (-.25, -.02)	.03	.02 (-.07, .11)	.04	-.03 (-.12, .18)	.08
Competence								
Actor	.09 ^{**} (.03, .15)	.03	-.13 [*] (-.25, .02)	.05	.22 ^{***} (.15, .27)	.03	-.30 ^{***} (-.41, -.18)	.06
Partner	.10 ^{**} (.03, .15)	.03	-.08 (-.18, .03)	.05	.05 (-.01, .11)	.03	-.01 (-.13, .10)	.06
Relatedness								
Actor	.22 ^{***} (.13, .30)	.04	-.19 ^{**} (-.36, -.05)	.07	.11 ^{***} (.02, .20)	.04	-.03 (-.19, .11)	.06
Partner	.01 (-.08, .10)	.04	.00 (-.15, .12)	.06	.00 (-.09, .07)	.04	-.01 (-.15, .15)	.08

Note. ^{*} $p < .05$, ^{**} $p < .01$, ^{***} $p < .001$. $N = 225$.

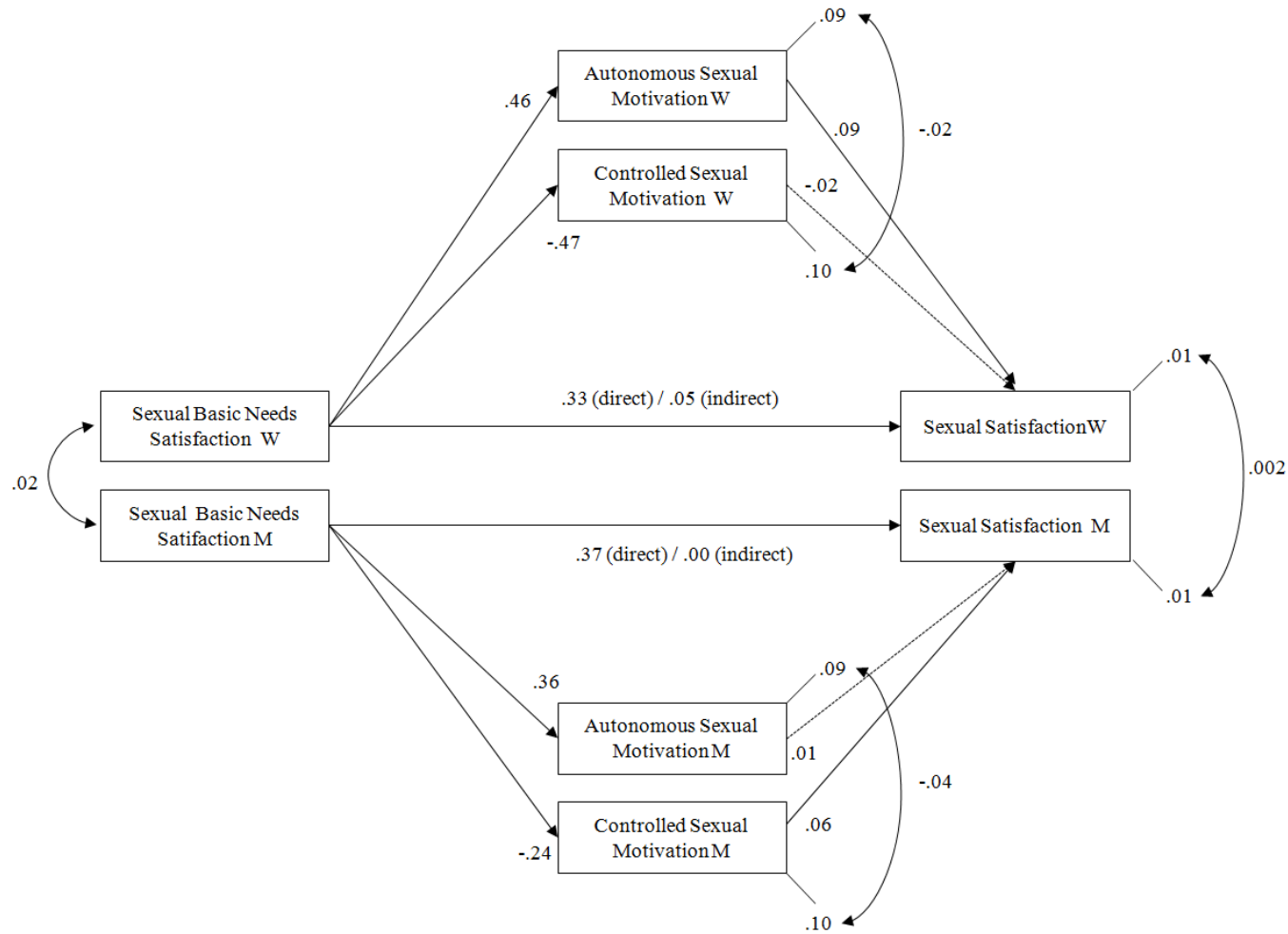


Figure 4.1. Unstandardized path coefficients for actor effects for associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual satisfaction. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

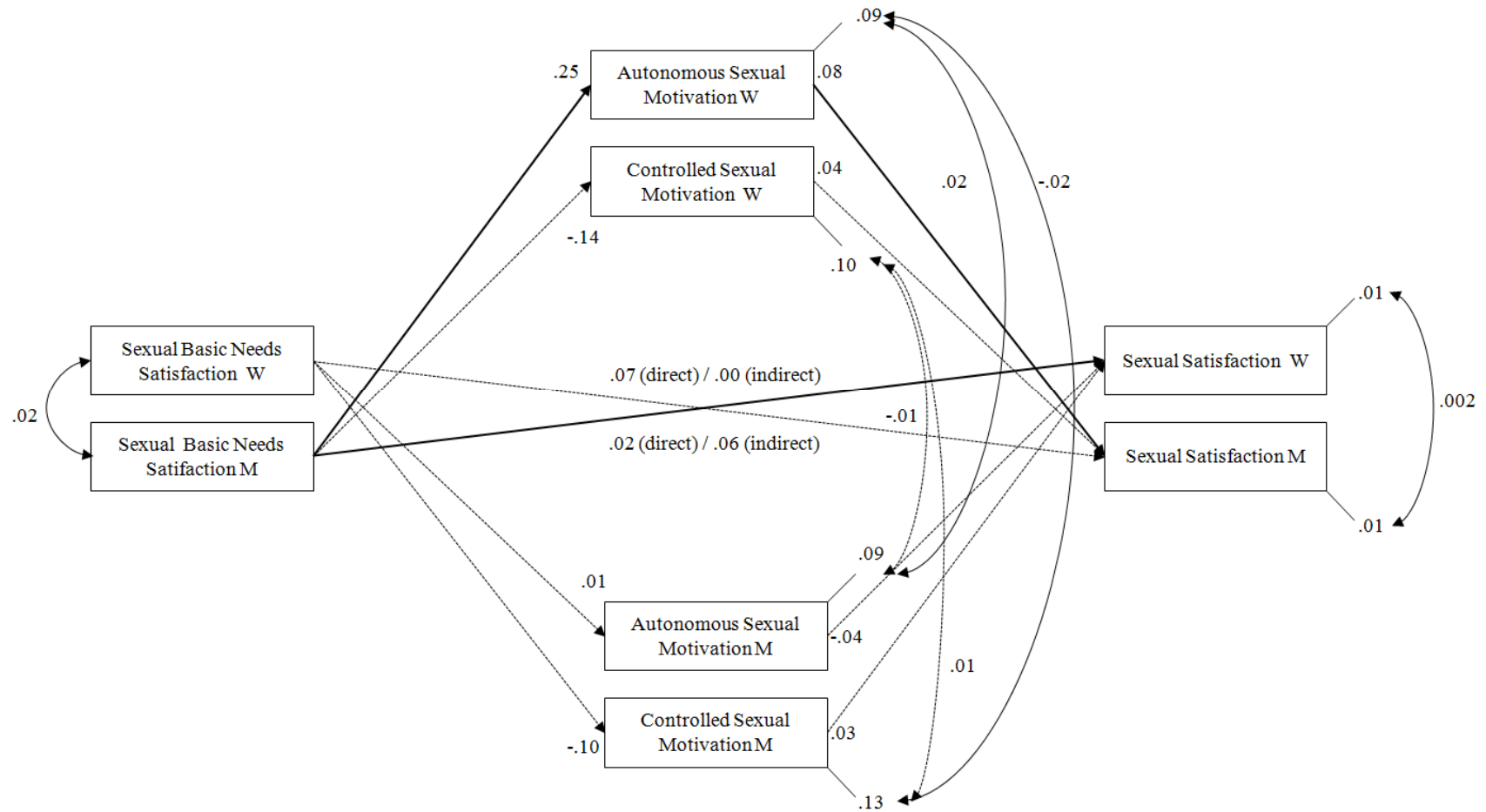


Figure 4.2. Unstandardized path coefficients for partner effects for associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual satisfaction. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

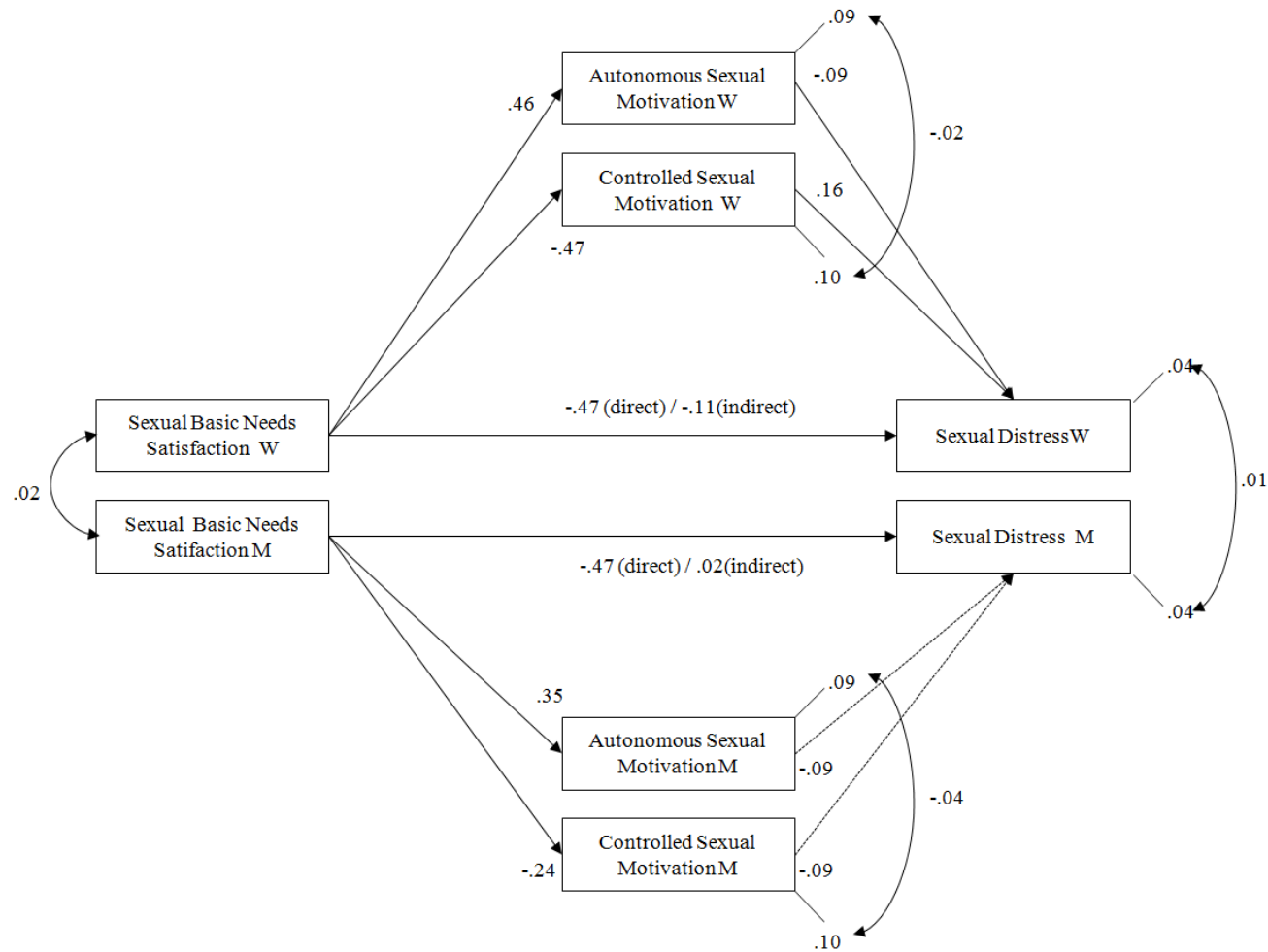


Figure 4.3. Unstandardized path coefficients for actor effects for associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual distress. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

