Exploring Sexual Well-Being in Older Adulthood: Diversity in Experiences and Associated Factors

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General Abstract

For decades, sexual expression in older adulthood was a taboo topic in the public discourse and ignored in the empirical literature. As a result of several significant sociocultural changes and medical developments as well as an increasingly older population, however, perspectives are shifting and acceptance and interest in the sexual lives of older adults is growing. The purpose of this dissertation was to investigate sexual well-being in older adulthood and explore its diversity. Study 1 involved a systematic review of the literature on factors associated with the maintenance and cessation of sexual activity in adults 60 years of age and older. Data were extracted from a total of 57 studies and each was assessed for methodological quality. Surprisingly, only four factors (i.e., partner's interest in sexual activity, past frequency of sexual activity, presence of erectile dysfunction, and partner-related illness) were consistently related, in more than one study, to whether or not older adults were sexually active. Significant variability in study results highlighted methodological caveats of the body of literature, but also the heterogeneity of older adults' sexuality. Study 2 built upon the findings and recommendations of Study 1 and further examined diversity in sexual well-being. Sexual function and satisfaction, the absence of sexuality-related distress, breadth of sexual experience, and overall frequency of sexual activity were considered as indicators of sexual well-being. The Dual Control Model of Sexual Response (DCM) was used as the theoretical framework in this study of women 50 years of age and older. The DCM posits that sexual response depends on the relative activation of sexual excitatory and sexual inhibitory processes, two separate and independent systems. Study 2 results indicated that, independently, women's propensities for sexual excitation and sexual inhibition were significantly associated with the majority of the indicators of sexual well-being and the directions of associations were consistent with the tenets of the DCM. The only association that

proved not statistically significant was the relationship between sexual excitation and sexual distress. When examined together, sexual excitation and sexual inhibition factors significantly predicted sexual function, satisfaction, and frequency. Sexual distress was predicted more strongly by sexual inhibition factors and sexual breadth by sexual excitation factors. Partner physical and mental health and participant mental health were further identified as moderating variables of these associations. The results of Study 2 expand current knowledge regarding the DCM and its relevance to older women; sexual excitation and sexual inhibition appear to have heuristic value to better understand the variability in sexual activity and well-being in women aged 50 years and older. The results of this dissertation have important implications for the study of sexuality and ageing, perhaps most prominently in terms of highlighting the inter-individual variation in older adulthood and the conclusion that generalizations about "older adults" as a group may not be appropriate.

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General Introduction

*I'm quite happy to have what you might call a f***, I mean it's great and to feel horny and to have somebody else feel attracted and passionate. . .But I also probably desire more whole body intimacy. I love to be touched, to be stroked, to be massaged.*

(Anna, 69 – Fileborn, Thorpe, Hawkes, Minichiello, & Pitts, 2015)

These words being spoken by a woman almost 70 years of age may be surprising for some. Sexual passion, feeling horny, desiring "a f***", and full body intimacy are not often associated in a positive way with individuals in the later decades of life. It is more common for sexual activity in older adulthood to be undervalued, mocked, and parodied, either blatantly through labelling older adults who desire sexual intimacy as "dirty old men" or "cougars", or more subtly through conceptualizing shared physical affection as "cute". The above quote also highlights another frequently overlooked point that sexuality and intimacy involve more than intercourse-specific activities. In older adulthood, some individuals continue to actively engage in sexual lives, while others cease sexual activity and may not miss it (Judson, 2009). Much diversity exists along this spectrum and the question arises as to what contributes to the apparent differences observed among older adults. This was the overarching research question for this dissertation and each study addressed specific research questions based on this theme. Study 1 systematically summarized the research focusing on variables associated with sexual activity in adults 60 years of age and older and highlighted the limitations of this body of work. Study 2 further built on these findings by examining variability in sexual well-being in older women along a range of different dimensions through the lens of the Dual Control Model of Sexual Response (DCM; Bancroft & Janssen, 2000).

Background

During the second half of the 20th century, a series of major social changes have impacted how sexuality is viewed and expressed in occidental countries. Major milestones included the

introduction of hormonal birth control and the emerging feminist movement in the 1960s, the LBTGQ rights movement starting in the 1970s, and subsequent successive legislative changes culminating in the legalization of same-sex marriage in 2005. Sexuality moved from a procreative to a recreational activity and the age at first marriage as well as divorce rates steadily increased (e.g., Goldstein, 1999; Goldstein & Kenney 2001; Treas, 2002; Twenge, Sherman & Wells, 2015). For better or worse, sexuality is all abound, with sexualized images in the media and entertainment, but also more sexuality-related information and education is available with more liberal values and diverse views on what may be "normal". With this break from traditional attitudes and behaviours comes a new openness to conduct research on aspects of life that were previously considered as confined to the privacy of the bedroom. The signs of this field of research coming of age are everywhere: new scholarly and scientific journals focusing on sexuality have been launched, new interdisciplinary sexuality research centres have been created, innovative academic degree programs have been developed, and the number of publications reporting sexuality research findings has increased rapidly in recent years. Particularly, as life expectancy for adults continues to rise and the baby-boomer generation is starting to age, more research attention has turned toward investigating sexuality in adults during their later decades of life (e.g., Delamater & Karraker, 2009; Delamater & Koepsel, 2015).

In addition to major social milestones positively affecting values and practices of sexuality, efforts to assist adults to manage and improve sexual problems in a systematic manner gained acceptance starting in the 1960s with the publication of Masters and Johnson's major works on human sexual response (Masters & Johnson, 1966) and sex therapy (Masters & Johnson, 1970). Pharmacological treatments to maintain sexual function in older men, starting with sildenafil or Viagra® in 1998 and more recently flibanserin or Addyi® for women with low

sexual desire, tacitly affirmed the notion of sexuality as a non-reproductive, pleasurable, and intimacy-building activity. Wide-spread publicity, for Viagra® in particular, further altered the perception of sexuality as an acceptable topic in the public discourse in general, and regarding sexual activity of older men and women in particular. As a result of these significant changes, baby-boomers are the first generation moving into the later years of life with the expectation of continuing to be sexually active because sex, removed from procreation, is viewed as an integral component of quality of life (Robinson & Molzahn, 2007). Investigations aimed at understanding factors related to older adults' maintenance, or moderation and/or cessation of an active sex life appear timely and relevant.

The process of aging is multifaceted and individualized, occurring across biological, psychological, and social domains (Dziechciaż & Filip, 2014). Biological aging involves changes in metabolism and the physicochemical properties of cells, leading to a decline in cells' regenerative capacity and structural and functional changes in tissues and organs (Tosato, Zamboni, Ferrini, & Cesari, 2007). In terms of sexuality, this can involve, for example, decreased scrotal vasocongestion and delayed erection in older men and decreased vaginal lubrication and elasticity in older women (Meston, 1997). Psychologically, with aging come increasing difficulties in adapting to new situations and changes in cognitive and intellectual spheres, perception, and other thought processes (Riddle, 2007). Socially, aging is conceptualized differently across cultures and time periods; each person living in society has defined roles, some of which are lost in the later years of life, others change or continue, and some new roles appear for older adults (Charles & Carstensen, 2010). Although it is the case that that some individuals successfully avoid disease, maintain high levels of physical and cognitive function, and continue to be actively engaged in society well into later life, the dynamic and

irreversible physiological process of aging create qualitative differences in the life experiences of adults across the life span (Dziechciaż & Filip, 2014). To date, little is known about the sexual experiences of older adults specifically.

Much like the broader sexuality-related literature, investigations of later-life sexuality have evolved significantly over the past 50 years, albeit at a seemingly slower pace. The term ageism was initially coined by Robert Butler (1969) to describe the prejudice that results from the misconceptions and myths about older adults that depict them as senile, frail, unattractive, asexual, sick, and dependent. More generally, sexuality tends to be equated with youthful standards of attractiveness and vitality (Baber, 2000); therefore, changing bodies, abilities, and energy levels in late life suggest to some that older individuals must be asexual, devoid of sexual feelings, and in need of pharmaceutical intervention (Marshall & Katz, 2006; Wood, Koch, & Mansfield, 2006). Negative attitudes toward sexuality in older adulthood are well-evidenced in the extant literature (e.g., Aizenberg, Weizman, & Barak, 2002; Bouman, Arcelus, & Benbow 2001; Hillman, & Stricker, 1996; Langer-Most & Langer, 2010; Luketich, 1991; Mahieu, Van Elssen, & Gastmans, 2011; Pratt & Schmall, 1989; Villar, Serrat, Fabà, & Celdrán, 2015) and many earlier sexuality studies excluded older adults from participant samples (e.g., Laumann, Paik, & Rosen, 1999; Levy, Ding, Kosteas, & Niccolai, 2007; Michael, Gagnon, Laumann, & Kolate, 1994). This neglect of older adults' sexual needs and experiences in the literature helped create a context preserving myths about later life sexuality.

Initial research on sexuality in older adulthood also contributed to the perpetuation of later life sexuality myths and stereotypes. These studies were conducted from a largely biomedical perspective, with emphasis placed on the sexual response cycle and hetero-normative behaviours (e.g., penile-vaginal intercourse; Marshall, 2011). A strong focus was placed on the

prevalence and correlates of dysfunction in older adulthood (e.g., Diokno, Brown, & Herzog, 1990; Feldman, Goldstein, Hatzichristou, Krane, & McKinlay, 1994; Mulligan, Retchin, Chinchilli, & Bettinger, 1988; Rosen, Taylor, Leiblum, & Bachmann, 1993) with a multitude of studies focusing on the negative impact of specific illnesses, medical conditions, or medication on sexual functioning of adults over the age of 50. Conceptualizations of late life sexuality in these studies were often relegated to sexual mechanics and discussions of the physical, psychological, and partner-related barriers that infringe upon one's ability to engage in sexual behaviour, frequently defined exclusively as intercourse. While the investigation of sexual problems in older adulthood remains an important area of research, these studies often presented obstacle-ridden views of late life sexuality with little exploration of the positive aspects of changing sexualities. What has been termed a medicalized view of sexuality (Tiefer, 1996) has been criticized widely (e.g., Delamater & Koepsel, 2015; Tiefer, 2000; Tiefer & Giami, 2002) and alternative views are coming into fruition (e.g., Lindau, Laumann, Levinson, & Waite, 2003).

A current emerging focus in the literature is the development of broader definitions of sexuality in older adulthood and a departure from the heterosexual script of intercourse as the focus. Findings of several studies emphasize that sexual activity in older adulthood includes a wide range of intimate and pleasurable behaviours such as hugging, touching, kissing, and emotional connectedness (e.g., Metz & McCarthy, 2007; Taylor & Gosney, 2011; Waite & Das, 2010) and engagement in multiple sexual behaviours are increasingly being investigated in the context of single studies (e.g., Corona et al., 2010; Freixas, Luque, & Reina, 2015; Herbenick et al., 2010a; Herbenick et al., 2010b; Palacios-Ceña et al., 2011). While the studies investigating only intercourse may find many older adults reporting sexual inactivity, other studies employing

these more inclusive definitions of sexual behaviour demonstrate that many older adults still maintain at least some sexual intimacy well into later life (e.g., Addis et al., 2006; Ginsberg, Pomerantz, & Kramer-Feeley, 2005; Gray & Garcia, 2012; Hinchliff, Gott, & Ingelton, 2010; Hurd Clarke & Korotchenko, 2011; Kontula & Haavio-Mannila, 2009; Schick et al., 2010). As researchers embark on more comprehensive study of the sexual lives of older adults, evidence against the once widely held notion of the "asexual elderly" becomes increasingly abundant.

Older adults consistently identify sexual well-being as integral to their overall quality of life (Davison, Bell, LaChina, Holden, & Davis, 2009; Delamater & Sill, 2005; Laumann et al., 2006; Laumann, Das, & Waite, 2008). Reports in the literature have suggested that both solo and partnered forms of sexual activity have been associated with physical benefits such as an increased immune system, youthful appearance, greater dietary and physical fitness habits, decreased risk of breast cancer, decreased pain sensitivity, and increased sexual health (e.g., Charnetski & Brennan, 2001; Chen, Zhang, & Tan, 2009; Cutler, 1991; Davey-Smith, Frankel, & Yarnell, 1997; Ellison, 2000; Evans & Couch, 2001; Jannini, Fischer, Bitzer, & McMahon, 2009; Lê, Bacheloti, & Hill, 1989; Leiblum, Bachmann, Kemmann, Colburn, & Swartzman, 1983; Levin, 2002; Petridou, Giokas, Kuper, Mucci, & Trichopoulos, 2000; Weeks & James, 1998; Yavaşçaoğlu, Oktay, Simsek, & Ozyurt, 1999). Sexual activity is further associated with emotional benefits such as decreased levels of depression, increased psychological well-being, overall quality of life, life-satisfaction, and self-esteem (e.g., Austrom, Perkins, Damush, Hendrie, 2003; Brody, 2010; Cyranowski et al., 2004; Davison et al., 2009; Levin, 2002; Palmore & Kivett, 1977; Woloski-Wruble, Oliel, Leefsma, & Hochner-Celnikier, 2010). As a whole, these studies seem to indicate that, even when controlling for other factors (e.g.,

socioeconomic status, smoking status), sexual activity may have a protective effect on individuals' physical and psychological health.

In the limited number of studies that are available, there is also some evidence of an inverse relationship between sexual activity and mortality in older adulthood (e.g., Chen, Tseng, Wu, Lee, & Chen, 2007; Davey-Smith et al., 1997). A major pitfall of these studies, however, is that they do not control for physical health when examining this relationship. Therefore, it is possible that sexual activity is actually an indicator of good physical health and in and of itself does not uniquely contribute to vitality. For example, the findings of several studies suggest that men with erectile dysfunction are at a greater risk for cardiovascular diseases and that erectile dysfunction may also be an early sign of cardiovascular disease (e.g., Billups, Bank, Padma-Nathan, Katz, & Williams, 2005; Roumeguère, Wespes, Carpentier, Hoffmann, & Schulman, 2003; Solomon, Man, & Jackson, 2003; Thompson et al., 2005). In other studies researchers reported similar positive correlations between physical and mental health and sexual activity regardless of age (e.g., Arias-Castillo, Ceballos-Osorio, Ochoa, & Reyes-Ortiz, 2009; Cheng, Ng, & Ko, 2007; Hill, Bird, & Thorpe, 2003; Minichiello, Plummer, & Loxton, 2003; Reece et al., 2010). Unfortunately, although many significant associations between sexual activity and various facets of life have been discovered, causality cannot be determined given the methodologies of these studies. Sexual well-being in older adulthood, therefore, should be conceptualized as resulting from a complex system of reciprocal interactions between several factors.

Taking the results of these studies together, there is support for the benefits of sexual activity across the lifespan. To date, public discussion about sexual expression has been predominantly "fear based" revolving around the risks of and problems with sexual activity and

little attention has been paid to its physiological and psychosocial health benefits (e.g., Davey-Smith et al., 1997; Reiss, 1990). With more careful examination of the literature, however, evidence of the utility of sexual activity outside of procreation and into the later decades of life is evident. A decreased focus on intercourse and medicalized aspects of sexuality, a more inclusive definition of sexuality, and an understanding of the benefits of ongoing sexual activity in the later years of life highlight the importance of research efforts to better understand the sexuality of older adults.

The positive developments flowing from this perspective, however, introduced an alternative, perhaps overly positive view of older adult sexuality. Increasingly, successful ageing includes the ideal of being the vigorous "sexy oldie" (e.g., Vares, 2009). This conceptualization appears to better fit the new generation of older adults who are physically healthier and live longer and more active and engaged later lives (Gilleard & Higgs, 2000). Representations of the "sexy oldie" have appeared in advertising, television, and film at an increasing rate. Advertisements for Viagra or films such as *Something's Gotta Give* (2004, Directed by Nancy Meyers) and *It's Complicated* (2009, Directed by Nancy Meyers) portray older couples as romantically and/or sexually interested and engaged. As such, there is a nascent representation in Western society that challenges the invisibility of late life sexuality in which older bodies are depicted as erotic and sexual.

Unfortunately, this conceptualization of the "sexy oldie" may also have potential negative consequences with increasing pressures placed on older adults to stay sexually active. If staying sexually active is viewed as engaging in intercourse, many older adults may be confronted with some challenges. Successful ageing discourses largely overlook the specificities of the ageing body and the reality of ageing-related changes (Liang & Luo, 2012). Changing sexual capacities

once associated with "normal" ageing are pathologized as sexual dysfunctions that require treatment and the notion that older adults should remain "forever functional" (Marshall & Katz, 2002) is endorsed. In a sense, this conceptualization swings to the other extreme. As such there exists a type of denial of the ageing process by continuing to align sexuality with youthful values. In effect, this paradigm still does not challenge the age hierarchy and ageism (Calasanti, 2003; Liang & Luo, 2012).

Sexuality in the ageing context seems to be best conceptualized by the most recent studies that focus on the heterogeneity of older adults sexual lives (e.g., Fileborn et al., 2015; Hinchliff et al., 2010; Howard, O'Neill, & Travers, 2006; Kontula & Haavio-Mannila, 2009; Yan, Wu, Ho, & Pearson, 2011) and the exploration of their individual sexual stories. This research highlights the multifaceted influences on one's sexuality and examines sexuality as experienced by groups of older adults differing on various characteristics (e.g., sexual orientation, gender, ethnicity; Beckman, Waern, Östling, Sundh, & Skoog, 2014; Herbenick et al., 2010b; Killinger, Boura, & Diokno, 2014; Laumann et al., 2005; Shankle, Maxwell, Katzman, & Landers, 2003). Theoretical frameworks such as "affirmative old age" (Sandberg, 2013) are further evidence of this growing alternative, more diversity-focused paradigm of sexuality as it is experienced in older adulthood. Rather than ageing being conceptualized as a slow march towards death, the notion of affirmative ageing argues for the need to go beyond the binaries of decline and success and theorizes ageing in terms of "difference" with no positive or negative valence attached. Inherent in this conceptualization is the belief that in the context of older adulthood, some differences do exist; however, the implication is that individuals are still able to lead fulfilling lives and the parameters of what is considered "fulfillment" vary between individuals.

Nonetheless, the notion of "sexual well-being" is a tenuous construct. Although research investigating sexuality in older adulthood is evolving, the focus thus far has mostly been on single outcomes, including frequency of sexual activity, sexual satisfaction, sexual function, and sexual desire (e.g., Laumann et al., 2006). The interrelationship among these variables may seem intuitive; however, for older adult samples in particular, the data often suggest paradoxical relationships. For example, Thompson, Charo, Vahia, Depp, Allison, and Jeste (2011) found that despite age-related declines in sexual activity, functioning, and sexual interest, self-reported sexual satisfaction remained consistent within a large sample of older women aged 60 to 89. Therefore, to account for the complexity of sexual experiences in later life, a multifaceted approach to represent older adults' sexual lives is warranted.

Sexual Response Models

Several models have been described to examine the sexual response processes in men and women, although none to date have specifically been developed to conceptualize the experiences of older adults. Based on observations of sexual responsivity during partnered and solo sexual activities, Masters and Johnson (1966) proposed a model of sexual response that included four phases: excitement, plateau, orgasm, and resolution for both men and women. These phases were associated with different physiological changes that occurred consecutively and the sexual response cycle was complete when all four phases occurred; the duration of the phases for men and women could vary. Despite wide use, this model has been criticized for its strong physiological basis and assumption that men and women have similar responses (e.g., Tiefer, 2002; Whipple, 2001; Wood, Koch, & Mansfield, 2006). Research since the pioneering work by Masters & Johnson described that individuals in general, and women in particular, may not move

progressively and sequentially though the phases as described (e.g., Basson et al., 2004; Giraldi, Kristensen, & Sand, 2015; Sand & Fisher, 2007;).

An early criticism of the Masters and Johnson human sexual response model was the absence of sexual desire assumed to be preceding sexual arousal. In 1979, Kaplan proposed a triphasic concept by creating a model that includes desire, excitement, and orgasm. This model, however, was still linear and assumed orgasm. Subsequently in 1997, Whipple and Brash-McGreer proposed a circular sexual response pattern for women that is comprised of four stages: seduction (encompassing desire), sensations (excitement and plateau), surrender (orgasm), and reflection (resolution). This model suggests that if a sexual experience results in pleasure and satisfaction, then it could lead to another sexual experience; if the experience was not pleasurable and satisfying, it may not lead to orgasm and/or additional sexual experiences.

Although this circular model of sexual response improved upon the existent linear models, the non-linear sexual response model developed by Basson in 2000 became more typically referred to for describing especially the female sexual response. Basson's model acknowledges that female sexual functioning proceeds in a complex and circuitous manner and is affected by numerous psychosocial factors (e.g., satisfaction with the relationship, self-image, and previous negative sexual experiences). Basson suggested that individuals have many reasons for engaging in sexual activity other than sexual desire. Basson's model clarifies that the primary aim of sexual activity is not necessarily orgasm, but rather personal satisfaction, which can manifest as physical satisfaction (pleasure, orgasm) and/or emotional satisfaction (feelings of intimacy; Basson, 2001; Walton & Thorton, 2003).

Later sexual response models identified additional reasons why individuals engage in sexual activity. Theories of approach and avoidance detail incentive- and threat-focused systems

involved in sexual motivation (Impett, Peplau, & Gable, 2005). Sexual approach motives focus on engaging in sexual activity to obtain a positive outcome such as pleasure, happiness, or increased intimacy. Conversely, sexual avoidance motives focus on having sex to attenuate or avoid negative outcomes such as sexual frustration, conflict, or loss of interest. These motives are theorized as distinct, yet not mutually exclusive.

Adding to this work, Meston and Buss (2007) developed a comprehensive taxonomy of individual motivations for having sex. They first surveyed 444 individuals and identified 237 unique reasons why people wanted to have sex. They subsequently presented these reasons to another sample of 1549 males and females. Factor analyses yielded four main categories of reasons why individuals engage in sexual activity and 13 sub-factors. The Physical reasons sub-factors included Stress Reduction, Pleasure, Physical Desirability, and Experience Seeking. The Goal Attainment sub-factors included Resources, Social Status, Revenge, and Utilitarian. The Emotional sub-factors included Love and Commitment and Expression. Finally, the three Insecurity sub-factors included Self-Esteem Boost, Duty/Pressure, and Mate Guarding.

Although the literature on sexual response has grown and new concepts and theories have emerged (e.g., Janssen, Everaerd, Spiering, & Janssen, 2000; Palace, 1995; Perelman, 2009), a common shortcoming is their lack of focus or pathologizing focus on sexual non-response. In the linear models, sexual non-response is conceptualized as problems experienced in one or more of the phases (e.g., difficulties with arousal, desire; Basson et al., 2004). In Basson's model, not responding sexually in a given situation may be a function of problems with body image, relationship satisfaction, previous negative sexual experiences, etc. Models focused on sexual motivation avoid the concept of sexual non-response altogether, focusing on motivations to engage in sex as opposed to reasons why sexual activity may not be advantageous in certain

situations. These models do not answer the question why, even when all factors are supportive of the occurrence of sexual response, some individuals are still not sexually responsive or engage in sexual activity. The variability of men and women's sexual response is still not adequately accounted for in these models.

The Dual Control Model of Sexual Response (DCM; Bancroft & Janssen, 2000) conceptualizes both sexual response and non-response as normal dimensions of human life and identifies factors that may be responsible for individual variations in sexual response. In brief, the DCM proposes that individuals vary in their propensity for both sexual excitation (SE) and sexual inhibition (SI), that these propensities are related to how individuals respond sexually to different situations, and that these propensities are relatively stable over the course of a person's lifetime and may, at least in part, be genetically determined. Given the DCM's more balanced focus on sexual response and non-response and its normalization of human variability, this model was chosen to explain variations in sexual well-being in older women in Study 2 of this dissertation. The specific tenets of, and the literature pertaining to this model will be further discussed in Study 2.

Investigations of sexual well-being in older adults thus far have been dominated by medical models focused on age-related sexual changes and dysfunction (e.g., Parker, 2009; Syme, Klonoff, Macera, & Brodine, 2013). Some studies have moved beyond the medical model suggesting more complex models of older adult sexuality, incorporating demographic, biological, psychological, and interpersonal aspects (Delamater, 2012; Kirana et al., 2009); however, few studies have applied these models to understand mechanisms of sexual variability and sexual well-being in older adults. We are just starting to conceptualize older adults as individual sexual beings in their own right and breaking from the asexual ageist stereotypes that

have dominated our sociocultural discourses for decades. As the population ages and the increasingly liberalized beliefs and values gained from the sexual revolution and other sociocultural influences are carried into later life, these investigations become more and more relevant.

Purpose

This dissertation is primarily focused on exploring potential reasons for the diversity of sexual experiences reported in older adulthood. Study 1 of this dissertation involved a systematic review of the extant literature on factors related to sexual activity in adults 60 years of age and older. The purpose of this study was to reveal variables consistently associated with older adults' sexual activity to enhance understanding of the mechanisms behind variability in this area and clarify who is more likely to continue to engage in sexual activity in the later years of life. This study also described the overall landscape of the literature in this area, highlighting areas of foci as well as themes in studies' methodological shortcomings.

Study 2 built on the conclusions drawn from Study 1 by investigating the variability of midlife and older women's sexuality through the lens of the DCM (Bancroft & Janssen, 2000). In an effort to expand both the DCM literature and the knowledge regarding variables associated with sexual well-being in older adulthood, the purpose of this study was to examine if and how propensities for SE and SI are associated with variability in older women's sexual well-being specifically, in terms of sexual function, satisfaction, distress, breadth of sexual experiences, and frequency of sexual activity.

Sexual Activity After 60: A Systematic Review of Associated Factors[1]

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& Heather VanZuylen, B.A.

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Abstract

Introduction: Sexuality and the desire for affection and intimacy are important human features across the lifespan.

Aims: The purpose of this systematic review was to evaluate and synthesize the existing literature on factors associated with continued sexual activity in adults 60 years of age and older.

Methods: Three databases were used to select articles, 57 of which met selection criteria. Methodological quality was assessed and data were extracted from these studies by two independent reviewers according to standards proposed by The Cochrane Collaboration.

Main Outcome Measures: Studies were evaluated in terms of quality, included sexual activities, and identified related factors.

Results: Sexual activity was positively associated with past frequency of sexual behaviour and partner's interest in sexual activity. Decreased sexual activity (and/or cessation) was associated with the presence of erectile dysfunction and partner's illness. Noteworthy were significant inconsistencies of findings across studies and contrasting findings of generally assumed factors associated with sexual activity in later years (e.g., physical and mental health). However, increasing methodological quality was observed with more recent studies. Probable reasons for disparate findings are discussed and recommendations for methodological improvements are outlined focusing on population diversity, construct definitions, measurement and sampling techniques.

Conclusion: The literature on sexual activity in older adults is vastly heterogeneous with methodological caveats and inconsistent results evidenced across studies. Vigilant attention to methodology is essential as sexual activity in later life is multi-determined with amplified individual variability in older versus younger cohorts.

Introduction

The topic of sexuality in older adults has received increased attention in the popular media (Vares, 2009; Walz, 2002) and the research literature (Delamater & Koepsel, 2015). Acceptance of older adults as sexual persons has shifted the focus from dysfunction to a more comprehensive understanding of sexuality and the ability to experience sexual fulfillment while managing potential barriers imposed by ageing (Rheaume & Mitty, 2008). As an example, the introduction of erection-facilitating medications such as Viagra® has contributed to the substantive expansion of sexual medicine, but also initiated a previously non-existent public discourse on sexual function in mid- and later-adulthood in men – and perhaps the same can be expected for women with the recent FDA approval for Addyi® to treat low sexual desire in women. While older adults today have more options regarding sexual activity as the result of more approving public opinions, our understanding of what factors are associated with sexual activity in older adults, however, is still limited. This systematic review was conducted to evaluate and summarize the research literature on variables associated with sexual activity in adults 60 years of age and older.

Research on sexuality and ageing is diverse; on one end of the spectrum, studies investigate physiological function with a direct or implied focus on the treatment of sexual problems (e.g., Blümel et al., 2009; Laumann, Das, & Waite, 2008; Laumann et al., 2005; Nicolosi et al., 2005; Wang et al., 2015). On the other end, researchers focus on the qualitative presentation of the considerable range in which sexual activity is expressed by older adults (e.g., Gott & Hinchliff, 2003; Rose & Soares, 1993; Tzeng, Lin, Shyr, & Wen, 2003). Much information can be gleaned from the existing research; however, some studies present with significant methodological shortcomings that preclude conclusions. Nevertheless, the authors

expected that an investigation of common themes of the more rigorous studies would assist in the formation of general conclusions with the potential of guiding future research. In order to identify these studies a systematic review of the literature was conducted. A systematic review was chosen over a meta-analysis because of the heterogeneity of methodologies employed in the reviewed studies and in order to include the analysis of qualitative literature.

The protocols for this systematic review were adapted from the standards proposed by The Cochrane Collaboration (Higgins & Deeks, 2008) together with guidelines suggested by Wright and colleagues (2007). This systematic review used a transparent and rigorous approach to provide critical analysis of studies that addressed the research question: “What factors are associated with sexual activity in adults 60 years of age and older?” In this article the authors review the search and selection criteria as well as the quality assessment of selected studies, present an overview of the areas of focus in these studies, report a synthesis of studies’ general research findings, highlight methodologic strengths and challenges, and conclude by directly addressing the research question using the highest quality studies. Sexual activity in the context of this systematic review was defined as caressing, foreplay, solitary or mutual masturbation, oral-genital sexual activities, and anal or vaginal intercourse.

Method

Search Strategy

Publications were retrieved by an initial computerised search of PsycINFO (1806-2011), Web of Science (1898-2011), and AARP Ageline (1978-2011) using the following search string: (sexual* or intercourse or masturbation) and (activity or behavior or behaviour or function or expression or habit* or regular* or frequency or routine*) and (elderly or old age or older adult or senior or aging or geriatric or gerontology) not (adolescent or child* or teen). In 2016, this

search was updated. Both searches returned a combined total of 5,652 results. RefWorks, a web-based bibliography and database manager, was employed to manage the search content.

Selection Criteria

In order to reduce the number of studies included in this systematic review, specific inclusion criteria were used. Studies were included if the following conditions were met: 1) the paper was a full report, published in English, in a peer reviewed journal; 2) information was presented on physical, psychological, social, and/or demographic factors relating to sexual activity in older adults; and 3) participants were 60 years of age or older. Studies were also included if they incorporated a broader age sampling, so long as adults 60+ were differentiated in the analyses.

Consistent with the protocols for systematic reviews proposed by The Cochrane Collaboration (Higgins & Deeks, 2003), together with guidelines suggested by Wright et al., (2007), two reviewers were chosen in order to minimize bias in the selection of articles for the review. Reviewers were the first author (S.B.), a Ph.D. candidate in clinical psychology and the third author (L.H.), a registered sex therapist. During the initial selection process, duplicate articles were first removed and remaining articles were then screened by each reviewer using the selection criteria by title, then by abstract, and then by full article. Articles were only excluded at each level of analysis if they failed to meet one or more of the inclusion criteria (e.g., if the title indicated a study on the sexual behaviours of animals it was excluded). If the available information was ambiguous in any respect, the article was retained. A second verification of inclusion criteria of selected articles was conducted by S.B. and inconsistencies were identified and resolved during consensus meetings. Each reviewer presented the rational for the inclusion/exclusion of the article and corroborating evidence was collaboratively searched in the

article or title/abstract depending on the stage of exclusion. During the updated selection process, articles were screened by the first author (S.B.) by title, then by abstract, and then by full article in consultation with the fourth author (H.V.; Ph.D. candidate in experimental psychology focusing on sexuality and ageing).

Quality Assessment

Following the extraction of the research papers directly pertinent to the research question, the second phase of the systematic review involved the assessment of methodological quality of the studies. The first and fourth author reviewed the papers using Kmet, Lee, and Cook's (2004) standard quality assessment criteria for evaluating primary research papers from a variety of fields to evaluate qualitative and quantitative studies included in this review. Quantitative studies were rated on research question, study design, participant selection, sample description, random assignment, investigator blinding, participant blinding, outcome measures, sample size, analytic methods, estimate of variance, confound control, results, and conclusions (Kmet et al., 2004). Qualitative studies were rated on the research question, study design, context, theoretical framework, participant selection, data collection methods, data analysis, verification procedures, conclusions, and reflexivity. Quantitative and qualitative studies were given a score of 0, 1, or 2 for each of the quality criteria. The quality assessment forms were reviewed by S.B. and disagreements between reviewers on individual items were identified, and then solved during scheduled, face-to-face consensus meetings which were conducted identically to the first stage consensus meetings. Subsequently, quality scores were computed for each article by summing the codes for each item of the quality assessment criteria and dividing this score by the number of applicable items. The studies were then ranked according to their total quality score (as a percentage of the maximum attainable score). Studies that incorporated both quantitative and

qualitative data were evaluated using both sets of quality assessment criteria and ranked accordingly.

Data Extraction

Data were collected from each study that met inclusion criteria via a pre-defined data extraction form implemented by two reviewers (S.B. and H.V.). This form was first piloted on a sub-sample of five studies by the first author. The data extracted included: sampling procedure, study setting, sample size, participant characteristics, study design, sexual activities measured, methods of data collection, whether measures were empirically validated, interventions, statistical analyses, and study findings. For studies with analyses on the same data set, unique findings were reported for each study and overlapping findings were classified as one finding for the purposes of this review. For studies that did not include sufficient statistical information in their reported results, statistical analyses on the provided data were conducted and results of these analyses were reported accordingly. The data extraction forms were reviewed by S.B. and any disagreements were collaboratively investigated and resolved in scheduled, face-to-face consensus meetings.

Results

Included Studies

The initial database search produced 4,824 results and the updated database search produced 828 results. Once removing duplicate articles, a total of 5,121 article titles were screened, 2,780 abstracts were examined for relevance, 840 full-records were reviewed, and 57 studies met inclusion criteria for this review. The methodological quality of the included studies varied considerably (see Tables 1 and 2) and the main findings of the selected studies are reported in Table 3.

Table 1.

Quality Analysis of Quantitative Studies

Authors. Year. Country	Quality (/100)	Deductions
Beckman et al. 2014. Sweden	100	None
Corona et al. 2010. Europe	100	None
Herbenick et al. 2010b. USA	100	None
Hyde et al. 2010. Australia	100	None
Karraker & Delamater. 2013. USA	100	None
Lee et al. 2013. Europe	100	None
Emmelot-Vonk et al. 2009. Netherlands	95.8	8
Arias-Castillo et al. 2009. Colombia	95.5	8
Bretschneider & McCoy. 1988. USA	95.5	8
Holden et al. 2014. Australia	95.5	12
Lindau et al. 2007. USA	95.5	12
Palacios-Cena et al. 2011. Spain	95	8
Chen et al. 2007. Taiwan	90.9	3, 12
Momtaz et al. 2014. Malaysi	90.9	12, 14
Killinger et al. 2014. USA	90	4, 12
Momtaz et al. 2013. Malaysia	86.4	4, 12, 14
Wong et al. 2009. China	86.4	3, 8, 12
Malakouti et al. 2013. Iran	85	3, 8, 13
Delamater et al. 2008. USA	81.8	8, 10, 11, 12
Weizman et al. 1983. Israel	79.2	3, 4, 8, 10, 12
Antonovsky et al. 1990. Israel	77.2	3, 4, 8, 12
Chew et al. 2009. Australia	77.2	3, 8, 10, 12
Ginsberg et al. 2005. USA.	77.2	3, 4, 8, 10, 13
Herbenick et al. 2010a. USA	77.2	4, 10, 12, 14
Liu et al. 2010. Taiwan	77.2	3, 10, 12, 14
Helgason et al. 1996. Sweden	72.7	4, 8, 10, 11, 12, 13
Leigh et al. 1993. USA	72.7	4, 10, 11, 12, 13
Papaharitou et al. 2008. Greece	72.7	8, 10, 12, 13, 14
Persson & Svanborg. 1992. Sweden	72.7	8, 9, 10, 14
Pfeiffer et al. 1968. USA	72.7	4, 10, 11, 12, 13
Freixas et al. 2015. Spain	70	2, 4, 8, 10, 12, 13
Galinsky et al. 2014.USA	70	9, 10, 12, 13, 14
Valadares et al. 2013. Brazil	70	3, 4, 8, 12, 13
Chao et al. 2011.Taiwan	68.2	4, 10, 12, 13, 14
Verwoerdt et al. 1967. USA	68.2	9, 10, 12, 13, 14
Pfeiffer et al. 1972. USA	63.6	3, 8, 10, 11, 12, 13, 14
Tsatali & Tsolaki. 2014. Greece	63.6	3, 4, 8, 10, 11, 12, 13, 14
Weizman & Hart. 1987. Israel	63.6	8, 9, 10, 11, 12, 14
Adams & Turner.1985. USA	60	2, 3, 4, 8, 10, 12, 13
Cogen & Steinman. 1990. USA	59.1	4, 8, 10, 11, 12, 13
Smith et al. 2007. USA	59.1	4, 9, 10, 11, 12, 13, 14,
Christenson & Johnson. 1973. USA	54.5	4, 8, 9, 10, 11, 13, 14
Conway-Turner. 1992. USA	54.5	2, 4, 8, 9, 10, 11, 12, 13, 14
Finkle et al. 1959. USA	54.5	3, 8, 10, 11, 12, 13, 14
Kahn & Fisher. 1967. USA	50	3, 4, 8, 9, 10, 12, 13, 14
Koskimaki et al. 2000. USA	50	2, 3, 4, 8, 10, 11, 12, 13, 14
Mulligan & Moss. 1991. USA	50	3, 8, 10, 11, 12, 13, 14
Bergstrom-Walan & Nielsen. 1990. Sweden	40.9	2, 3, 4, 8, 10, 11, 12, 13, 14
Steinke. 1994. USA	40.9	3, 4, 8, 9, 10, 11, 12, 13, 14
Stenberg et al. 1996. Sweden	40.9	3, 4, 8, 11, 12, 13, 14
Weinstein & Rosen. 1988. USA	40.9	1, 2, 3, 4, 8, 10, 11, 12, 13, 14
Bowers et al. 1963. USA	36.4	3, 4, 8, 9, 10, 11, 12, 13, 14

De Nigola & Peruzza. 1974. Italy	15	1, 2, 3, 4, 8, 10, 11, 12, 13, 14

Note. 1 = research question; 2 = study design; 3 = participant selection; 4 = sample description; 5 = random assignment; 6 = investigator blinding; 7 = participant blinding; 8 = outcome measures; 9 = sample size; 10 = analytic methods; 11 = estimate of variance; 12 = confound control; 13 = results; 14 = conclusions.

Table 2.

Quality Analysis of Qualitative Studies

Authors. Year. Country	Quality (/100)	Deductions
Crowther & Zeiss. 1999. USA	100	
Gusta. 2011. Zimbabwe	85	6, 7, 10
Litz et al. 1990. USA	85	6, 7, 10
Fileborn et al. 2015. Australia	80	8, 10
Conway-Turner. 1992. USA	50	3, 4, 6, 7, 8, 9, 10
Kahn & Fisher. 1967. USA.	40	1, 2, 4, 6, 7, 8, 9, 10

Note. 1 = research question; 2 = study design; 3 = context; 4 = theoretical framework; 5 = participant selection; 6 = data collection methods; 7 = data analysis; 8 = verification procedures; 9 = conclusions; 10 = reflexivity.

Table 3.