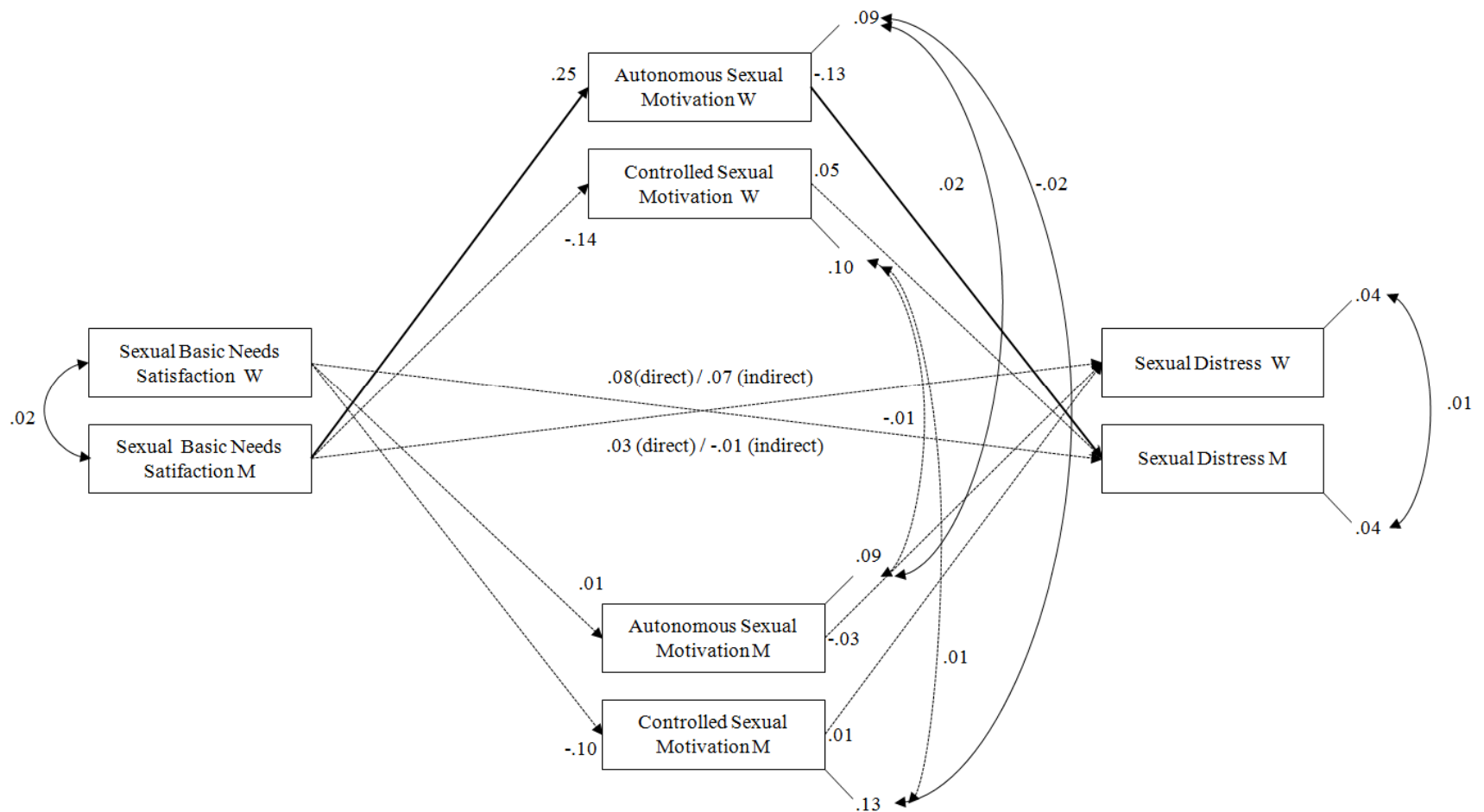


Figure 4.4. Unstandardized path coefficients for actor effects for associations between basic needs satisfaction during sexual activities, autonomous and controlled sexual motivation, and sexual distress. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

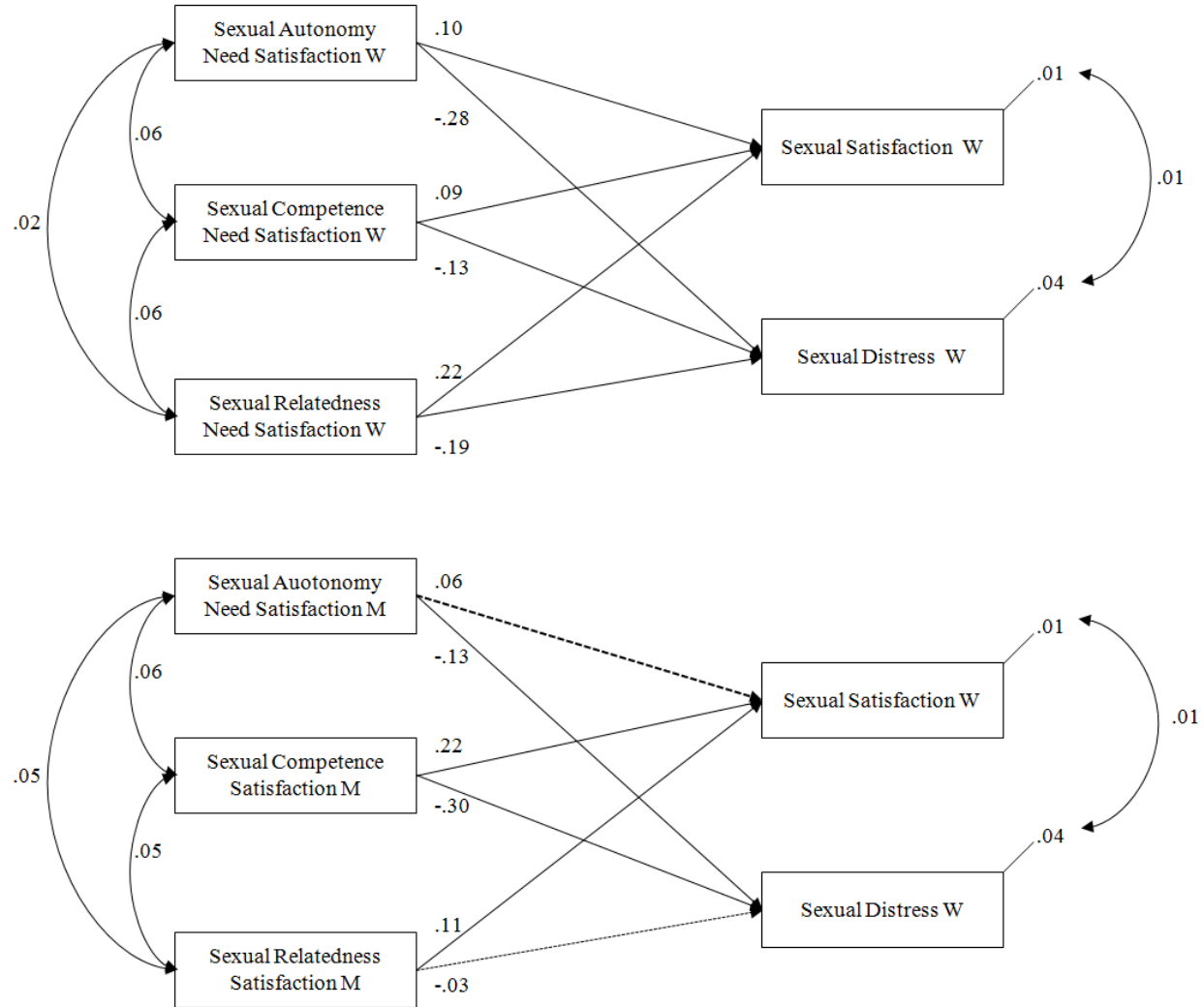


Figure 4.5. Unstandardized regression coefficients for the actor effects of basic psychological on sexual satisfaction and sexual distress. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

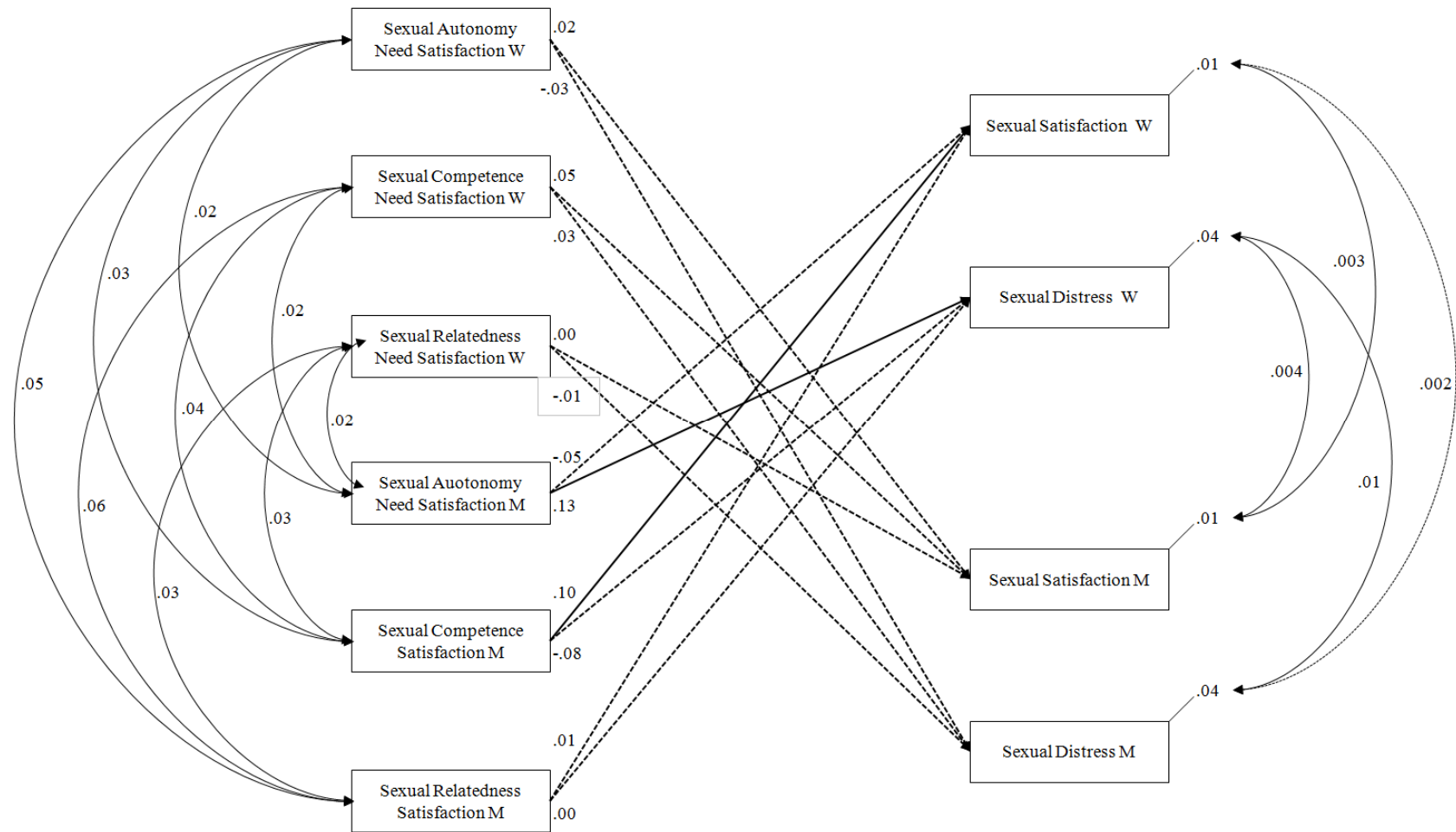


Figure 4.6. Unstandardized regression coefficients for the partner effects of basic psychological on sexual satisfaction and sexual distress. M = men; W = women. Solid lines are significant at $p < .05$, dashed lines are non-significant.