Results of Reviewed Studies

Authors. Year. Country	Design	Sample Size and Gender	Age Range	Relevant Measures	Sexual Activity	Significant Related Factors	Non-Significant Related Factors	Qualitative Related Factors
Adams & Turner.1985. USA	CS	102 M/ F	60-85	-NVQ	Intercourse		(•)Gender	
					Masturbation**	(+)Social economic status (±)Marital status (-)Church attendance	(•)Gender (•)Marital status (•)Church attendance	
Antonovsky et al. 1990. Israel	CS	298 M/F	65-85	-NVQ	Intercourse**	(±)Marital status (+)Physical health (+)Relationship satisfaction (+)Sexual desire now (+)Importance of sex now (+)Sexual satisfaction in 50s (+)Sexual satisfaction in 20-30s (+)Sexual desire in 20-30s (+)Frequency of intercourse in 20-30s (-)Age (±)Ethnicity (±)Gender	(•)Self-reported illness (•)Relationship satisfaction (•)Sexual satisfaction in 20-30s (•)Ethnicity	
Arias-Castillo et al. 2009. Columbia	CS	78M/F Total: 136	65-90 Total: 52-90	-NVQ	Intercourse	(±)Gender (±)Marital status		
					Masturbation	(±)Gender	(•)Marital status	
Beckman et al. 2014. Sweden	COH	1407M/F	70	-NVQ	Intercourse**	(±)Gender (+)Cohort (+)Positive attitude toward sexuality (+)Sexual debut before the age of 20 (+)Strong sexual desire in young adulthood (+)Premarital sexuality (+)Very happy relationship (+)Physically healthy partner (+)Mentally healthy partner (-)Partner 3+ years older (+)Partner 3+ years younger (-)More than one physical illness	(•)Sexual debut before the age of 20 (•)Strong sexual desire in young adulthood (•)Premarital sexuality (•)Partner 3+ years older (•)Partner 3+ years younger (•)More than one physical illness (•)Hypertension (•)Prostate problems (•)Chronic obstructive pulmonary disease (•)Depression (•)Marital status	

						(-)Coronary heart disease (-)Diabetes (-)Chronic obstructive pulmonary disease (+)Interviewer-rated good mental health (-)Depression (±)Marital status (+)Satisfied with sleep (-)Lifetime smoker (+)Alcohol intake >3 times per week	(•)Divorced at any time (•)Satisfied with sleep (•)Current smoker (•)Lifetime smoker (•)Higher education
Bergstrom-Walan & Nielsen. 1990. Sweden	CS	509M/F	60-80	-NVQ	Intercourse*	(-)Age (±)Civil status (±)Gender	(•)Religiosity (•)Gender
					Masturbation*	(±)Gender (-)Age	(•)Religiosity (•)Civil status
					Mutual sexual stimulation		(•)Gender
Bowers et al. 1963. USA	CS	157M	60-74	-NVQ -Physiological measures	Intercourse*	(-)Age (-)Urinary abnormalities	(•)Age (•)Urological symptoms (•)Urological diseases (•)Number of children (•)Prostatic abnormalities (•)Testicular abnormalities (•)Non-urologic diseases (•)Past history of venereal disease
Bretschneider & McCoy. 1988. USA	CS	202M/F	80-102	-NVQ	Intercourse	(±)Gender (+)Past frequency of intercourse (+)Present income (+)Past guilt over sexual feelings (+)Past importance of sex (±)Marital status (+)Engagement in extramarital sex (+)Present masturbation (+)Touching and caressing (+)Breast sucking (give/receive) (+)Receiving genital petting	(•)Age (•)Years of education (•)Physical and mental health (•)Present guilt over sexual feelings (•)Perceived environmental interference

						(+)Petting others' genitals (+)Performing oral sex (+)Receiving oral sex	
					Masturbation	(±)Gender (+)Past frequency of masturbation (+)Present income (+)Engagement in extramarital sex (+)Breast sucking (+)Petting others' genitals (+)Receiving genital petting (+)Performing oral sex (+)Receiving oral sex (+)Touching and caressing	(•)Age (•)Years of education (•)Physical and mental health (•)Past guilt over sexual feelings (•)Present guilt over sexual feelings (•)Perceived environmental interference (•)Past importance of sex
					Touching and caressing	(±)Age (±)Gender (+)Past frequency of touching/caressing (+)Present income (+)Past importance of sex (±)Marital status (+)Engagement in extramarital sex (+)Church attendance (+)Breast sucking (give/receive) (+)Petting others' genitals (+)Receiving genital petting (+)Performing oral sex (+)Receiving oral sex	(•)Years of education (•)Physical and mental health (•)Past guilt over sexual feelings (•)Present guilt over sexual feelings (•)Perceived environmental interference
					Breast sucking	(+)Petting others' genitals (+)Receiving genital petting (+)Performing oral sex (+)Receiving oral sex	
					Petting others' genitals	(+)Receiving genital petting (+)Performing oral sex (+)Receiving oral sex	
					Receiving genital petting	(+)Performing oral sex (+)Receiving oral sex	
					Performing oral sex	(+)Receiving oral sex	
Chao et al. 2011. Taiwan	CS	136M/F Total:	65+ Total:	-Interviews -NVQ	Intercourse	(-)Age	
					Masturbation	(-)Age	

		283	45-75+		Mutual stroking	(-)Age		
Chen et al. 2007. Taiwan	COH LONG	2,453M/F	65+	-NVQ -Chart review -Physical examination -Laboratory tests	Intercourse**	(±)Gender (-)Mortality (-)BMI (-)Systolic blood pressure (+)Diastolic blood pressure (-)Smoker (+)Alcohol drinker (-)Diabetes (-)Stroke (-)Disability	(•)BMI (•)Systolic blood pressure (•)Diastolic blood pressure (•)Cholesterol (•)Smoker (•)Alcohol drinker (•)Cardiovascular disease	
Chew et al. 2009. Australia	CS	587M Total: 1,580	65-99 Total: 20-99	-NVQ	Intercourse	(-)Age (-)Erectile dysfunction		
Cogen & Steinman. 1990. USA	CS	87M	60+	-NVQ -Interviews	Intercourse	(-)Erectile dysfunction		
Conway-Turner. 1992. USA	CS QUAL	26F	60-93	-NVQ -Interviews -Culture Free Self Esteem Inventory	Intercourse	(-)Self-esteem		
Corona et al. 2010. Europe	CS COH	1,669M Total: 3,369	60-79 Total: 40-79	-NVQ -Medical exam	Intercourse Masturbation Kissing, Petting, etc.	(-)Age (-)Age (-)Age		
Crowther & Zeiss. 1999. USA	QUAL	1F	78	-Interview -Chart review -Nurse reports	Masturbation			(+)Cognitive Behavioural Therapy
Christenson & Johnson. 1973. USA	CS	14F Total: 71	60+ Total: 50+	-Interviews	Coitus Masturbation		(•)Marital status (•)Marital status	
De Nigola & Peruzza. 1974. Italy	NR	85M/F	62-81	NR	Intercourse Masturbation	(-)Age (±)Gender		
Delamater et al. 2008. USA	COH	6,279 M/F	62-67	-Interviews -NVQ -Center for Epidemiological Studies Depression scale	Intercourse	(-)Partner illness (+)Partner interest	(•)Physical health (•)Psychological distress (•)Pain with intercourse (•)Level of discomfort (•)Personal illness (•)Personal interest (•)Time spent alone (•)Feeling loved	

							(•)Frequency of disagreements (•)Relationship satisfaction	
Emmelot-Vonk et al. 2009. Netherlands	CS	223M	60-80	-Physical measurements -Eleven Questions on Sexual Functioning	Masturbation***	(+)Baseline testosterone level	(•)Baseline testosterone level (•)Testosterone treatment	
Fileborn et al. 2015	QUAL	3F Total:15	71, 71, 81 Total: 55-81	-Interviews	Masturbation			(-)Lack of arousal due to lack of men in life (-)Lack of intimacy/emotional closeness
					Intercourse			(+)Desire for release (-)Sadness/loss related to not having a partner (-)Lack of satisfaction with sexual talents of partner/partner not meeting intimacy needs (-)Sexual pain
Finkle et al. 1959. USA	CS	85M Total: 101	60-86 Total: 55-86	-Interviews -NVQ	Intercourse	(-)Age (±)Marital status	(•)Occupation	(-)No desire (-)No partner (-)No erection (-)Partner refuses
Freixas et al. 2015. Spain	QUAL CS	237F Total: 729	60-70+ Total 50-70+	-Focus groups -NVQ	Intercourse	(-)Age		
					Masturbation	(-)Age (-)Previous masturbation		
					Mutual Masturbation	(-)Age		
					Oral Sex	(-)Age		
					Anal sex		(•)Age	
Galinsky et al. 2014. USA	COH LONG	3,377M/F	62-91	-Interviews -NVQ	Intercourse	(±)Gender		
Ginsberg et al. 2005. USA	CS	166M/F	61-91	-NVQ	Intercourse	(+)Living with partner		
					Masturbation		(•)Living with partner	

					Mutual stroking	(+)Living with partner		
Gusta. 2011. Zimbabwe	QUAL	6M/F	63-83	-Interviews	Intercourse			(-)Age (+)Viewing sexuality as a key component of married life and having to fulfill marital obligations (+)Traditional aphrodisiacs (+)Reproduction potential (+)Availability of multiple partners
Helgason et al. 1996. Sweden	CS	253M Total: 319	60-80 Total: 50-80	-NVQ	Intercourse	(-)Age		
					Orgasm	(-)Age		
Herbenick et al. 2010a. USA	CS	1,055M/F Total: 5,865	60-94 Total: 14-94	-NVQ	Masturbation (alone)**	(-)Age (±)Gender	(•)Age	
					Masturbation (w/ partner)**	(-)Age	(•)Age (•)Gender	
					Receive oral from F partner**	(-)Age	(•)Age (•)Gender	
					Receive oral from M partner**	(-)Age	(•)Age (•)Gender	
					Give oral to F partner		(•)Age (•)Gender	
					Give oral to M partner**	(-)Age	(•)Age (•)Gender	
					Vaginal intercourse**	(-)Age (±)Gender	(•)Age (•)Gender	
					Anal sex (insert)		(•)Age	
					Anal sex (receive)		(•)Age	
Herbenick et al. 2010b. USA	CS	207F Total: 2,523	60-92 Total: 18-92	-NVQ	Masturbation (alone)**	(±)Relationship status	(•)Relationship status (•)Health	
					Masturbation (w/ partner)	(±)Relationship status	(•)Health	
					Receive oral	(±)Relationship status	(•)Health	
					Give oral**	(±)Relationship status (+)Health	(•)Health	
					Vaginal intercourse**	(±)Relationship status (+)Health	(•)Health	
					Anal sex		(•)Relationship status (•)Health	

Holden et al. 2014. Australia	CS	2,821M Total: 5990	60-98 Total: 40-98	-Interviews -NVQ	Orgasm	(-)Age (+)Good health		
Hyde et al. 2010. Australia	COH	2,783M	75-95	-NVQ -Geriatric Depression Scale -Patient Health Questionnaire -Physiological measures	Sexual activity	(-)Age (+)Living with partner (-)Partner disinterested in sex (-)Partner has physical limitations (+)Non-English speaking background (-)Osteoporosis (-)Coronary heart disease (-)Heart failure (-)Arterial fibrillation (-)Prostate cancer (-)Prostatectomy (-)Leg ulcer (-)Eye disorder (-)Diabetes (-)Depression (-)Anti-depressant use (-)β – blocker use (-)Diuretic use (-)Smoking (+)Drinks alcohol	(•)Education (•)BMI (•)Arthritis (•)Sleep apnea (•)Insomnia (•)Pulmonary disease (•)Benign prostatic hypertrophy (•) “Other” cancer in last five years (•)Dementia (•)Stroke (•)Epilepsy (•)Parkinsons (•)Thyroid disorder (•)Irritable bowel syndrome (•)Hypertension (•)Dyslipidemia (•)Neuroleptic use (•)α – blocker use	
Kahn & Fisher. 1967. USA	CS QUAL	26M	71-96	-Interviews -Physiological measures	Sexual activity		(•)Age (•)Marital status (•)Full nocturnal erections	(+)Partner’s health (-)Age
Karraker & Delamater. 2013. USA	CS COH	842M/F Total: 1,502	65-85 Total: 65-85	-Interviews -NVQ	Sexual activity	-Age		
Killinger et al. 2014. USA	CS	2,42M/F	60+	-NVQ -Sexual Health Inventory for Men -Abbreviated Sexual Function Questionnaire	Sexual activity**	(±)Marital status (+)Satisfaction with sex life (+)Alcohol use (-)Incontinence (+)Overall health (+)Mobility (+)Sexual function (-)Hormone replacement therapy (-)Erectile “difficulty” (-)Erectile dysfunction	(•)Drinking coffee (•)Alcohol use (•)Incontinence (•)Mobility	

						(+)Use of erectile assistance		
Koskimaki et al. 2000. Finland	CS COH	1,194M Total: 1,983	60, 70 Total: 50, 69, 70	-NVQ	Intercourse	(-)Age		
Lee et al. 2013. Europe	COH	1,504M	60-79	-NVQ -Physical exam	Masturbation		(•)Frailty	
Leigh et al. 1993. USA	CS	4,46M/F Total: 2,058	60+ Total: 18+	-Interviews -NVQ	Intercourse	(-)Age		
Lindau et al. 2007. USA	COH CS	1,985M/F Total: 3,005	65-85 Total: 57-85	-NVQ -Physiological measures	Sexual activity** Oral sex** Masturbation**	(±)Gender (-)Age (-)Age	(•)Gender (•)Age (•)Age	
Litz et al. 1990. USA	QUAL	1M	72	-Interview	Masturbation Manual stimulation			(-)Partner's health (+)Partner's dementia
Liu et al. 2010. Taiwan	CS	201M Total: 744	60-87 Total: 43-87	-NVQ -Physiological measures	Intercourse	(-)Age		
Malakouti et al. 2012. Iran	CS	390M/F	60-82	-Interviews -NVQ	Masturbation	(±)Gender		
Momtaz et al. 2013. Malaysia	CS	1,046M/F	60-92	-Interviews -NVQ -MMSE	Intercourse	(-)Mild cognitive impairment (-)Hypertension (-)Gastritis (-)Arthritis (-)Visual Problem (±)Gender (-)Age (+)Education	(•)Diabetes (•)Income (•)Education (•)Arthritis (•)Visual problem	
Momtaz et al. 2014. Malaysia	CS	1,036M/F	60-92	-Interviews -NVQ	Intercourse	(-)Age (±)Gender (+)Smaller household size (+)Having own room (+)Sleeping together (-)More medical conditions (+)Higher income (+)More education (±)Ethnicity	(•)Income (•)Ethnicity	
Mulligan & Moss. 1991. USA	CS	206M Total: 427	60-99 Total: 30-99	-NVQ	Oral sex Touching and caressing Masturbation		(•)Age (•)Age (•)Age	

Palacios-Ceña et al. 2011. Spain	CS COH	1,939M/F	65+	-NVQ	Intercourse Oral sex Masturbation	(-)Age (±)Gender (-)Age (±)Gender (-)Age (±)Gender		
Papaharitou et al. 2008. Greece	CS	454M/F	60-90	-NVQ	Intercourse* Masturbation	(-)Age (-)Years of marriage (+)Education (+)Income (-)Arranged marriage (±)Gender	(•)Gender (•)Education (•)Economic status (•)Place of residence (•)Age	(-)Health problems (-)Lack of sexual desire (-)Impotence
Persson & Svanborg. 1992. Sweden	LONG	81M	75	-NVQ -Interviews -Chart review -Physiological measures	Intercourse	(-)Age (-)Heart volume (-)Systemic hypertension (-)Low breathing capacity (-)Vasculogenic factors and stresses (+)S-total iron binding capacity (+)Lower P-protein (+)Lower S-phosphate	(•)Systolic, diastolic and mean arterial blood pressure (•)Heart rate (•)Ischemic heart disease (•)Congestive heart failure (•)Diabetes (•)Hypertriglyceridemia (•)Education (•)Socioeconomic status (•)Physical activity at least 4 hrs/week (•)Social contact (•)Body weight, BMI, waist girth (•)Subscapular skin fold (i.e., body fat) (•)P-bilirubin, P-ALAT, P-ASAT, P-ALP (•)On medications (•)Smoking (•)Psychiatric issues	(-)Lack of ability (-)Own illness (-)Loss of interest
Pfeiffer et al. 1972. USA	CS	223M/F Total: 502	61-71 Total: 46-71	-NVQ	Intercourse	(±)Gender	(•)Age	
Pfeiffer et al. 1968. USA	LONG	254M/F	60-94	-Interviews -Physiological measures	Intercourse*	(-)Age	(•)Age	(-)Death of partner (-)Partner's illness (-)Partner's loss of interest (-)Partner's loss of potency

								(-)Own illness (-)Own loss of interest (-)Own loss of potency
Smith et al. 2007. USA	CS	50M/F	70+	-Interviews	Sexual activity		(•)Gender	
Steinke. 1994. USA (Two Studies)	CS	177M/F	60-83	-NVQ	Sexual activity		(•)Gender	
	CS	127M/F	60-86	-NVQ	Sexual activity		(•)Gender	
Stenberg et al. 1996. Sweden	CS	1076F	61	-NVQ	Intercourse	(±)Marital status		
Valadares et al.2013. Brazil	CS COH	380F Total: 622	60+ Total: 50+	-Interviews -NVQ	Coitus	(-)Age		
Verwoerdt, et al. 1967. USA	CS	254M/F	60-94	-Interviews -Physiological measures	Intercourse	(±)Gender (+)Sexual interest (±)Marital status (-)Age	(•)Age	
Tsatali & Tsolaki. 2014. Greece	CS	265M/F	60-85	-Interviews -Questionnaires -Chart review	Intercourse	(±)Gender		
Weinstein & Rosen. 1988. USA	CS	314M/F	60-80	-Senior Adult Sexuality Scales	Sexual activity	(+)Living in an age segregated community (±)Gender		
Weizman et al. 1983. Israel	CS	72M	60-70	-Interviews -Physiological measures	Intercourse	(-)Prolactin		
Weizman & Hart. 1987. Israel	CS	81M	60-71	-Interviews -Physiological measures	Intercourse		(•)Age	
					Masturbation	(-)Age		
Wong, et al. 2009. China	CS	1,556M	65-92	-Interviews -NVQ -International Prostatic Symptoms Score -Geriatric Depression Scale Index of Erectile Function -Physical	Intercourse	(-)Age (-)BMI (+)Physical activity (±)Relationship status (-)Stroke (-)LUTS (-)Peripheral arterial disease	(•)Education (•)Heart issues (•)Hypertension (•)Use of blood pressure medications (•)Diabetes (•)Depression (•)Beta blocker medications (•)Anti-androgen medications (•)Use of SSRI's (•)Use of tricyclic	

	Activity Scale for the Elderly Questionnaire -Physiological measures		antidepressants

Note. CS = cross-sectional; COH = cohort; QUAL = qualitative; LONG = longitudinal; NVQ = non-validated questionnaire; NR = not reported; LUTS = lower urinary tracts symptoms; SSRI = selective serotonin reuptake inhibitors; ALAT = alanine aminotransferase; ASAT = aspartate aminotransferase; ALP = alkaline phosphatase; BMI = body mass index; (±) 2+ categorical factor; (+) positively associated factors; (-) negatively associated factors; (•) non-associated factors.

* some factors are in both "significant" and "non-significant" columns because of the varying definitions of the sexual behaviours present in the study.

** some factors are in both "significant" and "non-significant" columns because significance of associations changed among sub-groups of participants investigated.

*** some factors are in both "significant" and "non-significant" columns because significance of associations changed when different variables were controlled for in statistical analyses.

Study Characteristics

Of the 57 included studies, 16 distinct countries and one continent are represented. Studies conducted in the United States constituted 46% of the reviewed studies. Forty-four percent were conducted before the year 2000. Studies that investigated correlates of sexual activity in both males and females, only males, and only females constituted 53%, 33%, and 14% respectively and the majority of studies used a quantitative study design (93%). Sample sizes ranged from a single participant to 3,377 participants and included individuals from ages 60 and above. The analysis in 67% of studies focused on the age group of 60 years and older exclusively, while 33% included a broader age sample with a subsection focusing on older adults. Few studies included standardized measures of assessment (Beckman, Waern, Östling, Sundh, & Skoog, 2014; Corona et al., 2010; Herbenick et al., 2010b); non-validated interviews and/or questionnaires were present in almost all of the included studies.

Quality Analysis

Each study was assigned a methodological quality score (see Tables 1 and 2) that was derived from Kmet et al.'s (2004) quality assessment criteria. Values for the quality scores ranged from 15% to 100%. For the studies that employed quantitative methodologies, the mean, median, and mode quality scores were 72.8% (*SD*: 20.8), 72.7%, and 100% respectively. More specifically, Figure 1 illustrates the number of studies that received point deductions for each of the evaluated quality criteria. In terms of relative weaknesses of the reviewed studies, the majority of quantitative studies received "1" or "0" codes on the quality criteria pertaining to outcome measures, analytic methods, and confound control (58%, 56%, and 68% respectively). None of these studies included a randomized control design; therefore, the quality assessment criteria regarding assignment to groups and blinding procedures (criteria 5, 6, and 7) were not

relevant for the purposes of this review. A relative strength in the quantitative studies was sufficient description of the research question, which was present in 96% of the studies. Regarding the studies that employed qualitative methodologies, the quality scores as well as the specific items that negatively impacted these scores can be found in Table 2, cited previously.

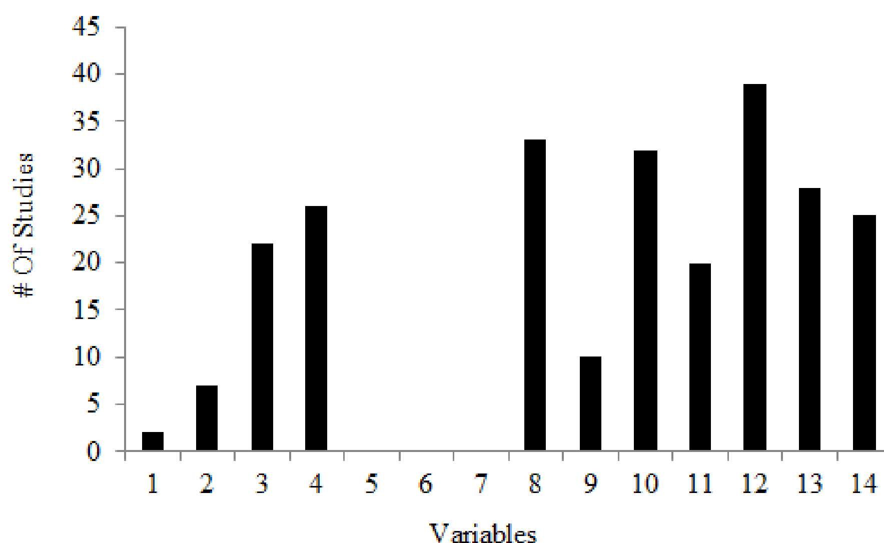

Figure 1. Point deductions for quantitative studies on specific quality assessment criterion. 1 = research question; 2 = study design; 3 = participant selection; 4 = sample description; 5 = random assignment; 6 = investigator blinding; 7 = participant blinding; 8 = outcome measures; 9 = sample size; 10 = analytic methods; 11 = estimate of variance; 12 = confound control; 13 = results; 14 = conclusions.

Defining Sexual Activity

The definitions for sexual activity and behaviours varied across studies, although a strong focus on penile-vaginal intercourse was observed. Seventy-four percent of studies included analyses of possible factors related to sexual intercourse. Masturbation was investigated in 30% of studies. Only 23% of studies included analysis of sexual behaviours other than intercourse and/or masturbation. Sixteen percent of studies included analyses on an inclusive definition of "sexual activity" that incorporated a range of specified behaviours within the one construct.

In 65% of studies, researchers focused on factors related to a single type of sexual activity in 16% on two types, and 19% of reviewed studies included analyses of more than two

different types of sexual behaviour. The absence or presence of sexual behaviour was generally identified in studies using non-validated, frequency-related items that pertained to a specific time frame (e.g., past week, month, three months, year). More rigorous, empirically validated measures of sexual activity were employed in only five percent of the reviewed studies.