CHAPTER SIX

GENERAL DISCUSSION

Summary of Thesis Objectives

The overarching objective of this thesis was to examine the contribution of autonomous and controlled sexual motivation to sexual well-being. We conducted five studies, presented over four manuscripts, each addressing limitations and important extensions for research on self-determination theory (SDT) and on sexual motivation more broadly. We validated the Sexual Motivation Scale (SexMS) as there was a need for a valid and reliable SDT-based measurement of self-regulation in the context of sexual activities. In addition, this research program was the first to investigate the correlates of between-person, within-person, and between-couple variations in autonomous and controlled sexual motivation in the context of committed relationships. This thesis was also the first to validate the relevance of SDT's motivational sequence for explaining variations in the quality of sexual experiences. By considering how sexual motivation operates at multiple levels of analysis, this research program contributed to build foundational knowledge for research on autonomous and controlled sexual motivation.

Main Findings

In the following section, we review the main findings from each manuscript presented in this thesis research program.

Manuscript 1 – “Doing it” for the right reasons: Validation of a measurement of intrinsic motivation, extrinsic motivation, and amotivation for sexual relationships. The objective of this research was to validate the SexMS, a measure of motivation for sexual activities grounded in the six types of self-regulation proposed by SDT (Deci & Ryan, 1985). In Study 1, we examined the factorial validity of the SexMS, its internal consistency, and its

measurement invariance as a function of gender and relationship type (i.e., casual and committed) in a sample of university students ($N = 1,070$). Confirmatory factor analysis and correlational analyses suggested that the SexMS adequately measured the six types of self-regulation proposed by SDT and two second-order motivational orientations, specifically self-determined and non-self-determined sexual motivation. Reliability coefficients for all subscales ranged from good to excellent, and measurement invariance analyses suggested that the factor structure of the SexMS was similar in women and men, and also for people in committed and casual relationships. Finally, correlations among the SexMS subscales indicated that the measure possessed good convergent validity given that, for the most part, sexual regulations that were posited to be adjacent on the self-determination continuum were more strongly correlated than those posited to be non-adjacent.

In Study 2, we replicated the analyses for factorial validity, convergent validity and reliability and we focused on establishing the discriminant and concurrent validity of the SexMS in an independent sample ($N = 590$). We found support for a 6-factor structure and good to excellent reliability for each subscale. Additionally, correlational analyses showed that the magnitude of the associations between SexMS subscales and SDT measurements of global and relational motivation were small to medium in size. These results suggested that the SexMS measured a domain of motivation that was distinct from yet related to those measured by global and relational motivation. Finally, the subscales measuring self-determined sexual regulations (i.e., intrinsic, integrated, and identified) correlated positively with sexual health and well-being outcomes, whereas the subscales measuring non-self-determined sexual regulations (i.e., introjected, external, and amotivation) correlated negatively with sexual health and well-being outcomes. These findings suggested that the SexMS possessed good concurrent validity as it

captured important individual differences in sexual health and well-being. Taken together, the results from these two studies demonstrated that the SexMS is a valid and reliable measurement of sexual motivation from an SDT perspective.

Manuscript 2 – Not all reasons to have sex are created equal: Motivational antecedents and well-being consequences of autonomous and controlled sexual motivation.

The objective of this study was to determine how individual differences in autonomous and controlled sexual motivation are associated with broader psychological functioning using the hierarchical model of intrinsic and extrinsic motivation (HMIEM; Vallerand, 1997) and principles of heterarchical modelling (e.g., Milyavskaya, Philippe, & Koestner, 2013). Specifically, we investigated the structure of their motivational antecedents and well-being consequences at the sexual, relational, and global level. In a sample of university students ($N = 828$), we examined whether global motivation (i.e., a general disposition for behaving in an autonomous and controlled manner) and relational motivation (i.e., autonomous and controlled reasons for maintaining a relationship with one's partner) predicted autonomous and controlled sexual motivation. We also examined whether the well-being consequences of autonomous and controlled sexual motivation extended beyond the sexual level into the relational and global levels. Finally, we determined whether these associations could be described as following a heterarchical structure, in which the more specific levels of functioning (i.e., sexual and relational) were partially embedded within the general level of functioning, thus able to operate independently from one another. Additionally, we examined whether the relational level could be considered as being more proximal to sexual motivation than the global level in this heterarchical structure.

Results from structural equation modelling revealed that, in terms of potential antecedents, higher global and relational autonomous motivation were associated with higher autonomous sexual motivation. The association involving autonomous relational motivation was stronger than the association involving autonomous global motivation. Additionally, higher controlled sexual motivation was predicted by higher controlled relational motivation. However, controlled global motivation was not a significant predictor of controlled sexual motivation. For both autonomous and controlled sexual motivation, the associations involving global motivation were mediated by relational motivation.

In terms of potential well-being consequences, higher autonomous and lower controlled sexual motivation were associated with higher sexual and global well-being. Results were less consistent for relational well-being. Controlled sexual motivation did not significantly predict relational well-being, and autonomous sexual motivation shared a negative association with relational well-being. However, when autonomous and controlled relational motivation were removed from the model, the association between autonomous sexual motivation and relational well-being became positive. This finding suggested a potential suppression effect of autonomous and controlled relational motivation in the association between autonomous sexual motivation and relational well-being. Finally, the association involving autonomous sexual motivation was strongest for sexual well-being, followed by relational well-being, and then by global well-being. The association between controlled sexual motivation and sexual well-being was similar in magnitude to the association between controlled sexual motivation and global well-being.

Overall, these results suggested that although the HMIEM (Vallerand, 1997) provides a useful framework to understand some aspects of the structure of the antecedents and consequences of sexual motivation, integrating principles of heterarchical modelling

(Milyavskaya et al., 2013) provides a more accurate representation of the complex associations between the sexual, relational, and global levels. In our model, sexual motivation was more proximal to the relational level than to the global level, thus highlighting the important connections between sexual activities and the broader relational context in which they occur. However, our model also showed that the sexual level operated independently from the relational level as there were direct associations between the global and the sexual levels. Thus, the heterarchical structure of the model suggests that sexual motivation operates within a life domain in its own right rather than operating strictly within a subdomain of relationships.

Importantly, the pattern of results suggested that autonomous sexual motivation was associated with optimal psychological functioning, whereas controlled sexual motivation was associated with non-optimal psychological functioning. More broadly, by showing associations between sexual motivation and psychological functioning at the global and relational levels, this study contributed to our understanding of the ways in which sexuality is integrated with the self.

Manuscript 3 – The ebb and flow of sexual well-being: The contributions of basic psychological needs and autonomous and controlled sexual motivation to daily variations in sexual well-being. The purpose of this study was to examine whether the motivational sequence proposed by SDT explained daily variations in sexual well-being ($N = 113$). Specifically, we examined whether variations in basic needs satisfaction in everyday interactions with one's partner were associated with variations in the quality of sexual motivation, and whether this was associated with daily variations in sexual well-being. Results from multilevel modelling suggested that on days when participants felt more autonomy, competence, and relatedness during their interactions with their partner, their sexual motivation was more autonomous and this was associated with higher sexual satisfaction, more positive sexual affect, and lower sexual

affect. We also found that on days when sexual motivation was more controlled, participants reported lower sexual satisfaction, less positive sexual affect, and more negative sexual affect. These findings held above the contributions of relationship length, relationship satisfaction, frequency of sexual activities, and gender.

Overall, these findings suggested that the quality of daily interactions with one's partner may play a critical role in fostering optimal sexual motivation and better sexual experiences. Additionally, engaging in sexual activities for autonomous or controlled reasons may contribute to variations in the quality of sexual experiences in important ways. Specifically, the patterns of association with sexual well-being outcomes indicated that autonomous reasons to engage in sexual activities can be considered an optimal form of sexual motivation, whereas controlled reasons can be considered a non-optimal form of sexual motivation.

Manuscript 4 – It takes two to tango: Associations between basic needs satisfaction, autonomous and controlled sexual motivation, and sexual well-being in heterosexual couples. The main objective of this study was to validate the relevance of SDT's motivational sequence in explaining between-couple differences in sexual well-being ($N = 225$ couples). Specifically, we examined whether basic needs satisfaction during sexual activities and the quality of sexual motivation in one partner influenced the sexual well-being of the other partner. A second goal of this study was to test the main proposition of relationships motivation theory (Deci & Ryan, 2014) in the context of sexual activities, which posits that each basic psychological need makes a unique contribution to optimal functioning in close relationships.

Results from path analyses revealed gender differences. In women, higher basic needs satisfaction during sexual activities was associated with higher autonomous sexual motivation which in turn was associated with more sexual satisfaction. Additionally, lower basic needs

satisfaction during sexual activities was associated with higher controlled sexual motivation which in turn was associated with more sexual distress. Contrary to predictions, autonomous sexual motivation was not associated with sexual distress and controlled sexual motivation was not associated with sexual satisfaction. In men, higher basic needs satisfaction during sexual activities was linked with higher autonomous sexual motivation, lower controlled sexual motivation, higher sexual satisfaction, and lower sexual distress. Contrary to our hypothesis, autonomous sexual motivation was not associated with sexual well-being and higher controlled sexual motivation was associated with higher sexual satisfaction. However, there was evidence that the association between controlled sexual motivation and sexual satisfaction was potentially the result of a suppression effect involving men's basic needs satisfaction. Finally, sexual motivation did not mediate the association between basic needs satisfaction during sexual activities and sexual well-being.

Partner effects also emerged. There was a positive indirect effect of women's basic needs satisfaction through women's autonomous sexual motivation on men's sexual satisfaction. That is, for couples in which women experienced higher basic needs satisfaction during sexual activities, their sexual motivation was more autonomous, and this in turn predicted higher sexual satisfaction in their partner. Additionally, for couples in which women's sexual motivation was more autonomous, their partner experienced higher sexual satisfaction and lower sexual distress.