Factors Related to Sexual Activity

The 57 selected studies contained a total of 469 findings (average = 8.23/study, range 1-67) with demographic factors receiving the most research attention. Tests of associations between demographic factors and sexual activity were present in 78% of studies; age and gender representing the most common analysis in 54% and 39% of studies respectively. Examinations of possible physical and psychological correlates to sexual activity were the second and third most frequent targets of investigation in 44% and 26% of studies respectively. Analysis of additional variables was relatively limited. Tests of association between partner/relationship factors were present in 18% of studies. An examination of lifestyle factors (i.e., smoking, drinking, and weekly physical exercise) and their associations with sexual activity were present in 14% of studies. Further, possible developmental correlates (e.g., past frequency of intercourse, past importance of sex, past sexual satisfaction) and current sexual activity were examined in only 7% of reviewed studies.

Several important relationships emerged from the reviewed literature. Table 4 illustrates the statistically significant and qualitative factors identified in this review that were related specifically to sexual activities as well as the direction of these relationships. This table reflects variables consistently related to sexual activity across more than one study as well as single-study findings that were not disputed by the other reviewed studies. Highlighting the consistently related factors in the table, sexual activity was positively associated with past frequency of

sexual behaviour (Chew, Bremner, Stuckey, Earle, & Jamrozik, 2009; Cogen & Steinman, 1990; Freixas, Luque, & Reina, 2015) and partner's interest in sexual activity (Delamater, Hyde & Fong, 2008; Finkle, Moyers, Tobenkin, & Karg, 1959; Hyde et al., 2010; Pfeiffer, Verwoerdt, & Wang, 1968). Decreased sexual activity (and/or cessation) was associated with the presence of erectile dysfunction (Chew et al., 2009; Cogen & Steinman, 1990; Finkle et al., 1959; Killinger, Boura, & Diokno, 2014; Pfeiffer et al., 1968) and partner's illness (Delamater et al., 2008; Hyde et al., 2010; Kahn & Fisher, 1969; Litz, Zeiss, & Davies, 1990; Pfeiffer et al., 1968).

Table 4.

Specific Sexual Activities and Related Factors

Factors	Intercourse	Masturbation	"Sexual Activity"	Other Sexual Behaviours
Demographic	(+)Living with partner (-)Years of marriage (+)Later age cohort	(+)Social economic status	(+)Living with partner (+)Non-English speaking background (+)Living in an age segregated community	(+)Living with partner (+)Present income (-)Church attendance
Physical	(-)Urinary abnormalities (-)Mortality (-)Erectile dysfunction (-)Heart volume (-)Vasculogenic factors and stresses (+)S-total iron binding capacity (+)Lower P-protein (+)Lower S-phosphate (-)Lack of ability (-)Stroke (-)LUTS (-)Peripheral arterial disease (+)Traditional aphrodisiacs (*vhuka-vhuka)* (+)Reproduction Potential (-)Coronary heart disease (-)Mild cognitive impairment (-)Gastritis (-)Disability		(-)Osteoporosis (-)Coronary heart disease (-)Heart failure (-)Arterial fibrillation (-)Prostate cancer (-)Prostatectomy (-)Leg ulcer (-)Eye disorder (-)Diabetes (-)Anti-depressant use (-)β – blocker use (-)Diuretic use (+)Physical health (+)Sexual function (+)Hormone replacement therapy (-)Erectile "difficulty" (-)Erectile dysfunction (+)Use of erectile assistance	
Psychological	(+)Sexual desire (current) (+)Importance of sex (current) (-)Self-esteem (+)Viewing sexuality as a key component of married life and having to fulfill marital obligations (+)Positive attitude toward sexuality (+)Desire for release	(+)Cognitive Behavioural Therapy (-)Lack of emotional closeness (-)Lack of arousal due to lack of men in life	(-)Depression (+)Satisfaction with sex life	
Partner/relationship	(-)Lack of partner (+)Partner interest in sex (+)Availability of multiple partners (+)Partner physical health (-)Partner's erectile dysfunction (+)Partner mental health (-)Partner not meeting needs	(+)Partner physical health	(-)Partner disinterested in sex (-)Partner has physical limitations	(-)Partner mental health
Developmental	(+)Sexual satisfaction in 50s (+)Sexual desire in 20-30s	(+)Past frequency of masturbation		(+)Past frequency of touching/caressing

	(+)Frequency of intercourse in 20-30s (-)Past guilt over sexual feelings (+)Past importance of sex			(+)Past importance of sex
Lifestyle	(+)Other sexual behaviours (+)Smaller household size (+)Having own room (+)Sleeping with partner	(+)Other sexual behaviours	(-)Smoking	(+)Other sexual behaviours

Note. (+) Positive relationship/more likely; (-) Negative relationship/less likely; LUTS = lower urinary tracts symptoms

Mixed Support Factors

The table above, however, only presents part of the picture of possible correlates of sexual activity in adults aged 60 and older. This review also revealed factors that received mixed support for their association with different types of sexual activity both within and between studies (see Table 5). Of note, when multiple studies investigated the association between sexual activity and a specific factor, significant associations were rarely found consistently across studies. The inconsistent findings are particularly relevant when attempting to form generalizations about what factors are related to sexual activity in adults 60 years of age and older.

Table 5.

Factors Receiving Mixed Support for their Associations with Specific Sexual Activities

Intercourse	Masturbation	"Sexual Activity"	Other Sexual Behaviours
~Age	~Age	~Age	~Age
~Gender	~Gender	~Gender	~Gender
~Education	~Marital status	~Alcohol use	~Marital status
~Marital status	~Baseline testosterone level	~Incontinence	~Physical health
~Income		~Mobility	
~Ethnicity			
~Physical health			
~Body mass index			
~Sexual pain			
~Diabetes			
~Sexual interest			
~Mental health			
~Relationship satisfaction			
~Sexual satisfaction in 20-30s			
~Physical activity			
~Sexual debut before the age of 20			
~Strong sexual desire in young adulthood			
~Premarital sexuality			
~Partner 3+ years older			
~Partner 3+ years younger			
~Chronic obstructive pulmonary disease			
~Depression			
~Satisfied with sleep			
~Lifetime smoking			
~Arthritis			
~Visual problems			

~Systolic blood pressure ~Diastolic blood pressure ~Smoking ~Alcohol use

Discussion

This systematic review identified 57 studies examining continued sexual activity in older adults. Reporting of the results was guided by the examination of the variables previously reported or hypothesized as related to the maintenance of sexual activity in adults 60 years and older and included demographic, physical, psychological, partner and relationship, developmental, and lifestyle factors. Methodological quality of studies ranged from poor to excellent with little consistency observed across studies on research design, key variables under investigation, measures, and results. Conservatively, only a few associations were reported by more than two studies. Sexual activity was positively associated with past frequency of sexual behaviour (Chew et al., 2009; Cogen & Steinman, 1990; Freixas et al., 2015) and partner's interest in sexual activity (Delamater et al., 2008; Finkle et al., 1959; Hyde et al., 2010; Pfeiffer et al., 1968). Decreased sexual activity (and/or cessation) was associated with the presence of erectile difficulties/dysfunction (Chew et al., 2009; Cogen & Steinman, 1990; Finkle et al., 1959; Killinger et al., 2014; Pfeiffer et al., 1968), and partner's illness (Delamater et al., 2008; Hyde et al., 2010; Kahn & Fisher, 1969; Litz et al., 1990; Pfeiffer et al., 1968). Correlates identified in single studies, not disputed by other reviewed studies, provided initial evidence for additional factors that may also be related to sexual activity in older adulthood; however, these require further investigation (e.g., specific physical illnesses, self-esteem, importance of sex, sexual desire, engaging in other sexual activities, smoking).

Of the sexual behaviours investigated in the selected studies, sexual intercourse received the most significant research attention; 74% of studies included reports on intercourse and

related factors (44% focused on intercourse and associated factors exclusively). Although important, the research focus on intercourse in older adults limits a more comprehensive understanding of broad-based conceptualizations of sexual activity. Intercourse is not always possible for older adults for various reasons (e.g., erectile dysfunction, genito-pelvic pain, lack of partner); however, the absence of intercourse does not equate with a cessation of sexual activity. Previous literature has posited that the focus of sexual activity in older adulthood may shift from an emphasis on the importance of frequent sexual intercourse to a greater valuing of companionship, non-coital sexual activity, affection, and intimacy (e.g., Gott & Hinchliff, 2003; Hinchcliff & Gott, 2004; Hurd Clarke, 2006). The results of this review highlight the overwhelming focus on intercourse and we would like to stress the need for future research to shed light on more flexible and diverse sexual activities that may be more resilient to age-related changes.

Only a small handful of factors were identified in more than one study as associated with ongoing sexual activity in older adults (past frequency of sexual behaviour, partner's interest in sexual activity, erectile difficulties/dysfunction, and partner's illness). Not surprisingly, these factors are also relevant to individual across the lifespan. For example, the impact of erectile dysfunction on intercourse is not age-specific. Similarly, a partner's lack of interest in sex and the effect on dyadic sexual activity has little to do with age. The results of this review supported that certain individual and partner variables continue to be important with regard to their associations with sexual activity in older adults; however, they are not uniquely related to ageing. The specific role of past sexual frequency and the likelihood of maintaining sexual activity in the later decades of life has been reported in previous research (Newman & Nichols, 1960; White, 1982). While not an obvious target for clinical intervention, it reveals perhaps more stable, trait-

like, positive sexual schema facilitating romantic-passionate and open cognitive generalizations in relation to sexual activity (Andersen & Cyranowski, 1994) favoring the appreciation of ongoing sexual activity as well as offering resilience to transient and/or more permanent changes associated with ageing (Randall & Byers, 2003).

Overall, this systematic review did not reveal consistent findings supported by several studies, including across studies with only the highest quality ratings (90% or higher on quality assessment criteria) (Arias-Castillo, Ceballos-Osorio, Ochoa, & Reyes-Ortiz, 2009; Beckman et al., 2014; Bretschneider & McCoy, 1988; Chen, Tseng, Wu, & Chen, 2007; Corona et al., 2010; Emmelot-Vonk, Verhaar, Nakhai-Pour, Grobbee, & van der Schouw, 2009; Herbenick et al., 2010b; Holden et al., 2014; Hyde et al., 2010; Karraker & Delamater, 2013; Killinger, Boura, Diokno, 2014; Lee et al., 2013; Lindau, Schumm, Laumann, Levinson, & O'Muircheartaigh, 2007; Momtaz, Hamid, Ibrahim, & Akahbar, 2014; Palacios-Ceña, Carrasco-Garrido, Hernández-Barrera, Alonso-Blanco, Jiménez-García, & Fernández-de-las-Peñas, 2012). The high quality studies conducted by Beckman and colleagues (2014), Herbenick and colleagues (2010b), and Killinger and colleagues (2014) particularly highlight this. In these studies, the significance of the associations between sexual activity and investigated factors change within each respective study based on variations in demographic characteristics of the sample participants, for example, with regard to age cohort, age, gender, and marital status. This demonstrates that even at the single study level, inconsistencies in findings exist with regard to factors associated with sexual activity in older adulthood. Findings appear to largely depend on individual study participant characteristics. Although overall among the selected studies, many factors (see Table 4) were identified in single studies as associated with continued sexual activity

in older adults, it is not yet clear whether or not these would remain consistent across more varied samples of older adults.

It is intriguing that for many of the reported associations across the reviewed studies; in particular for sexual activity and demographic variables, conflicting results were reported. One possible explanation is that these discrepancies may be partially due to variances in methodological quality of the studies. The search criteria for this review spanned several decades and the methodological quality of the studies tended to increase in more recent years. In comparison to the studies with lower quality ratings, the high quality studies included more robust and well-described methodologies (e.g., in terms of study design, participant selection, outcome measures, analytic methods), sample characteristics, findings, and conclusions. Generally these studies also included larger sample sizes and examined a wider range of sexual activities and potential related factors. Nonetheless, many inconsistencies in findings existed even when specifically focusing on the high quality studies. Therefore, although methodological quality may contribute to some of the discrepancies, it does not explain all of the variation.

Another possible explanation for the variability in reported results is the lack of consistent operationalization of "sexual activity" across studies. While the majority of studies employed an intercourse-focused conceptualization of sexual activity, inconsistencies in the measurement or definition of intercourse across studies and even within studies were observed. In some studies a dichotomous variable for the occurrence of intercourse was used with a considerable temporal range of assessment (Adams & Turner, 1985; Chew et al., 2009; Leigh, Temple, & Trocki, 1993; Liu et al., 2010) whereas others use a frequency-based measure (Antonovsky, Sadowski, & Maoz, 1990; Bergström-Walan & Nielsen, 1990; Bretchneider & McCoy, 1988; Delamater et al., 2008). In particular, four of the reviewed studies demonstrate

how the operationalization of intercourse influenced the significance of the relationships to other factors (Bergström-Walan & Nielsen, 1990; Bowers, Cross, & Lloyd, 1963; Papaharitou et al., 2008; Pfeiffer et al., 1968). Within each of these studies the relationship between age and sexual activity changed from statistical significance to non-significance as a function of the multiple methods employed to measure intercourse occurrence/frequency.

Inconsistencies in results across studies are further compounded when additional definitions of sexual activity are added (e.g., masturbation, oral sex, anal sex, etc.). For example, for factors such as religiosity, depression, and smoking, the statistical significance of the association to “sexual activity” is dependent on the researcher’s definition of the sexual behaviour under investigation (Adams & Turner, 1985; Bergström-Walan & Nielsen, 1990; Hyde et al., 2010; Persson & Svanborg, 1992; Wong, Leung, & Woo, 2009). These findings highlight that different types of sexual activity, or perhaps the researchers’ choice of terminology, are not uniformly related to the same construct. Problems associated with the operationalization of types of sexual activities and types of sexual relationships has been highlighted previously (Randall & Byers, 2003; Wentland & Reissing, 2014). Personal experiences with sexuality are rarely discussed publically; however, sexuality as a socio-cultural phenomenon is frequently discussed in the public domain. How popularly used terms map on to personal experiences is an important intersection that can only be navigated by researchers in a meaningful way if operationalisations are clearly and explicitly outlined. Many of the current studies are remiss on such explications.

A final possible explanation for the inconsistent results between studies is the variance of the sample characteristics across studies, particularly in terms of age of study participants. Some of the reviewed studies reported on very general and large age ranges, while others sampled

participants in very specific age brackets or individuals in the same year of life. The differences in samples may have resulted in the discrepancies in the results of the reviewed studies. In both Adams and Turner's (1985) study of 102 men and women between the ages of 60 and 85 and in Papaharitou et al.'s (2008) study of 454 women and men between the ages of 60 and 90, gender was not found to be significantly related to engaging in intercourse. However, in Bretschneider and McCoy's (1988) more circumscribed study of 202 men and women 80-102-years-old, a significant relationship between gender and engaging in intercourse was found (men were more likely to still engage in intercourse). Further, in Herbenick and her colleagues' (2010b) study of 207 women between the ages of 60 and 92, giving oral sex and engaging in vaginal intercourse were related to general health for 60-69-year-olds, but were not related to health in women 70 and older. These studies highlight the importance of carefully considering within cohort and between cohort variability in general, and the caveats of investigating "older adults", "seniors", the "elderly" or simply all adults above a certain age (e.g., 60+, 65+) with regard to sexuality in particular.

Diversity in older adults is commonly reported in other fields of research. In the gerontology literature, older adults are rarely considered to be a homogenous group (Baltes, 1998; Fisher, 1993). Inter-generational variability is assumed on almost every possible measure in individuals age 60 and older (Erber, 2010). Some examples include staying in the workforce; some 60-year-olds are fully retired, while others continue to work full-time. Cognitive decline is another example; while some 80-year-olds experience significant cognitive declines in a variety of areas, others maintain their cognitive function. Many 90-year-olds may suffer from incapacitating health problems, while others continue to demonstrate a good degree of physical ability and independence. Older adults exhibit a tremendous heterogeneity in functioning (e.g.,

Garfein & Herzong, 1995; Harris, Kovar, Suzman, Kleinman, & Feldman, 1989; Hertzman, Frank, & Evans, 1994; Suzman, Harris, Hadley, Kovar, & Weindruch, 1992) and many gerontologists suggest and that individual differences may be greater in the older age groups compared to young adult or middle-aged groups (e.g., Baltes, 1998; Elder, 1969; Erber, 2010; Grigsby, 1996; Maddox & Douglas, 1974; Neugarten, 1982).

Close attention to individual differences in "older" adults may not be enough. The lives individuals lived up until they participated in a research project also need consideration and culture of origin may be relevant, especially when studying a topic under considerable socio-cultural influence. For example, one reviewed study focused on older Greek adults in arranged marriages (Papaharitou et al., 2008). The experiences of these individuals likely differ significantly from the older adults in another reviewed study conducted by Lindau and colleagues (2007) with a community-dwelling sample of older adults from the United States who were not necessarily in committed relationships. Gott (2005) critically reviewed research regarding sexual diversity in older adults on several different dimensions (i.e., gender, sexual orientation, partnership status, socioeconomic status, living circumstances, ethnicity, and age and cohort) and argued that diversity in the sexual experiences of older adults is only accounted for in a "token" manner - if at all. Consistent with this claim, many of the reviewed studies in this systematic review promoted the importance of investigating sexual activity in "older adults;" however, none placed emphasis on exploring the sexual diversity among these individuals or comparing groups of older adults varying on different characteristics (e.g., relationship status, ethnicity, religiosity, relationship satisfaction, physical health, and mental health) regarding sexual behaviours.

The results of this review highlight that assuming commonality by age may be flawed; however, age is also not completely irrelevant. Age is meaningful in that it reflects the developmental and physiological ageing processes, is associated with various social and economic changes and defines membership to a particular birth cohort, thereby providing perspective to research questions. For example, to understand baby boomers' sexuality, one needs to consider socio-sexual changes during the 60s, 70s, and 80s. Older baby-boomers came of age at a time when birth control had just been legalized and sex outside marriage may be considered. Younger baby-boomers on the other hand, came of age at a time when birth control was normalized - condoms were encouraged to prevent sexually transmitted infections, abortion became legal/available (e.g., in most occidental countries), sex before marrying was increasingly normative, and same-sex sexual activity entered the public forum (Allyn, 2000). In this research context, age can be regarded as an important component for understanding and contextualizing research findings, but may be inadequate as the primary means of grouping and/or defining commonality among individuals in terms of their sexual activities a priori.

Recommendations for Future Research

Reviews of literature have offered many important insights with regard to sexual importance and expression in older adults and related factors to sexual functioning and behaviour (e.g., Bauer, McAuliffe, Nay, 2007; Delamater, 2012; Delamater & Karraker, 2009; Delamater & Koepsel, 2015; Delamater & Moorman, 2007; Ludeman, 1982). The findings of this systematic review largely supported their conclusions regarding the strong focus on biological aspects of sexual function in general and vaginal intercourse in particular, the lack of methodological standardization, and the need for a more comprehensive, biopsychosocial approach to the study of sexual expression in older adults. In line with lessons learned from previous examinations of

the literature and the specific focus of this systematic review on factors associated with maintaining versus ceasing sexual activity in the later decades of life, several recommendations for future research arise.

Imperative to a more comprehensive approach to the investigation of factors relating to sexual activity in adults 60 years of age and older is the rigorous definition of the characteristics of sample populations as well as the measures used to investigate and/or operationalize sexual activity. Sampling techniques need to be tailored to research questions and hypotheses. Expanding the definition of sexual activity to include non-coital sexual behaviours is also pertinent. Heterosexual intercourse may in fact be the most common sexual activity for older adults; however, this has not yet been clearly demonstrated. It is also reasonable to assume that older adults who experience difficulties with aspect of sexual function directly related to intercourse (e.g., genito-pelvic pain, Avis et al., 2009; erectile dysfunction, Corona et al., 2010) may choose to explore other aspects of sexual expression (e.g., Delamater & Koepsel, 2008; Fileborn, Thorpe, Hawkes, Minichiello, Pitts, 2015). Sexual activity for those individuals would not be captured by intercourse-focused definitions of sexual activity. Although a small number of the reviewed studies (Bretschneider & McCoy, 1988; Freixas et al., 2015; Herbenick et al., 2010a; Herbenick et al., 2010b) incorporated the examination of a variety of sexual behaviours, a more systematic operationalization of sexual behaviours investigated is still needed to enhance generalizability of study findings. This could be achieved via increased emphasis on employing validated sexuality measures to assess the sexual behaviours of older adults as opposed to study-specific questionnaires. The Derogatis Sexual Functioning Inventory (Derogatis & Melisaratos, 1979) and the Sexual Activity Questionnaire (Ochs & Binik, 1999) are two examples of questionnaires that may be of some utility as they encompass a broad range of sexual behaviours.

Increased inclusivity and consistency in measurement of sexual behaviours in older adulthood would improve comparisons of results across studies and enhance the ability to draw meaningful and general conclusions.

The significance of age in identifying certain patterns of characteristics and behaviours among older adults is debatable; age generalizations should be made with considerable caution. Nonetheless, as was evident from the results of this systematic review, age is not completely irrelevant to the understanding of sexual activity in older adults. One improvement regarding variability in individuals 60 years of age or older are more differentiated age categories, for example, young-old (ages 60-69), middle-old (ages 70-79), and old-old (ages 80+) (Forman, Berman, McCabe, Baim, & Wei, 1992). This has proved successful in capturing more detailed information in studies on “robust” ageing (Garfein & Herzong, 1995), relationship goals (Alterovitz & Mendelsohn, 2013), and depressive symptoms (Mehta et al., 2008). Clearly, this may necessitate more substantial sampling and may be out of the reach of some researchers and inappropriate for certain research questions (e.g., studies examining phenomena unrelated to age). Another possible manner in which researchers can demonstrate sensitivity to the vagaries of age and ageing is by means of statistical analyses. For example, in investigating the relationship between physical health and intercourse frequency in adults 60-80 years-old, researchers might benefit from using age as a moderating variable within the analyses in order to explain its effect on the strength of the association between these two factors. Greater effort needs to be put forward in future studies to acknowledge age heterogeneity and identify how the nuances of age influence the associations between sexual activity and other factors.

Limitations

The contributions of this systematic review need to be considered in light of some limitations. First, this review was limited to published, peer-reviewed research written in English and found in three databases. Second, the results are somewhat biased toward North American populations as approximately half the research was conducted in the United States. This review is, therefore, limited in its cross-cultural generalizability. Third, although this review synthesized study results regarding the associations between a number of variables and specific sexual behaviours, the inclusion criteria excluded some studies that may have also contributed to knowledge of sexual activity in older adulthood (e.g., the criteria excluded several studies that only discussed prevalence rates of sexual behaviours among older adults and studies that incorporated vague definitions of sexual activity). Fourth, given limitations in the participant sample descriptions in many of the selected studies, analyses in this review were not completed by sex which could have contributed to the inconsistency of findings across studies. Fifth, the results synthesis method was somewhat limited in that it did not statistically account for the magnitude of identified associations in studies or study quality (e.g., sample size). Lastly, the quality assessment criteria employed in this review accounted for the methodological limitations of the reviewed studies; however, it did not highlight areas of strength within specific studies relative to others.

Conclusion

This systematic review of studies focused on variables associated with sexual activity in adults 60 years and older and revealed a diverse body of literature reflecting at times complementary, but mostly disparate findings. Overall, partner-related factors, erectile dysfunction, and past active sexuality emerged as important potential determinants for older

adults continuing to, or ceasing to be sexually active. The significant lack of agreement between studies led us to conclude that generalizations about "older adults" as a group may not be appropriate. The diversity in sexual expression and circumstance of adults in mid- and later life may present a formidable challenge for researchers who seek to examine population attributes, correlates, and predictors. It is also possible that the relative modest methodological quality of many of the studies reviewed contributed to the lack of clarity and agreement to some degree. However, we could not confirm this by examining the studies with comparatively better methodological designs beyond the overarching caveat of describing and defining sexual activity with more breadth and in more detail. Many pivotal socio-sexual events over the life course of baby-boomers (e.g., introduction of hormonal contraceptive, medication to manage erectile dysfunction) and an overall more permissive sexual culture in Western countries, inevitably led to a cohort of older adults who consider an active sex life part of a vigorous and fulfilling life. It behooves researchers to produce high quality research to contribute to a body of literature to understand determinants of active sexuality and to help those who find their desire to be sexually active compromised.

Sexual Well-Being in Older Women: The Relevance of Sexual Excitation and Sexual Inhibition[2]

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Abstract

The primary aim of this study was to improve understanding of women's variation in sexual well-being during the later years of life through the use of the Dual Control Model of Sexual Response (DCM). Data from 185 women 50 years of age and older (M = 59.4, SD = 6.96), were used to examine the relationships between sexual excitation (SE) and sexual inhibition (SI) and their lower-order factors and indicators of sexual well-being, defined as sexual functioning, satisfaction, distress, frequency of sexual activity, and breadth of sexual behaviour. Possible moderating factors were also explored. Independently, SE and SI were associated with the majority of the indicators of sexual well-being and the directions of associations were consistent with the tenets of the DCM. The only association that did not emerge statistically significant was SE and sexual distress. When SE and SI lower-order factors were examined together, both SE and SI factors were significant predictors of sexual function, satisfaction, and frequency of sexual activity. Sexual distress was predicted more strongly by SI factors and breadth of sexual experience by one SE lower-order factor. Partner physical and mental health and participant's own mental health were identified as moderating variables of these associations. Findings of this study are discussed considering the contribution of the DCM to understanding the role of inhibition in women's sexuality and diversity in older women's sexual well-being, as well as the importance of a more comprehensive understanding of lifetime sexuality in women and potential clinical implications.

Introduction

Older adults' sexuality has received increased research attention; study foci have included sexual problems (e.g., Laumann et al., 2005; Lindau et al., 2007; Lonnèe-Hoffmann, Dennerstein, Lehert, & Szoeke, 2014; Nicolosi et al., 2004), management and treatment of function-related problems (e.g., Gott & Hinchliff, 2003; Rheaume & Mitty, 2008), but also sexual fulfillment (e.g., Chao et al., 2011; Fileborn, Thorpe, Hawkes, Minichiello, & Pitts, 2015; Woloski-Wruble, Oliel, Leefsma, & Hochner-Celnikier, 2010). Social values and attitudes regarding sexuality in general and sexual activity in older adults have become more liberal in Western countries (e.g., Beckman, Waern, Östling, Sundh, & Skoog, 2014). As baby-boomers age, some choose to maintain an active sex life, accommodating changes in sexual functioning, whereas others decide to cease sexual activity entirely (Rose & Soares, 1993). What contributes to older adults' sexual expression (or cessation thereof) is likely complex and multi-determined (e.g., Delamater, 2012). Research to date, however, is quite divergent and methodologically flawed, limiting understanding of variations in sexual well-being in the later decades of life (Bell, Reissing, Henry, & VanZuylen, 2016). Results across studies often lack comparability because of their reliance on unstandardized and narrowly-defined outcome measures (e.g., overemphasis on intercourse as sole measure of sexual expression in older adulthood) and vastly heterogeneous sample populations in single studies. The Dual Control Model of Sexual Response (DCM; Bancroft & Janssen, 2000) posits that a balance between a propensity for sexual excitation and inhibition is central to understanding variability in individual sexual responsiveness. In this study the DCM was used to provide a theoretical framework to explore the diversity in sexual function, satisfaction, distress, frequency of sexual activity, and breadth of sexual behaviour experienced by women 50 years of age and older.

Sexuality in Older Adulthood

A substantial body of literature has discredited the popular assumption that sexual activity is undesired by older adults. It is well established that many individuals desire sexual interaction and intimacy and continue to engage in various forms of sexual activity throughout the later years of life (e.g., Addis et al., 2006; Gray & Garcia, 2012; Hinchliff, Gott, & Ingelton, 2010; Hurd Clarke & Korotchenko, 2011; Lindau et al., 2007; Minichiello, Plummer, & Loxton, 2004; Schick et al., 2010). Similarly to their younger counterparts, many older adults consider sexual activity important and desirable (e.g., Delamater & Sill, 2005; Gott & Hinchliff, 2003; Kontula & Haavio-Mannila, 2009). Discrepancies regarding desired versus experienced frequency of sexual activity have been emphasized in the extant literature (e.g., Ginsberg, Pomerantz, & Kramer-Feeley, 2005; Hyde et al., 2010; Woloski-Wruble et al., 2010). This highlights that older adults are not only engaging in sexual activity, but desire more frequent sexual contacts. Although there is general consensus that sexual activity and its frequency decline in older adulthood (e.g., Araujo, Mohr, & Mckinlay, 2004; Beutel, Schumacher, Weidner, & Brahler, 2002; Delamater & Moorman, 2007; Dennerstein & Lehert, 2004; Karraker, Delamater, & Schwartz, 2011; Lindau et al., 2007; Palacios-Ceña et al., 2012) and may cease entirely for some, it is apparent that many older individuals still engage in and desire sexual interaction.

Later decades of life are marked by more individual variation than young and middle adulthood (e.g., Baltes, 1998; Bengtson, Kasschau, & Ragan, 1977; Elder, 1969; Erber, 2010; Grigsby, 1996; Maddox & Douglas, 1974; Neugarten, 1982). Consistent with this notion, findings of studies on sexuality in older adulthood show considerable variation among older adults on several facets including sexual functioning (e.g., Mulligan & Moss, 1991; Santosa et

al., 2011), frequency and breadth of behaviour (e.g., Bortz, Wallace, & Wiley, 1999; Dello Buono et al., 1998; Fileborn et al., 2015; Ginsberg et al., 2005), satisfaction (e.g., Matthias, Lubben, Atchison, & Schweitzer, 1997; McCall-Hosenfeld et al., 2008), and attitudes (e.g., Waite, Laumann, Das, & Schumm, 2009), with some studies demonstrating that variability along these dimensions further increases with advancing age (e.g., Lindau & Gavrilova, 2010). Moreover, the diversity of older women's sexual experiences in particular, has received increased research attention (e.g., Hinchliff et al., 2010; Howard, O'Neill, & Travers, 2006; Kontula & Haavio-Mannila, 2009). In a recent systematic review of the literature on variables associated with maintenance or cessation of sexual activity in adults 60 years of age and older, Bell et al. (2016) concluded that sources of marked diversity may in part be the consequence of methodological shortcomings (e.g., use of non-validated outcome measures, large age range of participants within/between studies, flawed statistical analyses, etc.). The authors also suggest, however, that it is reasonable to assume that older adult sexuality is more varied compared to their younger counterparts and age per se determines very little with regard to sexual well-being.

The study of sexuality in older adults has been dominated by medical models focused on age-related sexual changes and dysfunction (e.g., Parker, 2009; Syme, Klonoff, Macera, & Brodine, 2013). Some studies have moved beyond the medical model suggesting more complex models of older adult sexuality, incorporating demographic, biological, psychological, and interpersonal aspects (Delamater, 2012; Kirana et al., 2009); however, few studies have applied these models to understand mechanisms of sexual variability and sexual well-being in older adults. To transcend the traditional intercourse/dysfunction focus of the extant literature, the present study employed a multidimensional examination of sexual well-being of older women which included assessment of women's sexual satisfaction, function, distress, frequency, and

breadth of sexual behaviour as well as theoretically-founded predictors of variability along these different dimensions.

The Dual Control Model

The DCM (Bancroft & Janssen, 2000) is a framework that is particularly relevant for the examination of the variability of sexual well-being in older adulthood as, within this framework, individual sexual response is assumed to result from a balance of both sexual excitatory (SE) and inhibitory mechanisms (SI). Although negative correlations between age and SE and positive correlations between age and SI have been noted in some studies (Graham, Sanders, & Milhausen, 2006; Janssen, Vorst, Finn, & Bancroft, 2002a), these mechanisms are generally expected to vary between individuals and to be relatively stable over time. In terms of sexual well-being, variations in individuals' propensities for SE and SI could explain why sexual well-being is maintained throughout older adulthood for some (even with the presence of potential physical, psychological, and/or partner-related barriers), but not others.

The DCM was first presented by Bancroft and his colleagues (Bancroft, 1999; Bancroft & Janssen, 2000) in an attempt to conceptualize individuals' inclination to be more or less sexually responsive in different situations. According to Bancroft, Graham, Janssen, and Sanders (2009), three major assumptions underlie the DCM. The first assumption is that neurobiological inhibition is evolutionarily adaptive as it decreases the likelihood of a sexual response in situations where it would be disadvantageous or would interfere with the individual managing other demands pertinent in particular situations. The second assumption of the DCM is that individuals vary in their propensity for both SE and SI. Lastly, the third assumption of the DCM implies that learning may play a role in determining individual variability in response tendencies;

however, individual variation in SE and SI is a stable trait and may be, at least in part, genetically determined.

To date, a number of questionnaires have been developed to measure an individual's propensity for SE and SI. The Sexual Inhibition and Sexual Excitation Scales (SIS/SES) were developed by Janssen, Vorst, Finn, and Bancroft (2002a, 2002b) for use in men. Although the SIS/SES demonstrated acceptable psychometric properties in women (Carpenter, Janssen, Graham, Vorst, & Wicherts, 2008), Graham et al. (2006) developed the Sexual Excitation-Sexual Inhibition Inventory for Women (SESII-W), which includes five excitatory and three inhibitory subscales that load onto one excitatory and one inhibitory higher-order factor (see Table 1), to more specifically assess variability in SE and SI propensities in diverse samples of women (Bloemendaal & Laan, 2015; Jozkowski, Sanders, Rhoads, Milhausen, & Graham, 2015; Velten, Scholten, Graham, & Margraf, 2016a). Following this, versions to use with men and women as well as short versions were developed (Carpenter, Janssen, Graham, Vorst, & Wicherts, 2008, 2011; Milhausen, Graham, Sanders, Yarber, & Maitland, 2010).

Table 1.

SESII-W Higher-Order and Lower-Order Factors

Factors	Subscales
Sexual Excitation	*Arousability* - easily sexually aroused in a variety of situations
	Sexual Power Dynamics - arousal by force or domination in a sexual situation
	Smell - olfactory cues influencing arousal
	Partner Characteristics - partner's personality or behaviour impacting on arousal
	Setting (unusual or unconcealed) - arousal enhanced by the possibility of being seen or

	heard while having sex
Sexual Inhibition	*Relationship Importance* - need for sex to occur within a specific type of relationship
	Arousal Contingency - potential for arousal to be easily inhibited or disrupted by situational factors
	Concerns about Sexual Function - worries about sexual functioning influencing arousal

Although the majority of the initial research on the DCM used male samples, increasingly, studies are providing evidence that different aspects of SE and SI are also relevant for sexual well-being in women. Sanders, Graham, and Milhausen (2008) assessed the associations between these factors and current or lifetime sexual problems in a sample of 540 women. Arousability and Setting were significant positive predictors of masturbation frequency and Relationship Importance was a significant negative predictor of masturbation frequency. The two strongest associations with both current and lifetime sexual problems were the inhibitory factors Arousal Contingency and Concerns about Sexual Function. These findings were in line with the theoretical assumption of the DCM that high SI is linked to vulnerability to sexual problems (Sanders et al., 2008).

In a recent study, Bloemendaal and Laan (2015) investigated the discriminative validity of the SESII-W for sexual problems in a sample of 259 women with and 186 women without sexual problems. Arousal Contingency was the lower-order factor found to discriminate best between these two subsamples. Significant correlations between scores on Arousal Contingency and different aspects of female sexual function were also found in a small sample of 38 women (Bradford & Meston, 2006). This lower-order SI factor was negatively correlated with the Female Sexual Function Index (FSFI; Rosen et al., 2000) domains of desire, arousal, lubrication,

and satisfaction. Velten, Scholten, Graham, and Margraf (2016b) reported that four SE lower-order factors (Arousability, Partner Characteristics, Sexual Power Dynamics, and Setting) and two SI lower-order factors (Concerns about Sexual Function and Arousal Contingency) were significant predictors of concurrent and future sexual function in women.

Nonetheless, SE and SI associations with sexual well-being are not independent of contextual factors. In a cross-sectional study with 35 American newlywed couples, for example, Lykins, Janssen, Newhouse, Heiman, and Rafaeli (2012) found that partner similarity on SI was negatively correlated with wives' sexual arousal problems. This is the first study to suggest that the similarities between partners' SE and SI propensities are also important predictors of various sexuality-related variables in addition to each individual's own SE and SI propensities.
In women, Lykins et al. (2012) found a positive association between SI and sexual arousal problems when examined independently and a negative association between SE and sexual satisfaction when SE and SI were investigated together in a regression model along with additional variables. In addition, SI, due to concerns about performance failure as measured by the SIS/SES, was also negatively associated with sexual satisfaction. This study highlighted the importance of context and relationship, bringing to light new complexities and empirical questions for the DCM.

Overall, these studies highlight the DCM's associations with multiple dimensions of sexual well-being and provide support for the hypothesis that SE and SI propensities may play a role in the sexual functioning, satisfaction, frequency and breadth of sexual behaviours among older adults. Associations between SE and SI and indicators of sexual well-being in older women specifically, however, still remain unclear. Although some of the DCM studies included older women in the study samples (e.g., Graham et al., 2006; Sanders et al., 2008), analyses were not

specific to older women. Given the large number of studies that have highlighted changes in sexual well-being in midlife and with regard to menopausal status (e.g., Dennerstein, Alexander, & Kotz, 2003; Mansfield, Koch, & Voda, 2000), more research is required to confirm the utility of the DCM in older adult populations.

Purpose

In an effort to expand both the DCM literature and the knowledge regarding variables associated with sexual well-being in older adulthood, the purpose of this study was to examine how propensities for SE and SI are associated with variability in older women's sexual well-being. Sexual well-being was measured along five different facets: sexual function, satisfaction, distress, breadth of sexual experiences, and frequency of sexual activity. Specific hypotheses were the following:

1. In line with existing research, SE and SI were expected to be independently associated with all indicators of sexual well-being in a sample of women 50-years and older.
2. Based on the assumptions of the DCM that sexual response in a given situation is reflective of the balance between SE and SI propensities, it was expected that both SE and SI lower-order factors would predict sexual well-being indicators when examined together.

Following the review of the main results of the study, post hoc analyses were conducted in order to identify in which context SE and SI propensities may be more strongly associated with sexual well-being indicators. Factors commonly reported as associated with sexual well-being in older adulthood (physical/mental health, partner physical/mental health, relationship satisfaction; Antonovsky, Sadowsky, & Maoz, 1990; Beckman et al., 2014; Delamater, Hyde, & Fong, 2008; Holden et al., 2014; Laumann, Das, & Waite, 2008; Laumann et al., 2006; Matthias et al., 1997)

were explored as possible moderators of the associations between the SE and SI lower-order factors and indicators of sexual well-being.

Method

Participants

A total of 356 women were recruited. Eligibility criteria included being 50 years of age or older, being a native English speaker, residing in Canada, and being presently involved in a romantic relationship for a minimum of one year. Participants were recruited via a diversity of means, including community and online advertisement across Canada for a study on the topic of "experiences of women 50+ in intimate relationships." Of the 356 initial participants, 90 were excluded because they did not meet one or more of the inclusion criteria, 24 did not respond to the questionnaires after answering the inclusion criteria items, 47 only provided responses to the demographics portion of the survey, nine had 25% or more of their data missing, and one participant was excluded as a multivariate outlier. The final sample included in the analyses was 185 women (see Table 2 for information related to participant demographics).

Table 2.

Demographic and Background Characteristics

Variable	
Age	
% 50-59	56.2
% 60-69	32.9
% 70-79	10.8
Menopausal Status	
% 12 months since last period	79.5
Relationship Status	
% Married	75.7
% Domestic partnership or civil union	9.7
% Cohabiting with significant other	2.7
% Single and living alone, but in committed relationship	7.6
% Other (e.g., long-term casual, non-	4.3

exclusive)	
Relationship Length (years)	
Mean (SD)	25.7 (14.94)
Sexual Orientation	
% Heterosexual	91.9
% Other	8.1
Education	
% Did not attend school	0.5
% Some high school	1.6
% High school diploma	7.6
% Some college	13.5
% College degree	23.8
% Some undergraduate	3.2
% Undergraduate degree	18.9
% Some graduate	4.9
% Graduate degree	24.3
% Post-doctoral	1.6
Household Income	
% $0-$24,999	3.8
% $25,000-$49,999	19.5
% $50,000-$74,999	16.2
% $75,000-$99,999	21.1
% $100,000+	39.5
Religiosity (practicing/attending religious activities)	
% Never	34.6
% Yearly	27
% Monthly	9.7
% Once a week or more	28.7
Religious Affiliation	
% Christian	49.2
% Jewish	3.2
% Other	17.3
% Two or more religions	11.9
% None	21.6

Note. SD = Standard Deviation

Measures

Sexual Excitation/Sexual Inhibition Inventory for Women (SESII-W; Graham et al., 2006). The SESII-W is a 36-item, self-report questionnaire that examines various factors that affect women's propensity SE and SI. The SESII-W includes eight subscales. The subscales related to SE include: Arousability, Sexual Power Dynamics, Smell, Partner Characteristics, and

Setting (Unusual or Unconcealed). The subscales related to SI include: Relationship Importance, Arousal Contingency, and Concerns about Sexual Function (see Table 1). Items on the SESII-W are rated on 4-point Likert scale from "strongly disagree" to "strongly agree." To create scores for women on the SE and SI subscales, the item scores relevant to each factor are averaged. Satisfactory test–retest reliability has been demonstrated for both the SE (.81) and SI (.82) components of the SESII-W (Graham et al., 2006). Cronbach's alphas for SE and SI in this study were .88 and .80, respectively.

Female Sexual Function Index (FSFI; Rosen et al., 2000). The FSFI is a brief, 19-item self-report questionnaire that assesses key dimensions of sexual function in women over the past four weeks. It provides scores on six domains of sexual function (desire, arousal, lubrication, orgasm, satisfaction, and pain) as well as a total score. Each item is rated on a 5- or 6-point Likert scale ranging from 0 to 5 or 1 to 5, where a 1 indicates difficulties with a specific domain of function in the past four weeks (extremely difficult or impossible), 5 indicates no difficulties (not difficult), and 0 indicates no sexual activity in the past four weeks. Individual FSFI domain scores are obtained by adding the scores of the individual items that comprise the domain and multiplying the sum by the domain factor (i.e., 0.6 for desire, 0.3 for arousal and lubrication, and 0.4 for the other three domains). A full scale score is obtained by adding the scores for the six domains, which, if less than 26.55 indicates clinically significant sexual function difficulties (Wiegel, Meston, & Rosen, 2005). Overall, the FSFI demonstrates excellent reliability and internal consistency (Cronbach α = .89 to .96) (Wiegel et al., 2005). The instrument sensitively and reliably differentiates female sexual arousal disorder and control participants on each of the sexual function domains as well as on the total score. Additionally, divergence (i.e., divergent validity) of the FSFI from a measure of marital satisfaction, the Locke-Wallace Marital

Adjustment Test (Rosen et al., 2000), has also been established. In this study, Cronbach's alpha for the FSFI was .96.