When testing the individual contribution of each basic need during sexual activities on sexual well-being, we also found different patterns in women and men. Women who experienced higher autonomy, competence, and relatedness during sexual activities reported higher sexual satisfaction and lower sexual distress. In men, autonomy and relatedness during sexual activities were positively associated with higher sexual satisfaction, whereas higher autonomy and

competence were associated with lower sexual distress. Furthermore, two partner effects emerged. For couples in which men reported more competence during sexual activities, their partner experienced higher sexual satisfaction. Contrary to expectations, for couples in which men reported higher autonomy during sexual activities, their partner experienced higher sexual distress.

Overall, the findings suggested that basic needs satisfaction during sexual activities may be an important antecedent of the quality of sexual motivation and of the occurrence of positive and negative sexual experiences in heterosexual couples. Additionally, autonomous and controlled sexual motivation may predict important individual and couple differences in sexual well-being. However, the manner in which these motivational processes operate in heterosexual couples may be more complex than anticipated, perhaps reflecting deeper gender differences that tend to emerge in the domain of sexuality.

Theoretical Contributions

Collectively, the findings from this thesis can be viewed as contributing to three broad research areas: (a) the measurement of sexual motivation, (b) SDT research on committed relationships, and (c) sexuality research.

Contributions to the measurement of sexual motivation. The findings from the five studies conducted in this research program demonstrated that the SexMS is a valid and reliable measurement of sexual motivation from an SDT perspective. Findings suggested that the SexMS has strong factorial validity, convergent validity, and discriminant validity. The SexMS also showed strong concurrent validity as across four studies the subscales correlated to other constructs in a manner consistent with SDT predictions. Specifically, for sexual motivation as an outcome, basic needs satisfaction predicted more autonomous sexual motivation in Manuscripts

3 and 4 and less controlled sexual motivation in Manuscript 4. Importantly, the SexMS can be used to generate a broad range of predictions regarding well-being outcomes. Indeed, the subscales can predict between- and within-person differences in both positive and negative indicators of well-being across multiple levels of psychological functioning. Additionally, reliability estimates ranged from good to excellent across studies.

We also demonstrated that the SexMS has a high versatility. It can be used to measure the six types of self-regulation for sexual activities proposed by SDT. The items can also be aggregated in measures of higher-order motivational orientations, namely self-determined and non-self-determined sexual motivation, and autonomous and controlled motivation. Additionally, the SexMS can be used to measure dispositional and situational sexual motivation. In other words, it can capture individual differences in tendencies to engage in sexual activities for autonomous and controlled reasons, and variations in the extent to which one's sexual motivation is autonomous or controlled from one sexual encounter to another. Finally, the SexMS can be used with different groups that are relevant to sexuality research. It showed factorial invariance for both women and men, and for people in casual and committed relationships. Furthermore, the SexMS can capture group differences in sexual experiences. We found gender differences in the antecedents and consequences of autonomous and controlled sexual motivation across four studies. Therefore, the SexMS may offer new insights on the motivational underpinnings of gender differences in sexual experiences. In sum, the SexMS is a valid and reliable measurement instrument for research on the quality of sexual motivation. Finally, its validation represents a crucial step in extending SDT research to the domain of sexuality, an area that has received little attention so far.

Contributions to SDT research on committed relationships. A major contribution of this research was to validate three core models proposed by SDT in the context of sexual activities in committed relationships: the HMIEM (Vallerand, 1997), the motivational sequence (Deci & Ryan, 2000), and relationships motivation theory (Deci & Ryan, 2014). Overall, we found support for the relevance of these models in explaining the motivational underpinning of sexual experiences. Specifically, our findings are consistent, for the most part, with the following SDT propositions: (a) motivation exists at different levels of generality, (b) there are associations between motivation at different levels and in different domains, (c) basic needs satisfaction is an important predictor of the quality of motivation and optimal psychological functioning, and (d) the quality of motivation involves critical consequences for well-being. By validating these propositions in the context of sexual activities, we contributed to an extensive body of research demonstrating that SDT is a valuable model of human motivation and optimal functioning that generalizes across different levels of functioning and different life domains.

This thesis is also the first to provide an in-depth investigation of autonomous and controlled sexual motivation in committed relationships, their antecedents, and their well-being consequences. Only a handful of published SDT studies have explored sexual motivation in committed relationships (Boislard-Pépin, Green-Demers, Pelletier, 2002; Brunell & Webster, 2013) and in these studies, sexual motivation was measured as a single relative index of self-determination. However, there is a growing acknowledgment among researchers that autonomous and controlled motivation are distinct constructs associated with distinct correlates (e.g., Brunet, Gunnell, Gaudreau, & Sabiston, 2015). Thus, an important direction for research was to examine these two motivational orientations in the domain of sexual activities. The results

of this thesis demonstrated that they are indeed associated with distinct correlates, providing support for the importance of measuring them as distinct motivational orientations.

Finally, our findings highlighted the close interplay between broader relational functioning and autonomous and controlled sexual motivation. One pattern that emerged was that the quality of sexual motivation was influenced by relational processes, and that it contributed to relational outcomes. Optimal functioning in committed relationships is a rapidly growing area in SDT research (Knee, Hadden, & Rodriguez, 2013). However, there is currently an important gap in this literature with respect to the associations between sexual activities and relationship functioning. Thus, this thesis addresses this gap by demonstrating that a comprehensive understanding of optimal functioning in committed relationships from an SDT perspective requires a consideration of the contributions of sexual activities.

Contributions to sexuality research. A growing number of studies demonstrate that the quality of sexual motivation is a critical determinant of sexual well-being (for a recent review, see Muise, 2017). There are several empirical and theoretical models of sexual motivation (for a review see Hatfield, Luckhurst, & Rapson, 2010). Currently, the most widely researched approach is to consider the direction of sexual behaviour, that is, whether one is approaching a positive outcome or avoiding a negative one (Cooper, Shapiro, & Powers, 1998). In this thesis, we extended this literature by demonstrating that self-determination is another important dimension of the quality of sexual motivation. Our findings suggested that autonomous and controlled sexual motivation can be considered as optimal and non-optimal forms of sexual motivation, potentially enhancing sexual well-being or inducing sexual ill-being, respectively. Considering self-determination as a dimension of the quality of sexual motivation may provide new insights on the motivational underpinnings of positive and negative sexual experiences.

Another important contribution of this thesis for sexuality research was to demonstrate that satisfaction of the needs for autonomy, competence, and relatedness are relevant processes for explaining variations in the quality of both sexual motivation and sexual well-being experiences. So far, research has mainly focused on the quality of sexual motivation as a predictor of well-being outcomes (Muisse, 2017). An important next step was to identify some of its antecedents to better understand potential circumstances that elicit optimal and non-optimal forms of sexual motivation. Furthermore, research on the contributions of the partner and broader relational processes to sexual well-being are relatively limited despite being recognized as critical antecedents (e.g., Byers & Rehman, 2014; DeLamater & Hyde, 2004). A better understanding of the broader relational underpinnings of the quality of sexual motivation may assist researchers and clinicians alike in their exploration of the necessary conditions that support sexual well-being in committed relationships.

More broadly, this thesis demonstrates the relevance of SDT as a theoretical framework of optimal functioning for sexuality research. SDT provides a parsimonious yet comprehensive, heuristically rich, and well-validated framework delineating a full sequence of antecedents and consequences of motivation. As SDT operates at multiple levels of analyses, it is also equipped to address the complex nature of sexuality-related psychological processes. It acknowledges the critical interactions between the person and contexts, and importantly, the inextricably relational dimension of optimal and non-optimal psychological functioning. However, it is surprising that SDT has yet to be integrated to sexuality research's theoretical toolbox, especially when considering that the concepts it proposes and their relevance for sexual well-being are not at all foreign to sexuality research. The sexuality research literature is replete with constructs captured by or closely involved in the satisfaction of SDT's basic psychological needs. For example,

sexual assertiveness (e.g., MacNeil & Byers, 2005, 2009; Morokoff et al., 1997), sexual agency (e.g., Sanchez, Fetterolf, & Rudman, 2012), and sexual subjectivity and entitlement to pleasure (e.g., Tolman, 2002; Horne & Zimmer-Gembeck, 2006) are related to the need for autonomy; sexual self-efficacy (e.g., Rostosky, Dekhtyar, Cupp, & Anderman, 2008; Rowland, Adamski, Neal, Myres, & Burnett, 2015) is related to the need for competence; and sexual intimacy and responsiveness are related to the need for relatedness (e.g., Birnbaum & Reis, 2006; Birnbaum, Reis, Mizrahi, Kanat-Maymon, Sass, Granovski-Milner, 2016).

Researchers investigating sexuality also recognize the impacts of autonomy and control on the quality of sexual experiences. For instance, being authentic, as understood as being free to be oneself with a sexual partner, is proposed to be a central prerequisite for exceptional sexual experiences in the model of optimal sexuality proposed by Kleinplatz and Ménard (2007). Additionally, Laan and Rellini (2011) argue that sexual autonomy, as defined by the extent to which sexual behaviours are self-determined, has also been proposed as a critical mechanism underlying women's ability to experience sexual pleasure. Enhanced authenticity, in the sense of being consistent with one's true self, has also been proposed as a potential mechanism linking approach sexual goals to increased sexual desire and sexual satisfaction (Muise, Boudreau, & Rosen, 2016). In contrast, pressure for achieving or maintaining a partner's approval is also proposed to be a core mechanism underlying the negative impact of adherence to traditional gender roles on women's sexual well-being (Sanchez et al., 2012). Similarly, research suggested that a sense of obligation to meet a partner's sexual demands and avoiding negative relationship outcomes were frequently invoked by respondents as motives for sexual compliance (e.g., Impett & Peplau, 2003; Vannier & O'Sullivan, 2010). Furthermore, pressures to protect a partner's

sexual self-esteem and avoiding relationship conflicts were also often cited by respondents as motives for feigning orgasm (e.g., Fahs, 2014; Muehlenhard & Shippee, 2010).

Although, this literature has provided important insights on the determinants of sexual well-being, there is a need to better integrate and synthesize these findings and broaden our understanding of the quality of sexual motivation. Indeed, the literature on sexual well-being is fragmented which ultimately results in a slow and ineffective growth of sexual science due to disorganization of knowledge, conceptual confusion and contradiction, and less systematic production of knowledge (Yanchar & Slife, 1997). An integration of SDT to sexual well-being research, but also to sexuality research more broadly, may help address these issues in two major ways.

First, by providing well-delineated and well-validated predictions regarding the mechanisms that lead to optimal and non-optimal functioning, SDT may enhance the validity of research findings on the determinants of sexual well-being by improving their explanatory power. This point is particularly important as sexuality research has been criticized for being overwhelmingly atheoretical (Baumeister & Tice, 2001; Reiss, 1999; Weis, 1998). An excessive reliance on this epistemological approach has had negative impacts on the evolution of sexology as science. Specifically, researchers have argued that it may have diminished methodological rigour, slowed the growth of the psychometrics of sexual phenomena, and devalued the legitimacy of sex therapy as an evidenced-based clinical intervention (Farmer & Binik, 2005).

Second, because SDT is a broad framework of motivation, as opposed to domain specific, it is highly flexible and easily adaptable to a wide variety of approaches, research questions, and methodologies, thus offering important opportunities for conceptual and theoretical cross-fertilization. For example, SDT can provide a theoretical platform for modelling components of

effective sexual communication, adherence to sex therapy or to safer sex strategies, identifying conditions that enhance or hinder sexual function, and identifying protective and risk factors involved in the sexual health of sexual minorities or sexually disadvantaged groups. In closing, it is important to stress that we are not proposing that SDT replace any of the approaches that have been used so far in sexuality research; rather, we suggest that an integration of SDT concepts and processes may meaningfully contribute to the growth of sexuality research as a science.

Limitations

The results from this thesis need to be interpreted in light of some important limitations. First, we used correlational designs in all the studies. For this reason, we cannot formulate firm conclusions pertaining to the directions of the associations investigated. Furthermore, the associations we investigated are likely dynamic as both SDT (Deci & Ryan, 2000) and the HMIEM (Vallerand, 1997) predict reciprocal associations between basic needs satisfaction, motivation, and outcomes. Future studies using experimental designs to manipulate the saliency of different sexual motives and longitudinal designs to examine the manner in which they evolve over time are a critical step in clarifying the direction of the associations between basic needs satisfaction, sexual motivation, and well-being.

Other limitations of this thesis pertain to the composition of the samples that were used. First we relied on convenience samples mainly composed of privileged (i.e., educated, middle class, and heterosexuals of European descent) emerging adult women. It is unclear whether the associations observed in this research generalize to groups that were underrepresented in the samples. Use of lifespan, queer, and cross-cultural frameworks as well as larger samples of men are important next steps in understanding the generalizability of the findings. Second, as the samples were primarily composed of emerging adults in the earlier stages of a committed

relationship (i.e., the average relationship duration was 22.59 months across studies) we do not know whether the findings extend to the context of well-established committed relationships. This limitation is particularly important given that the function of sexual activities tends to change over the stages of a relationship (e.g., Birnbaum & Finkel, 2015). Therefore, an important direction for future studies is to clarify whether relationship stages modulate the associations between autonomous and controlled sexual motivation with sexual and relationship outcomes. Finally, the majority of participants across studies reported a high quality of life with respect to their relationship and their sexuality. Therefore, we do not know whether we would observe the same patterns of associations in terms of their linearity, direction, and magnitude in samples of people who experience personal and/or interpersonal difficulties. Sample size was also an issue, especially for Manuscripts 3 and 4. Small sample sizes may create problems in estimation due to inflation of variance and/or induced bias.

Additionally, we relied exclusively on self-report measures to collect the data which can be prone to recall biases and issues pertaining to the accuracy of participants' self-knowledge of their sexuality. As sexuality tends to be a private aspect of people's lives, it may not be a very salient aspect of the self for some (Garcia & Carrigan, 1998). As a result, some participants may have limited knowledge on their actual position on the constructs investigated in this study given that they may not actively and frequently think about their sexuality. Furthermore, given that most participants were young adults, sexuality may still be an emerging aspect of their self.

Finally, exclusive reliance on self-report data may have created a common method variance bias. That is, a proportion of the variance in the results may have been attributable to the type of measurement we used, and not to the constructs themselves (for a detailed discussion, see Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Although most of the constructs

investigated in this thesis are difficult to operationalize with other methods besides self-report measures, using scenarios and triangulating participants' self-perceptions with those provided by their partner may help to mitigate the impact of common method variance bias.

Future Research Directions

The findings from this thesis point to several avenues for future research. First, an important extension for sexual motivation research is to explore the saliency of sexual motives in people's everyday lives. Although research on sexual motivation has grown in the last decade, we know virtually nothing on the extent to which people are aware of their own and their partner's sexual motives. In the context of this research, we prompted people to reflect about their sexual motives, but this does not provide us with information about their saliency. Results from recent experimental studies on the quality of sexual motivation suggested that manipulating the saliency of certain types of sexual goals may produce changes in sexual well-being (Muis et al., 2016). It would therefore be useful to explore whether naturally occurring individual and situational differences in saliency of sexual motives lead to differences in well-being outcomes. Understanding for whom and when sexual motives are most or least salient may provide new insights on the strength and limitation of their contribution to well-being.

Second, there is a need to better understand the effects of differences in *sexual motivation profiles*. The emergence of person-centred approaches in SDT have highlighted that the magnitude of the associations involving motivation depends, in part, on a person's particular level of *both* autonomous and controlled motivation. For instance, those who report high autonomous motivation combined with low controlled motivation tend to experience optimal psychological functioning (e.g., Ratelle, Guay, Vallerand, Larose, & Senécal, 2007; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). Using this approach is another useful

strategy to achieve a better understanding of the conditions that modulate the magnitude of the effects of autonomous and controlled sexual motivation.

Third, future research on autonomous and controlled sexual motivation should investigate their associations with sexual desire. The determination of sexual desire is an important focus of investigation in sexuality research. Sexual desire is critical a contributor to sexual and relationship adjustment (for a review, see Muise, Kim, McNulty, & Impett, 2016). Additionally, low sexual desire and sexual desire discrepancies are some of the most frequent complaints of clients in sexotherapy (e.g., Rosen, 2000). As autonomous motivation tends to be associated with long-term maintenance of behaviour and controlled motivation with short-term maintenance only (e.g., Ng et al., 2012), autonomous sexual motivation may emerge as an important protective factor in sexual desire declines.

Fourth, future research should further investigate the associations between autonomous and controlled sexual motivation and sexual dysfunction. In this thesis, results from Manuscript 1 provided initial evidence supporting the existence of such associations. Nonetheless, the use of a cross-sectional design renders it difficult to understand the exact nature of their direction and reciprocal associations are likely. Low autonomous sexual motivation and high controlled sexual motivation could be antecedents of sexual dysfunction as low expectations pertaining to sexual pleasure combined with feelings of pressure to engage in sexual activity may interfere with the sexual response and feelings of emotional intimacy (Basson, 2002). Conversely, it is also possible that suffering from a sexual dysfunction could impact the quality of sexual motivation. Physiological problems caused by the dysfunction as well as its negative personal and interpersonal outcomes may interfere with a person's view of sexual activities as pleasurable, meaningful, and beneficial, thereby decreasing autonomous sexual motivation. Sexual

dysfunction may also foster higher controlled sexual motivation by exacerbating feelings of pressure to engage in sexual activities in an attempt to validate a bruised sexual self.

Additionally, controlled sexual motivation may be exacerbated when one attempts to avoid conflicts with their partner that could stem from refusing to engage in partnered sexual activities due to the dysfunction.

Future research would also benefit from broadening the conceptualization of sexual well-being. In this study, we focused exclusively on a *hedonic* approach to sexual well-being which is based on subjective evaluations, the presence of pleasure and comfort, and the absence of pain (Huta & Waterman, 2014). However, there is another important and complementary perspective in positive psychology that considers well-being as the realizations of one's full potential, namely the *eudaimonic* approach (Huta & Waterman, 2014). Important indicators of eudaimonic well-being include meaning, authenticity, growth, and excellence (Huta & Waterman, 2014). Despite an increase in research on eudaimonic well-being in recent years, a formal integration of this approach has yet to take place in sexuality research. Investigating eudaimonic sexual well-being would provide an important opportunity to expand our understanding of what it means to flourish and thrive as a sexual person.

Finally, although the main focus of this research was to validate core propositions of SDT in the context of sexual activities, we conducted exploratory gender comparisons across studies. One trend that emerged is that on average men reported stronger endorsement of controlled sexual motives. This finding converges with those from other studies showing that men are more likely to endorse sexual motives underlined by pressures and expectations, such as power, status, recognition, and conformity (for a review, see Hatfield et al., 2010). Another trend that emerged is that the association between sexual motivation and sexual well-being appeared to be weaker in

men, a finding consistent with results from previous research on sexual motives (Stephenson, Ahrold, & Meston, 2011). An important direction for future research is therefore to formally investigate gender differences and similarities in autonomous and controlled sexual motivation by attempting to identify their underlying mechanisms.

Implications for Sexual Well-Being

The findings of this thesis lead to important implications for people and couples seeking to maintain or enhance their sexual well-being. First, a more effective goal to increase sexual well-being may be to place greater focus on increasing the quality of sexual activities rather than simply focusing on their frequency. In this thesis, we showed that under certain circumstances, engaging in sexual activities is not always associated with positive outcomes. Sexual activities that are motivated by pressures may lead to a decrease in well-being. Therefore, individuals and couples need to carefully consider their motives for engaging in sexual activities and may choose to prioritize quality over quantity. One strategy to achieve this goal is to engage in sexual activities primarily for autonomous reasons – for the pleasure they provide, their meaningfulness, and their benefits for individual and interpersonal well-being. Conversely, it may be preferable to avoid engaging in sexual activities when one is primarily motivated by pressuring demands and expectations, such as to avoid conflict with a partner or issues related to self-worth.

A question that follows is how to foster autonomous sexual motivation. The findings from this thesis shed light on some of the paths that individuals and couples may take to achieve this goal. Our results suggest that the global, relational, and sexual levels are interconnected in the motivational structure of the self. Therefore, one recommendation for fostering autonomous sexual motivation is to enhance autonomy for performing daily activities and maintaining a

relationship with a partner. This can mean trying to find more pleasure and meaning in everyday activities. It can also mean finding opportunities for growth in one's relationship, and sharing activities, goals, and the big and small pleasures of everyday life with one's partner.

Another strategy that couples can use to foster optimal sexual motivation is to increase support of each other's basic psychological needs during everyday interactions and in sexuality-related situations, notably when communicating sexual likes and dislikes. Providing a partner with a sense of choice and supporting their decisions, making them feel capable and competent, and being warm and responsive are all concrete gestures that may help to create a relationship context that is more conducive for autonomous sexual motivation, and for more pleasurable and satisfying sexual experiences.

Conclusion

The broad aim of this thesis was to extend our understanding of the contributions of autonomous and controlled sexual motivation to sexual well-being. We addressed several important gaps in SDT research on sexual activities and research on sexual motivation. We validated an instrument measuring the six forms of regulations proposed by SDT in the context of sexual activities, we examined the structure of autonomous and controlled sexual motivation in the self, and we identified some of their antecedents and consequences at the dispositional and situational levels. Overall, the results suggested that autonomous sexual motivation can be considered optimal, whereas controlled sexual motivation can be considered non-optimal. Across four studies, engaging in sexual activities for autonomous reasons was linked to more positive sexual experiences, whereas engaging in sexual activities for controlled reasons was linked to more negative sexual experiences. In closing, the results from this thesis research support the conventional wisdom that being yourself is “sexy”, whereas not being yourself is a “turn off”.

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APPENDIX A

Parceling Procedures: Study 2

Parceling is a latent variable modelling strategy in which two or more items are aggregated into a single indicator (Cattell & Burdsal, 1975). There are several psychometric and modelling benefits associated with the use parceling instead of single items (for a detailed review, see Little, Cunningham, & Shahar, 2002). From a psychometric perspective, parceling can improve scale communalities, augment the common-to-unique ratio of variance, and reduce random error (Philippe, Brainerd, & Pressley, 1983). It can also better approximate the distribution of the construct (Bandalos, 2002) and the effectiveness of a model in defining the latent construct using a smaller number of indicators, thus optimizing fit for complex models (Little, Lindenberger, & Nesselroade, 1999). From a modelling perspective, by reducing model complexity, parceling reduces measurement error, thereby improving the stability of the parameter estimates (Little et al., 2002). Parceling can also improve overall model fit by reducing the complexity of computations associated with the estimation of the matrices involved in structural equation modelling (Bandalos, 2002).

Some concerns have also been raised regarding parceling (for a review, see Little et al., 2002; Marsh, Lüdtke, Nagengast, Morin, & Von Davier, 2013). Some studies show that parceling can induce estimation bias by attenuating parameter estimates (e.g., Stephenson & Holbert, 2003). However, others have shown that this bias is negligible (e.g., Bandalos, 2002). Second, parceling may be problematic when constructs are multidimensional as it can lead to model misspecifications (Little et al., 2002). Little and colleagues (2002) have argued that whether or not to use parceling is a decision grounded in the goals of the research. On one hand, if the goal is to understand the structure of items within a construct, such as in the context of

scale development, parceling is not appropriate. On the other hand, if the goal of the research is to understand complex systems of relations between latent constructs rather than the behaviour of the items within the construct, such as is the case in the present study, then parceling may be a useful strategy to overcome the modelling challenges inherent to this goal.