Female Sexual Distress Scale (FSDS: Derogatis, Rosen, Leiblum, Burnett, & Heiman, 2002). The FSDS is a 12-item self-report scale that assesses sexuality-related personal distress. Items are rated on a 5-point Likert scale ranging from "never" to "always". Item scores are summed to produce an overall score for sexual distress with higher scores being indicative of increased distress and a score of 11 representing the cut-off for clinically significant distress. The FSDS has a high degree of internal consistency (.86-.93) and test-retest reliability (.80-.92) over a four-week period (Derogatis et al., 2002). The measure also discriminates well between women with and without sexual dysfunction and has been shown to be sensitive to the effects of treatment. Cronbach's alpha for the FSDS in this study was .95.

Derogatis Sexual Functioning Inventory (DSFI: Derogatis & Melisaratos, 1979). Two subsections of the DSFI were used to examine the breadth and frequency of sexual behaviour of participants. The two sections of the inventory used focus on sexual experience (Section II) and sexual drive (Section III). Section II contains a list of 24 sexual behaviours that range from petting-type sexual activities to various forms of intercourse and oral-genital behaviours. Items on this section are rated on a dichotomous scale (yes/no) to indicate experience of the specified behaviour. An overall score for this section is developed by summing participants' "yes" responses. This subscale was used to measure breadth of sexual behaviour in this study. Section III of the DSFI is a summary measure composed of five components: sexual intercourse, masturbation, kissing and petting, sexual fantasy, and desired frequency of sexual intercourse. Each class of behaviours is evaluated on a 9-point Likert scale from "not at all" to "four or more times a day." The values of these items are summed to produce a total score of

sexual drive. Internal consistency and test-retest reliabilities of experience and drive subsections are .97 and .92 and .60 and .77, respectively. In this study, Cronbach's alpha for the experience subsection was .89. For this study we were only interested in the actual frequencies of sexual behaviours participants engaged in rather than the score of the drive subscale. The desired frequency of sexual intercourse item was therefore excluded from analysis and Cronbach's alpha for this adapted subscale was .51.

The New Sexual Satisfaction Scale (NSSS; Štulhofer, Buško, & Brouillard, 2010). The NSSS is a 20-item questionnaire including two dimensions, one focused on personal sexual experiences and sensations, and the other on participants' perceptions of partners' reactions and sexual activity in general. Scale construction and validation were carried out using seven independent samples with over 2,000 participants from Croatia and the U.S., aged 18–55 years. Overall, the measure demonstrated good psychometric properties with an internal consistency of .94-.96 and test-retest reliability coefficients ranging from .72-.84. As a result of technical difficulties in this study, responses from only the first 15 items of the NSSS were recorded (i.e., 25% of the data was missing). As this was our cut-off for missing data, the remaining items were carefully examined. Internal consistency for these items was excellent and comparable to the complete measure (.97). A decision was therefore made to retain the NSSS as a measure of sexual satisfaction in the analyses. Results in the present study based on this measure, however, should be interpreted with caution.

The Relationship Assessment Scale (RAS; Hendrick, 1988). The RAS is a seven-item, self-report measure of relationship satisfaction. General satisfaction, how well the partner meets one's needs, how well the relationship compares to others, regrets about the relationship, how well one's expectations have been met, love for partner, and problems in the relationship are

evaluated. Items are rated on a 5-point Likert scale ranging from "low satisfaction" to "high satisfaction." The RAS has satisfactory psychometric properties with mean inter-item correlation of .49, internal consistency of .86 (Hendrick, Dicke, & Hendrick, 1998), and test-retest reliability for the measure was .85 after a seven week period. With regard to convergent validity, the RAS demonstrated good concordance (.80-.88) with the Dyadic Adjustment Scale (Spanier, 1976) and the Kansas Marital Satisfaction Scale (Schumm et al., 1986; .64 for men and .74 for women). Cronbach's alpha for the RAS in this study was .92.

RAND 36-Item Health Survey 1.0 (Ware & Sherbourne, 1992). This is a 36-item questionnaire which evaluates eight dimensions of health: physical and social functioning, role limitations due to physical health, role limitations due to emotional problems, energy/fatigue, emotional well-being, pain, and general health. The eight parameters can be grouped into two summary measures of physical and mental health and one additional item measuring health change. For each parameter, scores are coded, summed, and transformed to a scale ranging from 0 to 100, with higher scores indicating better health. In use with older adults specifically, there is evidence for a high degree of internal consistency with Cronbach's alpha exceeding .80 for each parameter (Lyons, Perry, & Littlepage, 1994). The evidence for construct validity was also good, with this survey distinguishing between those with and without markers of poorer health. In this study, Cronbach's alpha ranged from .81 to .89 for all parameters.

Demographics questionnaire. This measure was used to gather information on personal (e.g., age, level of education, ethnicity, religiosity), relationship (e.g., relationship status, relationship duration), and partner-related variables (e.g., mental and physical health).

Procedure

Participants were offered the option of completing the study online or via a mail-in survey option. If interested in the online option, access to the contents of the study was provided through Survey Monkey, an internet-based service allowing users to create and publish surveys online. The survey package opened with an information letter outlining the purpose of the research, costs and benefits to participants, and the participants' right to withdraw at any time without consequence. Upon agreeing to participate in the study, participants were presented with the five eligibility questions. If a participant met the inclusion criteria, the survey questionnaires were presented in randomized order. Upon completion of the survey, participants were provided with a debriefing form and resources on the topic of sexuality and ageing as well as contact information for healthcare professionals and helplines should they wish to explore potential questions and concerns further. Participants who were not eligible to participate were taken directly to the resources page. At the end of the survey, participants were also invited
or call or email the research laboratory and leave their coordinates to participate in a draw for coffee shop gift certificates. This maintained the anonymity of the survey responses.

The six participants who were interested in participating through the mail-in survey option received the questionnaire package at the location of their choosing. This package included the study information sheet, questionnaires, debriefing form and resources, and a pre-addressed and stamped return envelope. The questionnaires were presented in a randomized order for each participant. Upon completion of the survey, the participants returned their questionnaire package in the addressed and stamped envelope provided.

Data Analysis

All statistical analyses were performed using IBM SPSS, Version 22. Prior to the main analyses, responses from participants were screened for missing data. Single imputation using the expectation maximization logarithm was employed in order to replace missing data (less than 3% of the dataset, missing at random). Univariate outliers, three or above standard deviations from the mean, were identified. Sixteen cases were detected and windsorized via replacing their value with that of the observation closest to them. Multivariate outliers were identified using Mahalanobis distances and the one detected case was deleted. Tests for skewness did not violate the assumption of normality for any of the variables.

To identify the associations between SE and SI variables and indicators of sexual well-being, bivariate correlations were first computed between SE, SI, and their lower-order factors and the indicators of sexual well-being. Bivariate correlations were also computed between SE and SI and participant variables (i.e., age, education, income, religiosity, physical health, mental health). Multiple regression analyses which included SE and SI lower-order factors as well as specific demographic variables (i.e., age, education, income, religiosity) were then run to determine significant predictors of sexual well-being indicators.

Moderation analyses using PROCESS (Hayes, 2013) were conducted to identify additional factors (i.e., relationship satisfaction, mental health, physical health, partner mental health, partner physical health) affecting the strengths of the associations identified between SE and SI lower-order factors and the indicators of sexual well-being. PROCESS is an add-on for SPSS for statistical mediation, moderation, and conditional process analysis. To avoid potentially problematic high multicollinearity with the interaction terms in each of the models, all predictor variables (i.e., SE and SI lower-order factors and potential moderators) were centered. Simple

slopes for the associations between the predictor variable and outcome variable were also tested for low (-1 *SD* below the mean), average (mean), and high (+1 *SD* above the mean) levels of the moderating variable in each model.

Results

Participant SE and SI Characteristics

Table 3 presents descriptive statistics for the two higher-order and the eight lower-order factor scores of the SESII-W.

Table 3.

Descriptive Data for the SESII-W Factors

Factor	*M*	*SD*
Sexual Excitation	2.27	.51
Arousability	2.38	.63
Sexual Power Dynamics	1.90	.65
Partner Characteristics	2.50	.76
Setting (unusual/unconcealed)	2.03	.71
Smell	2.51	.96
Sexual Inhibition	2.79	.49
Arousal Contingency	2.42	.71
Concerns about Sexual Function	2.26	.76
Relationship Importance	3.32	.57

Note: Absolute range, 1 (strongly disagree) to 4 (strongly agree)

Correlations among SE and SI Variables and Indicators of Sexual Well-Being

Table 4 presents the correlations between the SE and SI higher and lower-order factors and the indicators of sexual well-being. As hypothesized, SE was positively associated with sexual function and satisfaction, breadth of sexual experience, and frequency of sexual behaviour; SI was negatively associated with sexual function, satisfaction, breadth of sexual experience, frequency of sexual behaviour, and with sexual distress. In contrast to the hypotheses, no significant association was found between SE and sexual distress. Several significant associations were found between SE and SI lower-order factors and indicators of

sexual well-being; Arousal Contingency, Concerns about Sexual Function, and Arousability were the three lower-order factors with the strongest associations to the indicators of sexual well-being. Bivariate correlations between participant characteristics (i.e., age, education, income, religiosity, physical health, mental health) and SE and SI were not significant.

Table 4.

Correlations between SESII-W SE, SI, and Lower-Order Factors and Indicators of Sexual Well-Being

Factor	Function	Satisfaction	Distress	Breadth	Frequency
Sexual Excitation	.29**	.23**	.00	.19**	.44**
Arousability	.32**	.25**	-.04	.20**	.43**
Sexual Power Dynamics	.11	.03	.03	.13	.27**
Smell	.20**	.144	.04	.044	.21**
Partner Characteristics	.17*	.09	.07	.07	.25**
Setting	.14	.21**	-.05	.17*	.30**
Sexual Inhibition	-.21**	-.30**	.27**	-.21**	-.26**
Relationship Importance	.09	.07	-.06	-.15*	-.09
Arousal Contingency	-.38**	-.42**	.35**	-.18*	-.35**
Concerns about Sexual Function	-.27**	-.41**	.39**	-.14	-.20**
Function	-	.80**	-.55**	.21**	.44**
Satisfaction		-	-.70**	.19*	.41**
Distress			-	-.10	-.26**
Breadth				-	.20**
Frequency					-

* $p < .05$; ** $p < .001$

Regression and Moderation Analyses

Table 5 presents the standardized beta coefficients for the significant statistical predictors of the indicators of sexual well-being. Predictor variables were the eight SESII-W lower-order factor scores as well as the demographic variables of age, education, income, and religiosity. As hypothesized, SE and SI lower-order factors were significant predictors of sexual function, satisfaction, and frequency of sexual activity; however, only one SE lower-order factor significantly predicted breadth of sexual experience and only three SI lower-order factors predicted sexual distress. For identified associations between SE and SI lower-order factors and

indicators of sexual well-being, post hoc moderation analyses were conducted to determine which variables moderated the strength of relationships. Specific moderator variables investigated were relationship satisfaction, mental and physical health, and partner mental and physical health (see Table 6 for the results).

Table 5.

Standardized Beta Coefficients for each Statistically Significant Predictor for Multiple Regression Analyses

Predictor Variables	Function	Satisfaction	Distress	Breadth	Frequency
Sexual Excitation					
Arousability	.21**	.17*		.20**	.32**
Sexual Power Dynamics					
Smell					
Partner Characteristics					
Setting					
Sexual Inhibition					
Relationship Importance	.25**	.22**	-.17*		
Arousal Contingency	-.37**	-.25*	.25*		-.24**
Concerns about Sexual Function		-.28**	.28**		
Age	-.19**				-.19**
Education					
Income					
Religiosity					

* $p < .05$; ** $p < .01$

Table 6.

Moderating Variables of the Relationships between SE and SI Lower-Order Factors and Indicators of Sexual Well-Being

		Satisfaction (1)	Satisfaction (2)	Satisfaction (3)	Distress (1)	Distress (2)	Breadth
Predictor Variables	IV	Relationship Importance	Arousal Contingency	Concerns about Sexual Function	Arousal Contingency	Concerns about Sexual Function	Arousability
	Mod	Partner Physical Health	Partner Mental Health	Partner Mental Health	Partner Mental Health	Partner Mental Health	Mental Health
Overall Model Significance		R^2 = .067 F(3, 181) = 4.311, p = .006	R^2 = .246 F(3, 181) = 19.690, p < .001	R^2 = .257 F(3, 181) = 20.852, p < .001	R^2 = .227 F(3, 181) = 17.689, p < .001	R^2 = .190 F(3, 181) = 14.178, p < .001	R^2 = .064 F(3, 181) = 4.109, p = .008
Independent Relationships	IV-DV	b = 21.297 SE = 9.117 p = .021	b = 5.831 SE = 7.351 p = *ns*	b = 11.354 SE = 7.505 p = *ns*	b = -4.427 SE = 4.477 p = *ns*	b = -6.374 SE = 4.499 p = .159	b = 5.425 SE = 1.965 p = .006
	Mod-DV	b = 19.962 SE = 7.673 p = .010	b = 13.328 SE = 4.523 p = .004	b = 15.055 SE = 4.130 p < .001	b = -7.800 SE = 2.754 p = .005	b = -8.383 SE = 2.476 p < .001	b = .120 SE = .064 p = *ns*
Interaction		b = -4.984 SE = 2.276 p = .030	b = -3.618 SE = 1.69 p = .034	b = -4.725 SE = 1.722 p < .007	b = 2.625 SE = 1.032 p = .012	b = 2.126 SE = 1.029 p = .040	b = -.052 SE = .025 p = .041
Interaction at Different Levels of the Mod	Low	b = 7.360 SE = 3.326 p = .028	b = -.5.567 SE = 2.448 p = .024	b = -3.531 SE = 2.436 p = *ns*	b = 2.270 SE = 1.490 p = *ns*	b = 1.896 SE = 1.460 p = *ns*	b = 2.545 SE = .733 p < .001
	Average	b = 2.439 SE = 2.229 p = *ns*	b = -9.051 SE = 1.619 p < .001	b = -8.081 SE = 1.508 p < .001	b = 4.316 SE = .986 p < .001	b = 4.424 SE = .904 p < .001	b = 1.495 SE = .549 p = .007
	High	b = -2.482 SE = 2.994 p = *ns*	b = -12.258 SE = 2.051 p < .001	b = -12.269 SE = 6.322 p < .001	b = 6.200 SE = 1.249 p < .001	b = 6.751 SE = 1.163 p < .001	b = .445 SE = .580 p = *ns*

Note. IV = independent variable; Mod = moderating variable; DV = dependent variable; NS = not significant

Sexual Function. Arousability, Arousal Contingency, Relationship Importance, and age were significant predictors of sexual function (Table 5; $R^2 = .265$, $F(4, 180) = 16.184$, $p < .001$). Arousal Contingency and age had significant negative regression weights, indicating that older women who had higher scores on Arousal Contingency scale reported lower sexual functioning. Conversely, Arousability and Relationship Importance had significant positive regression weights, which means that women with higher scores on these scales scale had higher sexual functioning. No significant moderators of these associations were identified.

Sexual Satisfaction. The model yielded the following significant predictors for sexual satisfaction: Arousability, Arousal Contingency, Concerns about Sexual Function, and Relationship Importance ($R^2 = .279$, $F(4, 180) = 17.403$, $p < .001$). Women with higher scores on Arousal Contingency and Concerns about Sexual Function reported less sexual satisfaction; while higher scores on Arousability and Relationship Importance were positively associated with sexual satisfaction.

Moderation analyses also identified significant moderators of these relationships. As seen in Table 6, partner mental health was found to moderate the strength of the relationship between both Arousal Contingency and Concerns about Sexual Function and sexual satisfaction; these variables were most strongly related to sexual satisfaction when high levels of partner mental health were reported. Partner physical health significantly moderated the association between Relationship Importance and sexual satisfaction, especially when low partner physical health was reported.

Frequency of Sexual Activity. Arousability, Arousal Contingency, and age were identified as significant predictors for women's frequency of sexual activity ($R^2 = .263$, $F(3, 181) = 21.478$, $p < .001$). Arousability was related to an increased frequency of sexual activity

whereas Arousal Contingency and age were negatively associated with sexual frequency. No significant moderators of these associations were identified.

Breadth of Sexual Experience. For breadth of sexual experience, Arousability was identified as the only significant predictor ($R^2 = .041$, $F(1, 183) = 7.884$, $p = .006$). Mental health was identified as a significant moderator of the association between Arousability and breadth of sexual experience, especially when low mental health was reported.

Sexual Distress. Lastly, Arousal Contingency, Concerns about Sexual Function, and Relationship Importance were identified as significant predictors of sexual distress ($R^2 = .214$, $F(12, 172) = 3.898$, $p < .001$). Relationship Importance was negatively associated with sexual distress and Arousal Contingency while Concerns about Sexual Function were positively associated with sexual distress. Partner mental health was also identified as a significant moderator of the associations between both Arousal Contingency and Concerns about Sexual Function and sexual distress, with these positive relationships being the strongest when high partner mental health was reported.

Discussion

The main objective of this study was to investigate whether propensities for SE and SI were associated with the variability observed in older women's sexual well-being. With the exception of sexuality-related distress, SE and SI higher-order factors were significantly associated with all indicators of sexual well-being and the directions of associations were consistent with the tenets of the DCM. Many of the SE and SI lower-order factors were also correlated with the sexual well-being indicators. SE and SI lower-order factors were significant predictors of sexual function, satisfaction, and frequency of sexual activity; however, only one SE lower-order factor significantly predicted breadth of sexual experience and only three SI

lower-order factors predicted sexual distress. Further, partner mental health and physical health and participant mental health were identified as moderators of these associations, suggesting that given different situations, SE and SI lower-order factors may vary in predicting specific indicators of sexual well-being. Examining the results of this study, it is important to consider assumptions about what the SESII-W scales measure. SE, as a measure of sexual arousability, evaluates how likely it is that a woman will respond with sexual arousal in various situations not necessarily involving physical stimulation. SI, on the other hand, is the combination of active inhibition of sexual arousal and/or an individual's specific level of "inhibitory tone" (resting level of inhibition not in the context of sexual stimulus or sexual threat; Bancroft & Janssen, 2000). According to the DCM model, sexual arousal, including genital response, is the product of an active "excitation" response and a reduction or lack of inhibitory response, accompanied by a reduction of inhibitory tone (Bancroft & Janssen, 2000). This study had been designed to investigate how these propensities were associated with different facets of sexual well-being in older women specifically.

In line with these DCM tenets, the participants in this study reported better sexual function when also reporting higher SE and lower SI; variability in these variables predicted variability in older women's sexual function. These results are somewhat consistent with findings in the extant literature. In previous studies, SE and SI have been linked with erectile difficulties in men (Bancroft & Janssen, 2001) and subscale scores from both factors have been associated with sexual function and sexual problems in women (Sanders et al., 2008; Velten et al., 2016b). However, there are some discrepant findings across studies for the differential role of SE and SI and sexual function. In one study, both SE and SI were associated with women's arousal problems (Bloemendaal & Laan, 2015), whereas in another study only a significant link

between arousal difficulties and SI was found (Lykins et al., 2012). Variability in the number and descriptions of higher and lower-order factors between DCM-related questionnaires curtail the ability to compare results from single studies and generate meaningful conclusions regarding the relevance of SE and SI factors to aspects of sexual well-being. These challenges notwithstanding, the results of this first test of association between SE and SI and sexual function in older women add to our understanding of factors contributing to sexual problems in general and to variability in older women's sexual functioning in particular. These results suggest that sexual problems may develop as a consequence of impaired sexual responsiveness (i.e., higher "inhibitory tone") or a consequence of active inhibition of sexual responsiveness, or a combination of the two, especially in the presence of low arousability.

SE and SI were independently associated with sexual satisfaction in older women and both SE and SI lower-order factors were significant predictors. These findings are somewhat consistent with past research. In the only other study that investigated links between SE, SI, and sexual satisfaction in women, mixed results were found depending on analytic strategy. Lykins et al. (2012) reported that independently, SI was associated with sexual satisfaction whereas SE was not. When SE and SI were examined together in a regression model along with additional variables, however, SE was a significant negative predictor of sexual satisfaction. Although counter to theoretical tenets of the DCM, this negative association between SE and sexual satisfaction may be reflective of the dyadic context of this study. For newly married participants in this study who would be expected to be more sexually responsive in a given situation (i.e., higher SE), partners may not respond in kind. Sexual needs and possible expectations of marital sex, therefore, may be unfulfilled for these participants. The current study focused on older women who, on average, reported relationship lengths of over 25 years. Sexual variables (e.g.,

frequency, expectancies, satisfaction, desire) tend to change over the course of long-term relationships (e.g., Byers, 2005; McNulty, Wenner, & Fisher, 2014) and increased satisfaction has been reported by couples who have been in relationships 25 years and more (Heiman et al., 2011). Finally, here too the use of different questionnaires designed to measure SE and SI, the SIS/SES in the Lykins et al. (2012) study and the SESII-W in the current study, may also have contributed to the contrasting results in the two studies.