There are two important considerations to take into account when building parcels. The first is the number of parcels per factor. In order to optimize model fit and minimize estimation biases that can arise with low numbers of indicators, using three parcels per factor has been recommended to achieve a balance between these two concerns (e.g., Little, Rhemtulla, Gibson, & Schoeman, 2013; Matsuanga, 2008). The second consideration is the particular strategy used to build the parcels. There are several parceling algorithms and the selection process must be guided by the established psychometric properties of an instrument, especially its dimensionality, as to best capture the nature of the construct in question (Little et al., 2013).

We used a domain-representative approach (Kishton & Widaman, 1994) for all motivation constructs and the well-being indexes at the global and sexual levels as they were multidimensional constructs. With this strategy, parcels are created by combining items from each dimension into a parcel such that every dimension of the construct is represented in each parcel. This strategy is the most appropriate in situations when the dimensions of the construct are expected to be associated with other constructs included in the model above the effect of their common variance (Little et al., 2013), as was assumed to be the case in the present study. Indeed, it was reasonable to expect that the individual dimensions composing the motivation and well-being constructs may share unique effects among each other above their common variance. Items from each dimension were randomly assigned to each parcel as to create three parcels per construct. Further, because global well-being and sexual well-being were measured using

instruments with different response scales, all items were standardized prior to parcel construction. Finally, because the relational well-being measure we used was unidimensional, we created the parcels using the item-to-construct balance strategy (Little et al., 2002; Landis, Beal, & Tesluk, 2000). This method has the advantage of balancing item difficulty and discrimination across parcels by distributing pairs of highest and lowest factor loadings in each parcel; it has been shown to perform well in simulation studies (Landis et al., 2002; Rogers & Schmitt, 2004).

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APPENDIX B

Data Cleaning Procedures: Study 2

Data were prepared by dealing with missing values and outliers and were then screened for univariate and multivariate normality following the guidelines provided by Tabachnik and Fidell (2001) for multivariate statistics and by Kline (2010) for structural equation modelling.

Missing Data. We first identified the pattern underlying the missing data. Little's MCAR (missing completely at random) test was significant, $\chi^2(48377) = 49862.12, p < .001$, suggesting that the missing values were not missing completely at random. Separate variance *t*-tests were inspected to further probe the pattern underlying the missing data. When significant, these tests suggest that cases with missing values differ from cases with no missing values on other variables in the dataset, which indicates a missing at random (MAR) pattern. Results showed significant differences in means between participants with and without missing data on items included in the dataset, suggesting that data were missing at random (MAR). We then proceeded to use the Expectation-Maximization (EM) algorithm to impute missing data.

Outlier detection. Data were screened for univariate and multivariate outliers. Cases were considered univariate outliers if standardized scores on a parcel exceeded the absolute value of 3.29 and were dealt with by changing their score to unit larger or smaller than the next most extreme case (Tabachnik & Fidell, 2001). Then, multivariate outliers were identified using Mahalanobis distances. A case was considered a multivariate outlier if their Mahalanobis distance on the ensemble of parcels exceeded $\chi^2(27) = 55.47, p < .001$. Thirty-three multivariate outliers were identified, and hence were deleted from the database. Thus, analyses were conducted with 828 participants.

Assessment of normality. Univariate normality was examined using the kurtosis and skewness statistics. Byrne (2009) recommends using cut-off values of 3.00 for skew and of 7.00 for kurtosis for the assumptions of univariate normality to be respected. No parcels exhibited problematic values of skew (range = -1.25 to 1.30) or kurtosis (range = -.50 to .77). Multivariate normality was examined using the critical ratio of Mardia's estimate of multivariate kurtosis. Values above 5.00 suggest departures from multivariate normality (Bentler, 2005). The value for the critical ratio of Mardia's estimate of multivariate kurtosis in this study was 37.98, indicating that the data were not distributed normally at the multivariate level.

As the data did not meet the assumption of multivariate normality, a bootstrap procedure was used to generate standard errors with less bias and corrected *p* values with the Bollen-Stine bootstrap (Bollen & Stine, 1990; see Byrne, 2009, for a presentation of benefits, limitations and caveats associated with bootstrapping in the context of structural equation modelling). This procedure was also used to generate standard errors for mediation effects. Bootstrapping was developed by Efron (1979) and uses an algorithm that randomly selects cases from the sample data with replacement to produce new data sets that have the same number of cases as the original sample, therefore simulating the process of drawing multiple random samples from a population. Statistics are then computed for each of these data sets and then averaged to create a new statistic.

An advantage of the bootstrap procedure is that it does not rely on the assumption of normality to estimate statistics, resulting in less biased estimates when the data are non-normal (e.g., Nevitt & Hancock, 2001; Yung & Bentler, 1996). However, this procedure is not a perfect remedy for data that violates SEM assumptions as it assumes that the sample used is representative of the population (Zhu, 1997), a condition that is rarely met in psychological

research. The representativeness of the estimates that are generated is therefore inextricably linked to the representativeness of the original sample (Zhu, 1997). Nonetheless, bootstrapping remains a useful method of dealing with non-normal data (Nevitt & Hancock, 2001; Yung & Bentler, 1996). In this study, 5000 samples with replacements were used for the bootstrap procedure. Following recommendations on model identification in the context of bootstrapping, one factor loading per latent variable was constrained to a value of 1, as opposed to constraining the variance of the latent variable, to avoid inflation of standard error estimates (Hancock & Nevitt, 1999).

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APPENDIX C

Data Preparation and Cleaning Procedures: Study 3

First, Level 2 data were screened for missing values; Level 1 data was not screened for missing values as HLM handles them by weighting groups differently according to their size. The results from missing values analyses suggested that no items had more than 7% of data missing. We then imputed the missing data using the expectation-maximization algorithm.

Next, Level 1 and Level 2 data were screened for outliers. Cases were identified as univariate outliers if their standardized scores exceeded the absolute value of 3.29 and were dealt with by changing their score to one unit larger or smaller than the next most extreme case (Tabachnick & Fidell, 2001). Then, multivariate outliers were identified using Mahalanobis distances (Tabachnick & Fidell, 2001). A case was considered a multivariate outlier if its Mahalanobis distance exceeded $\chi^2(3) = 16.27, p < .001$. No Level 2 data exceeded this threshold. We then examined Level 1 data for bivariate outliers by examining Mahalanobis distances associated with the residuals of their slopes and intercepts. A slope or intercept was considered a bivariate outlier if their Mahalanobis distance exceeded $\chi^2(2) = 13.82, p < .001$. Outliers were removed on an outcome per outcome basis as follows: satisfaction: $n = 4$; positive affect: $n = 1$; negative affect: $n = 3$. The same procedure was conducted for identifying outlying intercepts and slopes for significant Level 2 predictors. Outliers were removed as follows: Satisfaction: $n = 3$; positive affect: $n = 3$; negative affect: $n = 2$.

We then screened data for univariate normality by dividing values of skew by their standard errors to obtain a significance test. For Level 1 data, all variables presented significant skew and this was dealt with by applying a square root transformation to the variables. Next, we screened the data for homogeneity of variances. All variances were homogenous across Level 1

groups. Finally, we screened the data for bivariate linearity, normality and homoscedasticity for Level 2 groups by inspecting scatter plots of the residuals of intercepts and Level 1 slopes as a function of Level 2 predictors. Overall, no strong deviations were noted except for mild heteroscedasticity for upper level values of relational well-being. Due to these violations of assumptions of multilevel analyses, we used robust standard errors provided by HLM 7 for parameter interpretation.

APPENDIX D

Global Motivation Scale

Sharp, E., Pelletier, L.G., Blanchard, C., & Lévesque, C. (2003, February). *The Global Motivation Scale: Its validity and usefulness in predicting success and failure at self-regulation.*

Paper presented at the Society for Personality and Social Psychology, Los Angeles, CA.

- ___ 1. In order to help myself become the person I aim to be.
- ___ 2. Because I want to be viewed more positively by certain people.
- ___ 3. Because I like making interesting discoveries.
- ___ 4. Because I choose them as means to attain my objectives.
- ___ 5. For the pleasure of acquiring new knowledge.
- ___ 6. Because otherwise I would feel guilty for not doing them.
- ___ 7. Because by doing them I am living in line with my deepest principles.
- ___ 8. Although it does not make a difference whether I do them or not.
- ___ 9. For the pleasant sensations I feel while I am doing them.
- ___ 10. In order to show others what I am capable of.
- ___ 11. Because I chose them in order to attain what I desire.
- ___ 12. Because I would beat myself up for not doing them.
- ___ 13. Even though I do not have a good reason for doing them.
- ___ 14. In order to attain prestige.
- ___ 15. Even though I believe they are not worth the trouble.
- ___ 16. Because I would feel bad if I do not do them.
- ___ 17. Because by doing them I am fully expressing my deepest values.
- ___ 18. Because they reflect what I value the most in life

APPENDIX E

Couples Motivation Questionnaire

Blais, M.R., Sabourin, S., Boucher, C., & Vallerand, R.J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, 59, 1021–1031.

doi:10.1037/0022-3514.59.5.1021.

There are many different reasons why people get involved in relationships. Thinking about your current sexual partner, please take a few moments to think about the reasons why you are currently in a relationship with that person (if you have more than one sexual partner, think about the one that is most important to you). Then, using the scale below, please indicate in the left margin the degree to which you feel each of the following items corresponds to your reasons for having a relationship with your sexual partner using the following answer key.

- | | |
|--------------------------------|---------------------------|
| 1 – Does not correspond at all | 5 – Corresponds well |
| 2 – Corresponds very little | 6 – Corresponds very well |
| 3 – Corresponds slightly | 7 – Corresponds exactly |
| 4 – Corresponds moderately | |

_____ 1. I don't know why. In all honesty, I don't really feel like making the effort necessary to keep the relationship together.

_____ 2. Because I need to be in a relationship with my partner to feel important.

_____ 3. Because I value the way my relationship with my partner allows me to improve as a person.

_____ 4. I don't know why anymore, I think, to my deepest disappointment, that our relationship is destined to fail since I no longer see any possibility of saving it.

_____ 5. Because I value the way our life as a couple gives me the opportunity to participate in new activities.

- _____6. Because I love the many fun and crazy times I share with my partner.
- _____7. Because I would feel very guilty if I separated from my partner.
- _____8. I don't really know; I feel helpless to the fact that sooner or later we are going to separate.
- _____9. Because my relationship with my partner allows me to have a more stable sex life with someone of my choice.
- _____10. Because people who are important to me (e.g. children, family, friends) are proud of our relationship and I wouldn't want to disappoint them.
- _____11. Because my partner wouldn't be able to cope with the separation.
- _____12. Because this is the person that I have chosen to share my important life projects.
- _____13. There is nothing motivating me to stay in my relationship with my partner.
- _____14. Because I experience enormous pleasure and freedom in our sexual life.
- _____15. Because life with my partner offers me the opportunity to learn how to better communicate my ideas.
- _____16. Because with my partner, I feel free to commit myself to future projects I hold dearly.
- _____17. Because my relationship allows me to share my emotions and special moments with someone.
- _____18. Because my relationship is a commitment I have to hold.
- _____19. Because the number of deep and meaningful discussions I share with my partner are very satisfying to me.

_____20. Because living with my partner gives me the opportunity to develop new abilities that I didn't know I had.

_____21. Because the moments I share with my partner are very stimulating and satisfying for me.

APPENDIX F

Sexual Motivation Scale

Gravel, E. E., Pelletier, L. G., & Reissing, E. D. (2016). “Doing it” for the right reasons: Validation of a measurement of intrinsic motivation, extrinsic motivation, and amotivation for sexual relationships. *Personality and Individual Differences*, 92, 164–173.
doi:10.1016/j.paid.2015.12.015

There are many reasons why people have sexual relationships. Please indicate to what extent each of the statements below corresponds to your motives for having sexual relationships in general by checking the appropriate number

Does not correspond at all			Corresponds moderately			Corresponds completely		
1	2	3	4	5	6	7		
_____1. Because sex is fun.								
_____2. Because my partner demands it of me.								
_____3. Because sexuality is a normal and important aspect of human development.								
_____4. I don't know; I feel it's not worth it.								
_____5. Because sexuality brings so much to my life.								
_____6. Because I enjoy sex.								
_____7. To prove to myself that I am sexually attractive.								
_____8. To avoid conflicts with my partner.								
_____9. I don't know; it feels like a waste of time.								
_____10. Because sexuality is a key part of who I am.								
_____11. Because I don't want to be criticized by my partner.								

- _____12. Because I feel it's important to experiment sexually.
- _____13. I don't know; actually, I find it boring.
- _____14. To show myself that I am sexually competent.
- _____15. Because sexuality is a meaningful part of my life.
- _____16. For the pleasure I feel when my partner stimulates me sexually.
- _____17. Because sexuality fulfills an essential aspect of my life.
- _____18. To live up to my partner's expectations.
- _____19. Because I think it is important to learn to know my body better.
- _____20. To prove to myself that I am a good lover.
- _____21. Because sex is exciting.
- _____22. Because I feel it's important to be open to new experiences.
- _____23. I don't know; sex is a disappointment to me.
- _____24. To prove to myself that I have sex-appeal.

APPENDIX G

New Sexual Satisfaction Scale

Štulhofer, A., Buško, V., & Brouillard, P. (2010). Development and bicultural validation of the New Sexual Satisfaction Scale. *Journal of Sex Research*, 47, 257–268.

doi: 10.1080/00224490903100561.

Thinking about your sex life during the last six months, please rate in the left margin your satisfaction with the following aspects using the following answer key:

- | | |
|--------------------------|-------------------------|
| 1 – not at all satisfied | 4 – very satisfied |
| 2 – a little satisfied | 5 – extremely satisfied |
| 3 – moderately satisfied | |

- _____ 1. The intensity of my sexual arousal
- _____ 2. The quality of my orgasms
- _____ 3. My ‘letting go’ and surrender to sexual pleasure during sex
- _____ 4. My focus=concentration during sexual activity
- _____ 5. The way I sexually react to my partner
- _____ 6. My body’s sexual functioning
- _____ 7. My emotional opening up in sex
- _____ 8. My mood after sexual activity
- _____ 9. The frequency of my orgasms
- _____ 10. The pleasure I provide to my partner
- _____ 11. The balance between what I give and receive in sex
- _____ 12. My partner’s emotional opening up during sex
- _____ 13. My partner’s initiation of sexual activity
- _____ 14. My partner’s ability to orgasm

- _____15. My partner's surrender to sexual pleasure ("letting go")
- _____16. The way my partner takes care of my sexual needs
- _____17. My partner's sexual creativity
- _____18. My partner's sexual availability
- _____19. The variety of my sexual activities
- _____20. The frequency of my sexual activity

APPENDIX H

Female Sexual Distress Scale (gender-neutral item only)

Derogatis, L.R., Rosen, R., Leiblum, S., Burnett, A., & Heiman, J. (2002). The female sexual distress scale (FSDS): Initial validation of a standardized scale for assessment of sexually related personal distress in women. *Journal of Sex & Marital Therapy*, 28, 317–330.

doi:10.1080/00926230290001448

Using the following answer key, please indicate in the left margin how often did you feel in the last 30 days:

0- never 1- rarely 2 – occasionally 3 – frequently 4 –always

_____ 1. Guilty about sexual difficulties

_____ 2. Embarrassed about sexual problems

_____ 3. Distressed about your sex life

_____ 4. Stressed about sex

_____ 5. Sexually inadequate

_____ 6. Regrets about your sexuality

_____ 7. Dissatisfied with your sex life

APPENDIX I

Relationship Assessment Scale

Hendrick, S. S., Dicke, A., & Hendrick, C. (1998). The Relationship Assessment Scale. *Journal of Social and Personal Relationships*, 15, 137–142. doi:10.1177/0265407598151009

Thinking about your current sexual partner, please indicate the extent to which these statements describe your relationship.

Low 1 2 3 4 5 High

1. How well does your partner meet your needs?
2. In general, how satisfied are you with your relationship?
3. How good is your relationship compared to most?
4. How often do you wish you hadn't gotten into this relationship?
5. To what extent has your relationship met your original expectations?
6. How much do you love your partner?
7. How many problems are there in your relationship?

APPENDIX J

Satisfaction with Life Scale

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction With Life Scale. *Journal of Personality Assessment*, 49, 71–75. doi:10.1207/s15327752jpa4901_13

Below are five statements that you may agree or disagree with. Using the 1 – 7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding.

- | | |
|--------------------------------|--------------------|
| 1 – Strongly disagree | 5 – Slightly agree |
| 2 – Disagree | 6 – Agree |
| 3 – Slightly disagree | 7 – Strongly agree |
| 4 – Neither agree nor disagree | |

- ____ 1. In most ways my life is close to my ideal.
- ____ 2. The conditions of my life are excellent.
- ____ 3. I am satisfied with my life.
- ____ 4. So far I have gotten the important things I want in life.
- ____ 5. If I could live my life over, I would change almost nothing.

APPENDIX K

Positive and Negative Affect Schedule

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063–1070. doi:10.1037/0022-3514.54.6.1063

*This scale consists of a number of words that describe different feelings and emotions. Read each item and then list the number from the scale below next to each word. **Indicate the extent you have felt this way over the past week.***

1 – Very slightly or Not at all	4 – Quite a bit
2 – A little	5 – Extremely
3 – Moderatel	

- | | |
|--|---|
| <p>_____ 1. Interested</p> <p>_____ 2. Distressed</p> <p>_____ 3. Excited</p> <p>_____ 4. Upset</p> <p>_____ 5. Strong</p> <p>_____ 6. Guilty</p> <p>_____ 7. Scared</p> <p>_____ 8. Hostile</p> <p>_____ 9. Enthusiastic</p> <p>_____ 10. Proud</p> | <p>_____ 11. Irritable</p> <p>_____ 12. Alert</p> <p>_____ 13. Ashamed</p> <p>_____ 14. Inspired</p> <p>_____ 15. Nervous</p> <p>_____ 16. Determined</p> <p>_____ 17. Attentive</p> <p>_____ 18. Jittery</p> <p>_____ 19. Active</p> <p>_____ 20. Afraid</p> |
|--|---|

APPENDIX L

Psychological Well-Being Scales

Abbott, R. A., Ploubidis, G. B., Huppert, F. A., Kuh, D., Wadsworth, M. E., & Croudace, T. J. (2006). Psychometric evaluation and predictive validity of Ryff's psychological well-being items in a UK birth cohort sample of women. *Health and Quality of Life Outcomes*, 4, 76. doi:10.1186/1477-7525-4-76

Please indicate in the left margin your degree of agreement to the following sentences using this answer key.

Strongly disagree

Strongly agree

1 2 3 4 5 6

_____ 1. I am not afraid to voice my opinions, even when they are in opposition to the opinions of most people.

_____ 2. In general, I feel I am in charge of the situation in which I live.

_____ 3. I am not interested in activities that will expand my horizons.

_____ 4. Most people see me as loving and affectionate.

_____ 5. I live life one day at a time and don't really think about the future.

_____ 6. When I look at the story of my life, I am pleased with how things have turned out.

_____ 7. My decisions are not usually influenced by what everyone else is doing.

_____ 8. The demands of everyday life often get me down.

_____ 9. I think it is important to have new experiences that challenge how you think about yourself and the world.

_____ 10. Maintaining close relationships has been difficult and frustrating for me.

- _____ 11. I have a sense of direction and purpose in life.
- _____ 12. In general, I feel confident and positive about myself.
- _____ 13. I tend to worry about what other people think of me.
- _____ 14. I do not fit very well with the people and the community around me.
- _____ 15. When I think about it, I haven't really improved much as a person over the years.
- _____ 16. I often feel lonely because I have few close friends with whom to share my concerns.
- _____ 17. My daily activities often seem trivial and unimportant to me.
- _____ 18. I feel like many of the people I know have gotten more out of life than I have.
- _____ 19. I tend to be influenced by people with strong opinions.
- _____ 20. I am quite good at managing the many responsibilities of my daily life.
- _____ 21. I have the sense that I have developed a lot as a person over time.
- _____ 22. I enjoy personal and mutual conversations with family members or friends.
- _____ 23. I don't have a good sense of what it is I'm trying to accomplish in life.
- _____ 24. I like most aspects of my personality
- _____ 25. I have confidence in my opinions, even if they are contrary to the general consensus.
- _____ 26. I often feel overwhelmed by my responsibilities
- _____ 27. I do not enjoy being in new situations that require me to change my old familiar ways of doing things.
- _____ 28. People would describe me as a giving person, willing to share my time with others.
- _____ 29. I enjoy making plans for the future and working to make them a reality.
- _____ 30. In many ways, I feel disappointed about my achievements in life.

- _____31. It's difficult for me to voice my own opinions on controversial matters.
- _____32. I have difficulty arranging my life in a way that is satisfying to me.
- _____33. For me, life has been a continuous process of learning, changing, and growth.
- _____34. I have not experienced many warm and trusting relationships with others.
- _____35. Some people wander aimlessly through life, but I am not one of them.
- _____36. My attitude about myself is probably not as positive as most people feel about themselves.
- _____37. I judge myself by what I think is important, not by the values of what others think is important.
- _____38. I have been able to build a home and a lifestyle for myself that is much to my liking.
- _____39. I gave up trying to make big improvements or changes in my life a long time ago.
- _____40. I know that I can trust my friends, and they know they can trust me.
- _____41. I sometimes feel as if I've done all there is to do in life.
- _____42. When I compare myself to friends and acquaintances, it makes me feel good about who I am.

APPENDIX M

Female Sexual Function Index

Rosen, R., Brown, C., Heiman, J., Leiblum, S., Meston, C., Shabsigh, R., ... D'Agostino, R. (2000). The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *Journal of Sex & Marital Therapy*, 26, 191–208. doi:10.1080/009262300278597.

*These questions ask about your sexual feelings and responses during the past 4 weeks. Please answer the following questions as honestly and clearly as possible. In answering these questions the following definitions apply: Sexual activity can include caressing, foreplay, masturbation and vaginal intercourse. Sexual intercourse is defined as penile penetration (entry) of the vagina. Sexual stimulation includes situations like foreplay with a partner, self-stimulation (masturbation), or sexual fantasy. **CHECK ONLY ONE BOX PER QUESTION.***

Sexual desire or interest is a feeling that includes wanting to have a sexual experience, feeling receptive to a partner's sexual initiation, and thinking or fantasizing about having sex.

1. Over the past 4 weeks, how **often** did you feel sexual desire or interest?

- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

2. Over the past 4 weeks, how would you rate your **level** (degree) of sexual desire or interest?

- ☐ Very high
- ☐ High
- ☐ Moderate
- ☐ Low
- ☐ Very low or none at all

Sexual arousal is a feeling that includes both physical and mental aspects of sexual excitement. It may include feelings of warmth or tingling in the genitals, lubrication (wetness), or muscle contractions.