SE and SI were both found to be independently associated with frequency of sexual behaviours and both SE and SI lower-order factors were significant predictors also. Other research has linked SE and SI propensities to frequency of sexual behaviour in both men and women (Janssen et al., 2002a; Sanders et al., 2008; Winters, Christoff, & Gorzalka, 2009). The lower-order factors associated with frequency of sexual behaviour, however, varied between studies. This is likely a function of differing definitions of sexual behaviour employed in studies; SE and SI factors are not related uniformly to all types of sexual behaviours (Janssen et al., 2002a). Although the internal consistency of the sexual frequency measure for the present study was low, it was an improvement to frequency counts and study-specific measures found problematic in other studies (e.g., Bell et al., 2016).

Both SE and SI were independently associated with breadth of sexual behaviour; however, only Arousability significantly predicted this variable in the multiple regression model. Higher scores on Arousability reflect a tendency to become easily sexually aroused in a variety of situations. This implies that higher SE results in a broader sexual repertoire regardless of SI. This finding has particular implications in the context of older adults where increased physical limitations and difficulties (e.g., vaginal dryness, erectile dysfunction) may make expectations for engagement in certain sexual behaviours (e.g., intercourse) problematic. A larger sexual

repertoire will likely facilitate maintenance of sexual activity, if desired, into later life as individuals are able to draw upon a wider range of activities to meet their sexual needs and better accommodate age-related caveats.

SI was the only factor that was significantly associated with sexual distress; women who scored high on SI were predicted to experience more sexual distress. Although previous research has not established direct links between SI and sexual distress, conceptually this association is logical. SE would not necessarily be expected to be linked with sexual distress unless a woman's sexual arousal is thwarted in some respect. For example, when high SE is met with high SI, it is likely that sexual distress will be at its peak as these competing propensities will be at odds; sexual responses to various situations will be high, but also unfulfilled and inhibited.

Interestingly, as was also evident for sexual function and sexual satisfaction, Relationship Importance was not associated with indicators of sexual well-being in the predicted directions. Sexual distress was negatively associated with Relationship Importance and both sexual function and satisfaction were positively associated with Relationship Importance. These results suggest that the associations between SE and SI propensities are more nuanced and are perhaps a function of other contextual factors. Relationship Importance evaluates a woman's need for sex to occur within a specific relationship context to facilitate sexual arousal; higher scores on this factor reflect greater interference with arousal when these conditions are perceived as not met. The women in the study sample were in long-term relationships. Consequently, responding more favourably to the items pertaining to this factor could be indicative of women's positive perceptions of their current relationship.

Another interesting finding of this study was the variation in strength of some of the established relationships between the lower-order SE and SI factors and indicators of sexual

well-being as a function of their interactions with other variables. The positive relationships between Arousal Contingency and Concerns about Sexual Function and sexual distress disappeared when low partner mental health was reported. Partner physical health and the women's own mental health were also identified as moderators of the associations between SE and SI lower-order factors and different facets of sexual well-being. These findings suggest that in certain situations, SE and SI may be less (or more) predictive of the variability in sexual well-being indicators in older women.

These results are particularly salient when taking into consideration the tenets of the DCM of sexual response. One principle of the model is that SE and SI are "traits" that remain relatively consistent over time. The results of one study support a genetic/heritability component (Varjonen et al., 2007); however, other studies show at least some variation of SE and SI along different, demographics-related constructs (e.g., Pinxten & Lievens, 2015) and dyadic variables (Lykins et al., 2012). Although it is still relatively unclear to what extent questionnaire measures of SE and SI assess the state or the trait dimension (Bancroft et al., 2009; Sanders et al., 2008), the assumptions of the DCM imply that SE and SI propensities are not easily mutable. Velten et al. (2016b) also found a relatively high one year stability of both SE and SI factors. This suggests that, for example, a woman's high SI contributing to sexual difficulties may not easily be changed, especially in older adult life where the early learning events cited to also influence SE and SI propensities (Bancroft & Janssen, 2000) are distal and may have been reinforced over the lifetime of the individual. This identification of factors moderating the relationships between SE and SI lower-order factors and sexual well-being could help focus interventions for sexual problems by elucidating ways to foster and expand positive relationships identified and/or reduce negative associations that are discovered. This study provides a preliminary investigation of the

moderating variables of the links between SE and SI and sexual well-being; however, more research is required to explore mechanisms that could be better targeted via psychological and/or pharmacological interventions to enhance maintenance of sexual well-being in older adulthood.

Implications

This study broadened the extant DCM literature by examining the utility of the theoretical model to understanding diversity in sexual well-being of older women, on a spectrum of facets that included both cognitive and behaviour-related components. DCM predictions regarding the stability of SE and SI propensities (Bancroft & Janssen, 2000) were supported by the results of this study; these propensities were not correlated with participant age. Unfortunately, study design did not allow for direct conclusions regarding the stability of SE and SI propensities across various groups of older adult woman. Nonetheless, there was no evidence to suggest that, for example, better mental health or physical health was related to higher SE and lower SI scores. This may suggest more inherent potential to these propensities, rather than SE and SI being more influenced by current circumstance, at least in older women.

The results of this study also illustrate the relative contributions of SE and SI lower-order factors, when examined together, to a range of indicators of sexual well-being. Taken together, the results suggest stronger predictive utility of SI when compared with SE; high SI, for example, indicates a greater likelihood of sexual difficulties later in life for woman. This finding is consistent with the extant DCM literature (Bancroft, 1999; Graham et al., 2006; Milhausen et al., 2010; Sanders et al., 2008); and the SESII-W questionnaire was developed to better account for the differential factor construction and role SI may play in sexual responses of women as compared to men (Graham et al., 2006). Bjorklund and Kipp's (1996) often cited research in the DCM literature on parental investment theory and gender differences in the evolution of

inhibition mechanisms also further underscores the fundamental importance of SI in women specifically and offers an evolutionary perspective of the adaptive advantages of sexual inhibition. Although the results of this study generally highlight that both SE and SI propensities are relevant to the conceptualization of sexual well-being in older women, findings also support the commonly held notion in the DCM literature that women's sexual experiences are more strongly related to inhibition than excitation factors.

Much of the literature on the sexuality of older adults has been criticized for failing to account for diversity of experiences in this age group (e.g., Gott, 2005). Many researchers have cautioned against conceptualizing "older adults" as one group; older adults exhibit a tremendous heterogeneity in functioning (e.g., Garfein & Herzong, 1995; Harris, Kovar, Suzman, Kleinman, & Feldman, 1989; Hertzman, Frank, & Evans, 1994; Suzman, Harris, Hadley, Kovar, & Weindruch, 1992) and many gerontologists suggest and that individual differences may be greater in the older age groups compared to young adult or middle-aged groups (e.g., Baltes, 1998; Elder, 1969; Erber, 2010; Grigsby, 1996). The DCM may provide a theoretical framework for research and understanding of individual variability in sexual responsiveness beyond a medicalized lens on sexuality or group aggregate results of association with demographic variables. Identifying an individual's propensities for SE and SI may provide a way of understanding why certain individuals who, for example, suffer physical health/mental health and other difficulties still choose to maintain their engagement in sexual activities while others do not. It may be plausible to expect that these individuals have a comparatively higher SE and lower SI. The DCM reflects a more holistic and person-centered interpretation of variability in older women's sexual well-being by taking into consideration possible innate propensities, early-

learning experiences, and a lifetime of sexual experiences, all culminating in diversified sexual well-being later in life.

Limitations

The findings of this study need to be considered in light of some limitations. Currently, it has not yet been established to what extent SE and SI should be regarded as “state” or “trait” measures or, in other words, to what extent they measure individual differences in vulnerability to sexual well-being difficulties, or rather the consequences of established sexual well-being difficulties. This distinction may not be possible until prospective studies are carried out. In addition, the number of comparisons was not corrected for in evaluating significance, which will be desirable with replication.

In terms of study design, the use of correlational data does not allow causal inferences to be drawn between women’s propensities for SE and SI and their sexual well-being. SE and SI factors were discovered to be relevant constructs in explaining variability in sexual well-being in older women; however, they cannot be conceptualized as direct determinants. The relatively low Cronbach’s alpha of the scale used to measure frequency of sexual behaviour as well the shortened version of the NSSS employed in this study also introduce limitations; results for these outcome variables need to be interpreted with discretion. Future studies would benefit from more comprehensive measures of both sexual frequency and satisfaction. Although the findings of SESII-W validation studies (e.g., Bloemendaal & Laan, 2015; Velten et al., 2016a) suggest the questionnaire measures distinct constructs, it should be noted that there was some overlap between items among study questionnaires which may have affected study results (e.g., possibly inflating correlations). Further, it cannot be assumed that these study results are generalizable to all older women; women who participated in the survey all had long-term sexual partners and

they tended to be well-educated, higher-earning, heterosexual, Caucasian women. Replication of this study with more diverse samples and in older men is required to more thoroughly explain the relevance of SI and SE to indicators of sexual well-being in older adulthood.

Conclusion

Variability in sexuality in older women may be determined by the interplay of a theorized, lifelong differential predisposition regarding sexuality, but also the specific caveats posed by ageing. Assessment of a woman's lifetime experience of sexuality developed in the context of her propensities for SI and SE appears highly warranted. Some women may be highly receptive to clinical interventions while for others, a focus on maintaining sexuality into later decades of life may indeed be an undesirable burden. In addition, the type of interventions chosen may differ depending on a more comprehensive understanding of her sexual history. For example, for a postmenopausal woman with Genito-urinary syndrome of menopause, receiving local estrogen may be the only necessary intervention needed for her to return to comfortable, enjoyable sex. However, a woman with high propensities for inhibition may not find a pharmacological intervention sufficient to manage her concerns. The story of sexual well-being in midlife and older women is complex and a focus on the contributing, highly variable inter-individual factors is paramount for appropriately identifying and addressing the sexual needs of this diverse and growing population.

General Discussion

Sexuality in older adulthood has received increased attention by popular media and the research community over the past half century as a result of more sex-positive views resulting from socio-cultural changes including the “sexual revolution”, the advent of birth control, and sexuality enhancing medications. The growing interest was further fuelled by demographic changes with an increasingly older - yet healthy and engaged population. Once invisible and undiscussed, representations of late-life sexuality have evolved and now integrate many positive images of older adults leading long and sexually fulling lives. For some older adults, the importance of, and desire for sexual activity remain preserved whereas for others, the pursuit of sexual endeavours ceases completely and attention is turned elsewhere. The overarching purpose of this dissertation was to examine factors related to the diversity in sexual well-being observed in later life.

Study 1 Summary

Study 1 of this dissertation is a systematic review of the literature on factors related to sexual activity in both males and females 60 years of age and older. In the context of this study, sexual activity was broadly defined as caressing, foreplay, solitary or mutual masturbation, oral-genital sexual activities, and anal or vaginal intercourse. Three databases were initially searched for selected articles in 2011 and then the search was updated in 2016 to include the most recent and relevant literature. After excluding articles based on the inclusion criteria for this study, data were extracted from a total of 57 full articles.

Interestingly, only four factors were found to be consistently related to the maintenance and/or cessation of sexual activity. These factors included past frequency of sexual behaviour (Chew, Bremner, Stuckey, Earle, & Jamrozik, 2009; Cogen & Steinman, 1990; Freixas, Luque,

& Reina, 2015), partner's interest in sexual activity (Delamater, Hyde, & Fong, 2008; Finkle, Moyers, Tobenkin, & Karg, 1959; Hyde et al., 2010; Pfeiffer, Verwoerdt, & Wang, 1968) presence of erectile dysfunction (Chew et al., 2009; Cogen & Steinman, 1990; Finkle et al., 1959; Killinger, Boura, & Diokno, 2014; Pfeiffer et al., 1968), and partner illness (Delamater et al., 2008; Hyde et al., 2010; Kahn & Fisher, 1969; Litz, Zeiss, & Davies, 1990; Pfeiffer et al., 1968). Several other factors were identified as being related to specific types of sexual activity in older adulthood such as years of marriage, partner availability, self-esteem, current sexual interest and importance placed on sexual activity as well as physical illness. These associations, however, were only investigated in single studies, and thus it remains unclear if these results can be replicated and how they apply to a wider range of older individuals.

Of particular interest in Study 1 was the investigation of generalizable factors associated with the maintenance and/or cessation of sexual activity in older adulthood; however, the results of the systematic review were indicative of significant heterogeneity of older adults' sexual experiences, making generalizations challenging. An overall conclusion that was reached pointed towards the caveat of generalizing older adults as a group, highlighting potential significant between- cohort and inter-cohort variability. This conclusion needs to be considered with some discretion as another noteworthy finding of the systematic review was the considerable methodological caveats across the majority of studies precluding firm conclusions.

Study 2 Summary

Following recommendations for future literature that stemmed from the findings of Study 1, Study 2 of this dissertation employed the DCM (Bancroft & Janssen, 2000) as its theoretical framework to help explain sexual well-being diversity in women 50 years of age and older. Women from across Canada who, at the time of the study, were involved in a long-term

relationship were recruited to participate via an online or mail-in survey. Data from 185 women were used. Participants anonymously completed questionnaires relating to sexual function, satisfaction, distress, frequency of sexual activity, breadth of sexual experience, and sexual excitation (SE) and sexual inhibition (SI) propensities.

Study 2 involved three specific areas of investigation: (a) examining the applicability of the DCM model to sexual well-being indicators in women 50 years of age and older; (b) determining the differential role of DCM factors to women's sexual function, distress, satisfaction, breadth of sexual experience, and frequency of sexual activity; and (c) investigating if any additional variables influence the strength of identified relationships. Prior to this dissertation research, DCM-related studies included very few older adult participants. If the sample was age-stratified, few conclusions were drawn specific to older adults. It was, therefore, necessary to first confirm relationships between SE and SI and their lower-order factors and indicators of sexual well-being in older women. Each scale considered independently, SE and SI were correlated with the majority of the indicators of sexual well-being and the directions of associations were consistent with the tenets of the DCM. Several lower-order factors were also correlated with the indicators of sexual well-being. Study 2 subsequently investigated whether both SE and SI lower-order factors significantly predicted indicators of sexual well-being as the DCM would suggest. Findings indicated that both SE and SI factors were significant predictors of sexual function, satisfaction, and frequency of sexual activity. Sexual distress was predicted more strongly by SI factors and breadth of sexual experience by one SE lower-order factor. Finally, Study 2 involved investigating possible moderating variables of the significant associations between SE and SI lower-order factors and the indicators of sexual well-being.

Partner physical and mental health and participant's own mental health were identified as moderating variables of these associations.

The significant contributions of Study 2 were twofold; it added further validation and expansion of the DCM model to older women and it provided theoretically-grounded insight into mechanisms explaining variation in older women's sexual well-being. To date, studies have supported the DCM as a framework for understanding sexual attitudes and behaviours in a variety of populations (e.g., Bancroft, Carnes, Janssen, & Long, 2005; Bloemendaal & Laan, 2015; Graham, Sanders, & Milhausen, 2006; Jozkowski, Sanders, Rhoads, Milhausen & Graham, 2015; Nguyen et al., 2012; Varjonen et al., 2007; Velten, Scholten, Graham, & Margraf, 2015). Questions still remained, however, regarding the DCM's relevance for older adult populations. The results of Study 2 confirm the utility of the DCM in a sample of older women, thereby broadening the model applicability to additional populations and a wider range of sexuality-related constructs. A normal distribution of SE and SI propensities was observed in older women and this variability was linked with several indicators of sexual well-being. Further underscoring findings of previous studies (e.g., Sanders, Graham, & Milhausen, 2008), results of Study 2 illustrate the relative contributions of SE and SI, suggesting stronger predictive utility of SI when compared with SE in terms of indicators of sexual well-being.

The identification of variables moderating the significant relationships between SE and SI lower-order factors and indicators of sexual well-being was another important contribution of Study 2. While SE and SI are proposed to be relatively stable across the life span (Bancroft & Janssen, 2000), it was found that the strength of the associations between these propensities and indicators of sexual well-being were not consistent when other select variables were taken into consideration. Arousability, for example, was not associated with sexual breadth in women who

reported good mental health. This implies that for women who have SE and SI profiles that are more strongly related to sexual difficulties (e.g., women who are not very sexually arousable and are highly sexually inhibited), sexual problems are not necessarily inevitable; by addressing other factors (e.g., partner health and personal health), sexual well-being in later life may be improved despite one's SE and SI profile.

Lastly, the findings of Study 2 were significant contributions to the extant literature in that they reflected a theoretically-grounded explanation of observed variability in sexual well-being in older women. Identifying an individual's propensities for SE and SI may provide a way of understanding mechanisms behind why, in the face of ageing-related changes, some older women chose to maintain their engagement in sexual activities while others do not. It is plausible to suggest that these individuals may have a higher SE and lower SI than individuals in the same situation who choose to not engage in sexual activity. The DCM reflects a more person-centered interpretation of women's sexual well-being diversity in later life by taking into consideration possible innate propensities as well as early-learning and life experiences.

Limitations

Although this dissertation offers several important contributions to the literature, it is not without its limitations. A significant portion of the research reviewed in Study 1 was carried out with participants from the United States thereby limiting cross-cultural inferences. Given the emphasis in this study on the changing associations between many factors and sexual activity as a function of sample characteristics and sexual activity definitions, it is expected that this finding would be further strengthened with the inclusion of increasingly diverse participants over the age of 60. The more consistent factors linked to sexual activity in older adults would also likely not change as these are associations common to all sexual relationships. Erectile dysfunction, for

example, impacts the ability to engage in intercourse regardless of age or cultural heritage. Nonetheless, it would be preferable for future systematic reviews to include a more balanced selection of studies; hopefully this will be possible with the increase in research attention turned toward this field of study in recent years.

Regarding Study 2, significant attempts were made to recruit a varied cross-Canadian sample; however, the majority of participants were Caucasian, heterosexual, and fairly well-educated. Self-selection for sexuality-based studies also poses a caveat in that those who agree to participate in sexuality research have been reported to have more positive and less traditional attitudes toward sexuality, experience less sexual guilt, report more sexual self-esteem, and have more sexual experience compared to individuals choosing not to participate (Dunne et al., 1997; Strassberg & Lowe, 1995; Wiederman, 1999). These sample characteristics may have influenced the strength of the associations identified; one’s sexual attitudes may interact with SE and SI propensities, for example. More heterogeneous participants need to be recruited to replicate the findings of this study and similar research with older adult men will be necessary to explore potential gender differences.

Study 2 included some methodological limitations in terms of outcome measures employed. The internal validity of the sexual activity frequency measure was lower than desired. The measure of sexual satisfaction was limited resulting from technical difficulties. Finally, the four-week criterion used for sexual activity in the measure of sexual functioning may have been less appropriate in this sample, especially for the woman in their later 70s. Frequency of sexual activity does decline in older adulthood; however, engaging in sexual activity less than once a month does not necessarily indicate significant problems with sexual functioning in this population. In further studies, these measures and other sexuality-based measures may need to be

better adapted for older adult populations (e.g. a 12-week criterion for sexual activity as opposed to a 4-week criterion) as these questionnaires were not initially validated for use with individuals in the later years of life.

Lastly, the results of Study 2 cannot be treated as evidence for the tangible existence of SE and SI propensities; they simply reflect associations between theorized constructs and variability in the sexual well-being of older women. Although proposed, neural substrates of SE and SI have yet to be directly linked to the DCM (Bancroft, 1999) and the notion of sexual inhibition, in particular, remains controversial (Bjorklund & Kipp, 1996). The DCM is a theoretical framework rather than a precise depiction of a concretely measurable state and change. More research is required to identify genetic and biological markers of SE and SI propensities and solidify validated measurements of these constructs in both women and men.

Implications

Several significant implications can be drawn from this dissertation. The results of study 1 and 2 underscore the observation that the sexual lives of older adults are diverse and multi-determined. Many older adults continue to be sexually active, which is reported in a considerable number of existing studies; in addition, they also engage in a variety of different sexual behaviours. Sexual distress, functioning, and satisfaction also vary greatly between older adults, in particular older women. This dissertation highlighted that age is not the most important factor related to sexual well-being, but rather that other variables (e.g., partner health and interest in sexual activity, past sexual experiences, SE and SI propensities) are more relevant and provide greater insight into an individual’s sexual experiences in older adulthood.

In particular, theoretical underpinnings of sexual well-being in older adulthood were identified and the utility of the DCM for understanding individual variability beyond a

medicalized lens on sexuality or group aggregate results of association with demographic variables was demonstrated. Links between SE and SI and indicators of sexual well-being established in this dissertation highlight the DCM's predictive ability in terms of later life sexual difficulties. As these propensities are purported to remain relatively stable over time (Bancroft & Janssen, 2000), it is plausible to suggest that identifying individuals' SE and SI propensities is helpful in predicting future sexual difficulties and potentially identifying those older women who may desire and be receptive to clinical intervention. For younger women, a high propensity for SI and a low propensity for SE, therefore, may be a risk factor for current or later life problems with sexual satisfaction, distress and functioning, as well as lower breadth of sexual experiences and frequency. Further evidenced by the results of this dissertation, lack of sexual well-being may be even more likely for low SE high SI women if they struggle with mental health difficulties and also have partners with no physical or mental health concerns. This dissertation not only highlighted the associations between SE and SI and indicators of sexual well-being, but also began to explore the importance of the relationships between predictor variables (something often neglected in the extant research as demonstrated by the findings of Study 1) and what these interactions may mean for an individual's sexual well-being.