3. Over the past 4 weeks, how **often** did you feel sexually aroused ("turned on") during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

4. Over the past 4 weeks, how would you rate your **level** of sexual arousal ("turn on") during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Very high
- ☐ High
- ☐ Moderate
- ☐ Low
- ☐ Very low or none at all

5. Over the past 4 weeks, how **confident** were you about becoming sexually aroused during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Very high confidence
- ☐ High confidence
- ☐ Moderate confidence
- ☐ Low confidence
- ☐ Very low or no confidence

6. Over the past 4 weeks, how **often** have you been satisfied with your arousal (excitement) during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

7. Over the past 4 weeks, how **often** did you become lubricated ("wet") during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Almost always or always

- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

8. Over the past 4 weeks, how **difficult** was it to become lubricated ("wet") during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Extremely difficult or impossible
- ☐ Very difficult
- ☐ Difficult
- ☐ Slightly difficult
- ☐ Not difficult

9. Over the past 4 weeks, how often did you **maintain** your lubrication ("wetness") until completion of sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

10. Over the past 4 weeks, how **difficult** was it to maintain your lubrication ("wetness") until completion of sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Extremely difficult or impossible
- ☐ Very difficult
- ☐ Difficult
- ☐ Slightly difficult
- ☐ Not difficulty

11. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **often** did you reach orgasm (climax)?

- ☐ No sexual activity
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

12. Over the past 4 weeks, when you had sexual stimulation or intercourse, how **difficult** was it for you to reach orgasm (climax)?

- ☐ No sexual activity
- ☐ Extremely difficult or impossible

- ☐ Very difficult
- ☐ Difficult
- ☐ Slightly difficult
- ☐ Not difficult

13. Over the past 4 weeks, how **satisfied** were you with your ability to reach orgasm (climax) during sexual activity or intercourse?

- ☐ No sexual activity
- ☐ Very satisfied
- ☐ Moderately satisfied
- ☐ About equally satisfied and dissatisfied
- ☐ Moderately dissatisfied
- ☐ Very dissatisfied

14. Over the past 4 weeks, how **satisfied** have you been with the amount of emotional closeness during sexual activity between you and your partner?

- ☐ No sexual activity
- ☐ Very satisfied
- ☐ Moderately satisfied
- ☐ About equally satisfied and dissatisfied
- ☐ Moderately dissatisfied
- ☐ Very dissatisfied

15. Over the past 4 weeks, how **satisfied** have you been with your sexual relationship with your partner?

- ☐ Very satisfied
- ☐ Moderately satisfied
- ☐ About equally satisfied and dissatisfied
- ☐ Moderately dissatisfied
- ☐ Very dissatisfied

16. Over the past 4 weeks, how **satisfied** have you been with your overall sexual life?

- ☐ Very satisfied
- ☐ Moderately satisfied
- ☐ About equally satisfied and dissatisfied
- ☐ Moderately dissatisfied
- ☐ Very dissatisfied

17. Over the past 4 weeks, how **often** did you experience discomfort or pain during vaginal penetration?

- ☐ Did not attempt intercourse
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

18. Over the past 4 weeks, how **often** did you experience discomfort or pain following vaginal penetration?

- ☐ Did not attempt intercourse
- ☐ Almost always or always
- ☐ Most times (more than half the time)
- ☐ Sometimes (about half the time)
- ☐ A few times (less than half the time)
- ☐ Almost never or never

19. Over the past 4 weeks, how would you rate your **level** (degree) of discomfort or pain during or following vaginal penetration?

- ☐ Did not attempt intercourse
- ☐ Very high
- ☐ High
- ☐ Moderate
- ☐ Low
- ☐ Very low or none at all

APPENDIX N

International Index of Erectile Function

Rosen, R.C., Cappelleri, J.C., Smith, M.D., Lipsky, J., & Peña, B.M. (1999). Development and evaluation of an abridged, 5-item version of the International Index of Erectile Function (IIEF-5) as a diagnostic tool for erectile dysfunction. *International Journal of Impotence Research*, 11, 319–326

These questions ask about the effects that your erection problems have had on your sex life over the last four weeks. Please try to answer the questions as honestly and as clearly as you are able. In answering the questions, the following definitions apply:

- sexual activity includes intercourse, caressing, foreplay & masturbation
 - sexual intercourse is defined as sexual penetration of your partner
 - sexual stimulation includes situation such as foreplay, erotic pictures, etc.
 - ejaculation is the ejection of semen from the penis (or the feeling of this)
 - **orgasm** is the fulfilment or climax following sexual stimulation or intercourse
- Over the past 4 weeks: Please check *one* box only**

1. How often were you able to get an erection during sexual activity?

- ☐ No sexual activity
- ☐ Almost never or never
- ☐ A few times (less than half the time)
- ☐ Sometimes (about half the time)
- ☐ Most times (more than half the time)
- ☐ Almost always or always

2 . When you had erections with sexual stimulation, how often were your erections hard enough for penetration?

- ☐ No sexual activity
- ☐ Almost never or never
- ☐ A few times (less than half the time)
- ☐ Sometimes (about half the time)
- ☐ Most times (more than half the time)
- ☐ Almost always or always

3. When you attempted intercourse, how often were you able to penetrate (enter) your partner?

Did not attempt intercourse

- ☐ Almost never or never
- ☐ A few times (less than half the time)

- ☐ Sometimes (about half the time)
- ☐ Most times (more than half the time)
- ☐ Almost always or always

4. During sexual intercourse, how often were you able to maintain your erection after you had penetrated (entered) your partner?

- ☐ Did not attempt intercourse
- ☐ Almost never or never
- ☐ A few times (less than half the time)
- ☐ Sometimes (about half the time)
- ☐ Most times (more than half the time)
- ☐ Almost always or always

APPENDIX O

Basic Needs Satisfaction during Sexual Activities

Brunell, A. B., & Webster, G. D. (2013). Self-determination and sexual experience in dating relationships. *Personality and Social Psychology Bulletin*, 39, 970–987.

doi:10.1177/0146167213485442

Please indicate to what extent each statement describes your overall sexual interactions with your partner by indicating how true it is for you. By sexual interactions, we mean any interaction in which you engage in one or many of the following activities: manual sex, oral sex, penile-vaginal sex, anal sex, and the use of sex toys. Use the following scale.

Not at all true	Somewhat true	Very true
1 2 3 4	5 6 7	

_____ 1. When I have sex with my partner, I feel free to be who I am.

_____ 2. When I have sex with my partner, I feel competent.

_____ 3. When I have sex with my partner, I feel loved and cared about.

_____ 4. When I have sex with my partner, I often feel inadequate or incompetent.

_____ 5. When I have sex with my partner, I have a say in what happens, and I can voice my opinion.

_____ 6. When I have sex with my partner, I often feel a lot of distance.

_____ 7. When I have sex with my partner, I feel very capable and effective.

_____ 8. When I have sex with my partner, I feel a lot of closeness and intimacy.

_____ 9. When I have sex with my partner, I feel controlled and pressured to be certain ways.

APPENDIX P

Measure of Frequency of Sexual Activities

Please indicate in the left margin how many times you have engaged in the following sexual activities over the last week.

- _____ 1. Masturbation (self-stimulation of the genitals).
- _____ 2. Manual sex (stimulating your partner's genitals with the hands or fingers, or having your partner stimulate your genitals with his/her hands or fingers).
- _____ 3. Oral sex (stimulating your partner's genitals with your mouth or having your partner stimulate your genitals with his/her mouth).
- _____ 4. Vaginal sex (penetration of the vagina with the penis).
- _____ 5. Anal sex (penetration of the anus with the penis, and/or stimulation of the anus with the fingers, mouth, or with objects).
- _____ 6. Use of sex toys (objects that are used during sexual activities)

APPENDIX Q

Study 3: Instructions Provided to Participants

The goal of our study is to understand people's daily sexual experiences.

First, we need to verify that you meet the study's inclusion criteria

- Are you over the age of 18?
- Are you fluent in English?
- Are you in a committed relationship of at least 3 months?
- Are you and your partner are in a long-distance relationship?

Your participation in the study involves two tasks. In the first task, you will answer an online baseline survey that will take no more than 30 minutes to complete. The aim of this task is to establish your general level on the study's variables. The next day, you will begin the second task, which involves answering an online daily diary. The daily diary is a very short survey that we ask you to complete at the end of each day before going to bed. In this study, this will occur over a period of 21 days. The last day of your participation in the study will therefore be on the _____(check the ISPR system before the session, it is the date of Part 2) .

The diary takes at most 2 minutes to complete on days when you don't engage in partnered sex and at most 5-10 minutes on days when you engage in partnered sex. By partnered sex, we mean any interaction in which you engage in one or many of the following activities with your partner: Manual sex, oral sex, penile-vaginal sex, anal sex, and the use of sex toys.

You will need to enter a unique numeric identifier to complete the baseline survey and the diaries. This numeric identifier, the links to the surveys' websites, and a summary of the study's instructions were sent to your uottawa email address. Make a copy of this email for your

files in the advent that you would lose this information. When you first login in the baseline study's website, you will be provided with the consent form.

It is important that you complete the baseline survey and the daily diary in a private setting because the presence of others can have an effect on your responses. It is also very important that you complete the daily diary at the end of each day before you do to sleep because your memories of the events that happened during the day will be fresher. If you complete it the next morning, your memories may have faded and this can have an effect on your responses. In the advent that you cannot complete the diary before going to sleep, then complete the survey the next morning. Please try to complete the diary as early as is feasible for you in order to provide the most accurate memories of the events. If you complete the diary in the morning, we ask that you provide both the date on which you are completing the diary and the date you are reporting about.

To make sure you don't forget to complete the diary, a reminder email will be sent to your email account every morning at 9:00 am. In order to program the daily reminders, we will ask you to provide us with your preferred email address when you complete the baseline, this is because although we can contact you by email through the ISPR, the system does not actually show us your email address.

In the eventuality that you do not complete the diary for two consecutive days or more, we ask that you complete the latest diary first because it is likely to be the most accurate, then complete the second latest one, and so on.

It is important that you complete the survey every day because the goal of the study is to understand how our sexual experiences vary from day to day. If we only have a few days, we will not be able to draw reliable conclusions. If you think that it would be too difficult or

inconvenient to complete the daily diaries for most days, perhaps it is best that you do not participate in the study.

For those who are not participating through the ISPR. To thank you for your participation, you will be given the opportunity to enter a draw for one cash prize of \$100 or one cash prize of \$50 by providing your email in the baseline survey. As an incentive, an extra ballot will be entered in the draw every time you submit the survey on time, thus increasing your odds of winning the draw. Please note that your email address will be removed from the file once you have completed the study if you do not want to participate in the draw. If you participate in the draw, the file will be deleted permanently once the draw has been performed.

For those participating through the ISRP. Please note that your points for participation will be granted to you at the end of the study. Also, you do not have to come to the lab for part 2. We schedule part 2 in the system just to indicate the date on which you complete the diary part of the study.

Finally, we would like to emphasize that you are like a researcher in this project. We know very little about people's daily sexual experiences. Your contribution is therefore very valuable because you are helping us to better understand how things really work in everyday life. As such, it is important for you not to be analytical or think about the study when you are having sex. Just do what you would normally do if you were not participating in the study and report on your experiences as they happened.

Do you have any questions?

Thank you and do not hesitate to contact us at any point during your participation in the study if you have questions or concerns.