The question arises whether the findings of this dissertation would be replicated with more diverse samples of women. For example, it is possible that the identified positive relationships between SE and indicators of sexual well-being in this dissertation may vary in other samples of women. On the one hand, high SE women who are no longer able to engage in intercourse-related activities may creatively expand their sexual repertoire to other sexual behaviours to preserve sexual intimacy. Conversely, sexual experiences and pleasures associated with high SE may present an unattainable standard in later life due to life and age-related

constraints (e.g., lack of partner, lack of partner's sexual ability, one's own physical disability). Such constraints limiting sexual expression can result in increased sexual distress and dissatisfaction. Inconsistencies between expected direction of associations between SE factors and sexual satisfaction have already been highlighted in the literature (e.g., Lykins, Janssen, Newhouse, Heiman, & Rafaeli, 2012). These findings coupled with the results of this dissertation demonstrate that the relationships between SE and SI factors and indicators of sexual well-being are variable and are related to a variety of individual and contextual factors. This dissertation provided the initial steps to these investigations via linking SE, SI and their lower-order factors to a range of indicators of sexual well-being; however, the nuances of these relationships require further development. For example, is high SE predictive of increased sexual well-being in older women in a more general sense, or is this only the case when women have access to an able sexual partner?

These findings also have important clinical implications. Particularly in the current sociocultural context with the increasingly ageing population composed of individuals who grew up with more liberalized sexual attitudes and practices, sexuality is increasingly becoming a more expressed area of concern. Healthcare professionals are charged with the delicate task of acknowledging clients' advanced age while resisting assumptions about the implications of age regarding their sexuality. Historically, much discomfort was acknowledged among health professionals with regard to discussing sexual topics with older adults, with many choosing not to broach the subject (e.g., Gott, Hinchliff, & Galena, 2004; Gott, Galena, Hinchliff, & Elford, 2004; Dogan, Demir, Eker, & Karim, 2008; Taylor & Gosney, 2011). Unfortunately, some healthcare professionals continue to hold stereotypic beliefs, such as assuming older adults are asexual, and express worry about addressing sexuality with older adults because of

embarrassment and a lack of knowledge (Hinchliff & Gott, 2011). Negative views become apparent in communications with healthcare providers, but are perhaps best expressed by what is omitted from health provider and older patient interactions. For example, the assumption that an older client won't engage in casual sex may lead healthcare professionals to entirely neglect the topic of protection against and testing for sexually transmitted infections (STIs). Some studies in fact indicate an increased incidence of STI in older adults (Minichiello, Rahman, Hawkes, & Pitts, 2012; Poynten, Grulich, & Templeton, 2013), although there is still a lack of agreement between studies investigating this phenomenon and debate about the statistical analyses used in these studies. Additionally, clinicians' negative attitudes toward sexuality in later life can subtly reinforce existing shame, discomfort, or self-doubt in clients who are reluctant to discuss sexual topics. As is evident from the results of this dissertation, older adults' sexual lives are highly varied; it is therefore important for healthcare professionals to be aware of their own biases and engage clients in open discussions about their sexuality that take into consideration possible, but not assumed, age-related influences.

As was evidenced by the findings of this dissertation, the sexual lives of older adults are highly varied and not universally dictated by age. Misinformation, myth, and stereotypes prevail if researchers and healthcare professionals who work with older adults do not probe directly into their unique sexual experiences and attempt to address relevant sexual concerns. Encouragingly, the application of specific extant models for discussing sexual issues with older adults have been discussed in recent studies with a focus on enhancing the assessment of the multitude of sexual experiences, difficulties, and related factors relevant to this population. One such example is the PLISSIT model (Annon, 1976) which involves a method of sexual assessment that allows clients to feel safe in expressing their sexuality while also providing a way of determining the level of

intervention that clients require. This model has been widely used over the past 30 years by healthcare practitioners working to address the sexual well-being needs of individuals with acquired disability or chronic illness and has more recently been recommended for use in older adult populations (Wallace, 2003).

The first level in the PLISSIT model is “permission” which involves the clinician giving the client permission to be sexual, to have sexual feelings, to desire sexual activity, and to discuss sexuality; it relates to the proactive initiation of the conversation about sexuality (Wallace, 2008). Many clients only require the permission to voice their concerns in order to understand and better cope with them, often not requiring additional levels of intervention. Particularly among older adults where sexual needs have often been neglected by healthcare professionals (e.g., Nusbaum, Singh, & Pyles, 2004), simply initiating sexuality-related discussions is an important first-step intervention. The next level of PLISSIT is “limited information” where clients are provided with information on the topics or concerns discussed to increase understanding, correct any misconceptions, and dispel myths (Wallace, 2008). This may involve providing verbal psychoeducation to clients on specific sexual issues, recommendations of certain information pamphlets or additional reading materials, or even normalization of sexual behaviour in and of itself in older adulthood. The third level includes “specific suggestions” where the clinician provides the client with concrete suggestions to help the client address his or her expressed difficulties. This could, for example, include suggestions on how to vary sexual positions to alleviate arthritis-related pain during sexual activity. Finally, the fourth level of PLISSIT is “intensive therapy” where further supports (e.g., therapists, medical interventions) are identified to address relevant concerns and interventions are provided to help clients deal with the deeper, underlying issues being expressed. Following the previous example, clients

might need assistance in exploring pain management strategies in response to arthritis pain in the context of sexual activity while also addressing the debilitating negative effects of long-standing communication deficits within the relationship. In sum, the PLISSIT model identifies strategies important to assessment and treatment of sexual issues in older adulthood; it provides a framework for exploring identified issues in a way that is sensitive to the impacts of the variety of factors that have been identified via this dissertation as relevant to sexual well-being in older adulthood. Given the findings of this dissertation coupled with extant research highlighting the necessity for improvement in healthcare professionals' responses to the sexual needs of older adults (e.g., Bauer, McAuliffe, & Nay, 2007), it is important to further develop person-centered models for assessing sexual well-being in older adulthood that balance consideration of possible age-related influences, but also reflect a broader, non-judgemental assessment approach to sexual diversity in this population.

Regarding the treatment for sexual difficulties in later life, the results of this dissertation also provide some insight into who may be more likely to seek out and benefit from assistance. Although SI is more strongly linked with sexual problems, individuals' propensities for SE possibly differentiate individuals who seek assistance for sexual problems and those who do not. Older women who have sexual difficulties, but who are not high on SE may place less value on sexual experiences and thus not be greatly distressed when problems associated with ageing get in the way of sexual activity. These are possibly the individuals who cease sexual activity in later life and do not miss it. On the other hand, older women who are high on SE, who experience interferences with an active sex life may seek out additional help (e.g., therapy, medical assistance, sexual aids) to compensate because sexual activity remains an important component of their lives. Identifying individuals' SE and SI profiles, therefore, may be pertinent in assessing

individuals' desire to engage in treatment, discriminating between those desiring change when problems arise and those content with fewer (or no) sexual experiences in older adulthood.

Future Research Directions

This dissertation advanced our empirical understanding of sexual well-being in older adulthood and related factors; however, it also presented many additional questions. Possibly the most salient research concern this dissertation invokes are the significant methodological caveats and lack of theoretical and conceptual grounding of research on sexuality and ageing. How can we advance research to assist us in better understanding general trends in older adults' sexual well-being while also balancing sensitivity to diversity?

Biopsychosocial Approach. An important recommendation for future research involves approaching the study of sexuality and ageing from a biopsychosocial perspective. Previous literature reviews have strongly encouraged a multidimensional approach (e.g., Delamater & Karracker, 2009; Delamater & Koepsel, 2015; Ni Lochlainn & Kenny, 2013) and have critiqued the dominant medical models focused on age-related sexual changes and dysfunction that have driven this field of literature thus far (e.g., Gott, 2005; Tiefer, 2000; Tiefer & Giami, 2002). The general format of these extant reviews is similar; they discuss limitations in the foci of the extant literature and propose a biopsychosocial approach to the study of sexuality and ageing, then procced in reviewing studies on the various biological, psychological, and social factors related to various sexual constructs in older adulthood. The significant contributions of these reviews are in their descriptions and discussion of the relationships between numerous types of factors and their putative interactions with indicators of sexual well-being. Unfortunately, concrete strategies for guiding future work, beyond highlighting the need to employ a biopsychosocial approach and encouraging the inclusion of more representative samples, are rarely put forth.

The findings of this dissertation support existing recommendations, but expand on them in a few important respects. Of note, the findings of this dissertation highlight the fluidity of associations between various factors and sexual activity in older adulthood. For example, health was related to sexual activity of some older individuals, but not others (e.g., Herbenick et al., 2010b). Therefore, in approaching the study of sexuality in older adulthood, researchers must not only be concerned with the multitude of factors that may be relevant, but also how associations may shift over time or within different groups of older adults and target their sampling strategies accordingly. The DCM provides one means of understanding and predicting how individuals might navigate the ageing process in terms of sexual well-being. Links identified in this dissertation between SE and SI propensities and sexual well-being in older adulthood help to open the discussion of other, more stable characteristics of an individual that may be related to and predict their sexual well-being in older adulthood and their possible vulnerabilities. Specifically, in future studies attention must be placed on broader investigations of both individual (e.g., sexual attitudes, personality style, past engagement in sexual behaviour) and contextual (e.g., partner-related, living circumstances) factors related to older adults' sexual well-being.

Relatedly, this dissertation calls into question how much biological age per se affects the developmental trajectory of sexuality across the later decades of life. To date, researchers have placed significant emphasis on how biological age is related to sexual well-being in the later years of life, often using age as the primary means of classifying participants (e.g., Bergström-Walan & Nielsen, 1990; Bretschneider & McCoy, 1988; Chew, Bremner, Stuckey, Earle, & Jamrozik, 2009; Dundon & Rellini, 2010; Laumann, Das, & Waite, 2008; Laumann et al., 2005; Valadares et al., 2008). Findings of this dissertation demonstrate that age has a highly variable

relationship to indicators of sexual well-being in older adulthood and that other factors are often more relevant. For example, the findings of Study 1 indicated that partner-related factors (e.g., health, interest in sexual activity) were more consistently related to sexual activity in older adulthood than age, and in Study 2, SE and SI factors were more strongly related to indicators of sexual well-being than age. Interestingly, in the gerontology literature, significant inter-generational variability is assumed on almost every possible measure in individuals age 60 and older (Erber, 2010), with many gerontologists suggesting that individual differences may be greater in the older age groups compared to young adult or middle-aged groups (e.g., Baltes, 1979; Elder, 1969; Erber, 2010; Grigsby, 1996; Maddox & Douglas, 1974; Neugarten, 1982). Yet, the notion that chronological age is not a categorical marker for understanding and measuring sexual activity in older adulthood seems to be a relatively novel conceptualization.

In the future, greater emphasis needs to be placed on sampling participants who possess similar characteristics aside from age. For example, in gero-psychology the framework generally referred to by its acronym, ADRESSING (Hayes, 1996), has been proposed as a framework for sensitizing clinicians to the multidimensional combination of socio-cultural and individual factors that broadly affect older adults in general, and with regard to sexual function in particular. ADRESSING was developed from American Psychological Association guidelines for working with multicultural clients and stands for Age, Disability, Religion, Ethnicity, Social status, Sexual orientation, Indigenous heritage, National origin, and Gender, summarizing the variables suggested for systematic consideration in the study of sexuality in older adulthood (Orel & Watson, 2012). Age may be a common denominator among older adults, yet within this model it is only one mechanism for understanding sexuality within the context of a variety of other factors that are seen to shape older adults' attitudes, definitions of sexual activity, and

sexual behaviours. Using this framework, for example, a 65-year-old Indonesian-born, single, homosexual, man with a high socioeconomic status, but severe mobility issues would not be placed in the same category as a 66-year-old North-American-born, married, heterosexual, man who possesses a high degree of athleticism, but very low income. Clearly, the possibilities for grouping study participants along combinations of these characteristic dimensions are endless but can be purposeful in light of the existing literature. Overall, taking into consideration a broader range of factors in recruiting participants for sexuality and ageing research will benefit the significance of the relationships identified in studies and their generalizability to specific sub-groups of "older" adults.

Defining Sexual Well-Being. Considering the intricacy of age and its role in sexual well-being in older adults, another question emerged: what does sexual well-being represent for older adults? Studies to date in older adulthood have been largely focused on very few elements of sexual well-being, primarily sexual functioning (Delamater, 2012); Study 1 of this dissertation highlighted significant limitations with how researchers have investigated sexual activity with regard to older adults. The focus was mostly on frequency ratings of intercourse, not taking into account the myriad ways in which older adults can experience sexual well-being including activities that are less likely affected by physiological effects of ageing (e.g., erection, vaginal lubrication). Although sexuality and ageing studies have significantly improved over the past 60 years, transitioning from completely excluding older adults, to investigations of sexual prevalence, dysfunction and decline, to a bimodal discourse of sexual decline vs. the "sexy oldie", it has only been most recently that qualitative work in particular has started to explore more of the nuances of sexual well-being in older adulthood. Encouragingly, studies are now starting to recognize sexual well-being as a lifelong consideration (DeLamater, 2012; Thompson,

Charo, Vahia, Depp, Allison, & Jeste, 2011; Waite, Laumann, Das, & Schumm, 2009). Qualitative studies describe an inclusive meaning of sexual well-being in older adulthood. Fileborn, Thorpe, Hawkes, Minichiello, and Pitts (2015), for example, conducted semi-structured interviews with 43 Australian women (aged 50-81). These authors found that the sexual desires and activities of the women in their sample were diverse and fluid over the life course and their accounts of their sexual experiences did not conform to simplistic definitions of penetrative sex. Other authors also suggested that the focus in older adulthood may change from an emphasis on the importance of frequent sexual intercourse to a greater valuing of companionship, non-coital sexual activity, affection, and intimacy (e.g., Lemieux, Kaiser, Pereira, & Meadows, 2004; Hurd Clarke, 2006; Gott & Hinchliff, 2003).

The growing association of sexual activity as a “recreational” rather than “procreative” activity is well reflected when considering the sexual behaviours of older adults. To date, some studies have investigated *how* interested older adults are in sexual activity (Bretschenider & McCoy, 1988; Delamater & Sill, 2005; Kalra, Subramanyam, & Pinto, 2011; Leiblum, Baume, & Croog, 1994; Minichiello, Plummer, & Loxton, 2004), but studies thus far have provided little insight into *why* sexual activity is important; assumptions about the value and importance of sex in later life need to be further challenged. In one study of 44 men and women aged 50–92 years, Gott and Hinchliff (2003) reported that sexual activity was considered at least “moderately” important by the majority of participants and was valued as a way of expressing love for a partner and providing him/her pleasure, helping maintain relationships, and improving self-confidence and, at times, body image. It appears that the foci of research also needs to broadened to the exploration of older adults’ motivations to engage in sexual behaviour, rather than simply focusing on more superficial constructs (e.g., prevalence and frequencies of sexual behaviours).

Clinically, this would also involve more of a focus on exploring the needs that sexual activity fulfills for older adults (and individuals in general), whether these needs are adequately being addressed, and problem solving challenges that arise.

It is suggested that researchers focus efforts on more qualitatively-driven, inductive approaches to understanding sexual well-being in older adulthood to better conceptualize this construct in the ways most relevant to these individuals. Deductive, quantitative assessment of sexual well-being in this population is unlikely sufficiently comprehensive and also may be somewhat pejorative. For example, some studies include behaviours such as hugging, kissing, and handholding in their definition of "sexual activity" (e.g., Palacios-Ceña et al., 2012). The question this research provokes is whether older adults themselves conceptualize "handholding" and such behaviours as sexual activity or if the inclusion of these behaviours in study measures is more a reflection of researchers' biases and lingering infantilizing stereotypes of older adults' sexuality. In at least one qualitative study where older adult men are interviewed about their conceptualizations of sexuality, behaviours such as hugging and kissing were not in fact considered "sexual" (Yan, Wu, Ho, & Pearson, 2011).

Taken together the findings of this dissertation and information gleaned from qualitative studies, suggest that narrow definitions of sexual well-being do not take into account the diversity of potential sexual fulfillment in later years. Definitions of sex based on penetration and "youthful" models of sex obscure the broader range of practices, and the greater focus on intimate touch and affection that older people actually do desire and engage in (Drummond et al., 2013; Helmes & Chapman, 2012; McCarthy, Farr, & McDonald, 2013; Willert & Semans, 2000; Yee, 2010). How we define sexual well-being will increase the validity of research findings and start the investigation of how those definitions may – or may not change over the lifespan.

Conclusion

Sexuality and ageing research is only in its infancy. Recently recognized as a valuable endeavor with positive impacts on quality of life and indeed a human right (WHO, 2006), sexuality in the later decades of life remains a relatively ill-understood phenomenon. The effects of biological ageing, medical illness, and sexual dysfunction treatments have garnered more attention than the exploration of sexual well-being outside the reproductive imperative. The observation that some adults cease sexual activity with no apparent regret while others are willing to go to great lengths to maintain an active sex life was one of the foci of this dissertation. Instead of answering the question under which circumstances older adults are more likely to maintain an active sex life, this dissertation revealed a picture of great diversity in the later years that precludes simple generalizations. Diversity is further underscored by individual sexual propensities that are hypothesized to create the grounds for a lifetime of sexuality that may be more or less satisfying and fulfilling. It appears as though the themes of individuals' sexual lives continue into older adulthood with the additional caveats of own and partner health compromising sexual well-being. As researchers, we are called upon to endeavor to understand older adults' experiences of their sexuality through the lens of widening diversity. Variable opportunities for older adults to breach the boundaries of convention and scripts and define their own sexual trajectories may be at the very source of diversity and resilience; an exciting topic to continue to unravel via research and explore in clinical practice.

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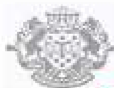
Appendix A

Research Ethics Board Approval

File Number: H 01-14-14

Date (mm/dd/yyyy): 02/28/2014



Université d'Ottawa University of Ottawa
Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

Ethics Approval Notice

Health Sciences and Science REB

Principal Investigator / Supervisor / Co-investigator(s) / Student(s)

First Name	Last Name	Affiliation	Role
Elke	Reissing	Social Sciences / Psychology	Supervisor
Suzanne	Bell	Social Sciences / Psychology	Student Researcher

File Number: H 01-14-14

Type of Project: PhD Thesis

Title: The Experiences of Women 50+ in Intimate Relationships

Approval Date (mm/dd/yyyy)	Expiry Date (mm/dd/yyyy)	Approval Type
02/28/2014	02/27/2015	Ia

(Ia: Approval, Ib: Approval for initial stage only)

Special Conditions / Comments:
N/A

550, rue Cumberland 550 Cumberland Street
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
(613) 562-5387 • Téléc./Fax (613) 562-5338
http://www.recherche.uottawa.ca/deontologie/ http://www.research.uottawa.ca/ethics/index.html

File Number: H 01-14-14 **Date (mm/dd/yyyy):** 02/28/2014

Université d'Ottawa University of Ottawa
Bureau d'éthique et d'intégrité de la recherche Office of Research Ethics and Integrity

This is to confirm that the University of Ottawa Research Ethics Board identified above, which operates in accordance with the Tri-Council Policy Statement and other applicable laws and regulations in Ontario, has examined and approved the application for ethical approval for the above named research project as of the Ethics Approval Date indicated for the period above and subject to the conditions listed the section above entitled "Special Conditions / Comments".

During the course of the study the protocol may not be modified without prior written approval from the REB except when necessary to remove subjects from immediate endangerment or when the modification(s) pertain to only administrative or logistical components of the study (e.g. change of telephone number). Investigators must also promptly alert the REB of any changes which increase the risk to participant(s), any changes which considerably affect the conduct of the project, all unanticipated and harmful events that occur, and new information that may negatively affect the conduct of the project and safety of the participant(s). Modifications to the project, information/consent documentation, and/or recruitment documentation, should be submitted to this office for approval using the "Modification to research project" form available at: http://www.research.uottawa.ca/ethics/forms.html.

Please submit an annual status report to the Protocol Officer 4 weeks before the above-referenced expiry date to either close the file or request a renewal of ethics approval. This document can be found at: http://www.research.uottawa.ca/ethics/forms.html.

If you have any questions, please do not hesitate to contact the Ethics Office at extension 5387 or by e-mail at: ethics@uOttawa.ca.

Signature Removed

Germain Zongo
Protocol Officer for Ethics in Research
For Daniel Lagarec, Chair of the Sciences and Health Sciences REB

550, rue Cumberland 550 Cumberland Street
Ottawa (Ontario) K1N 6N5 Canada Ottawa, Ontario K1N 6N5 Canada
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http://www.recherche.uottawa.ca/deontologie/ http://www.research.uottawa.ca/ethics/index.html

Appendix B

Notices of Study

Study 2 Recruitment Poster

University of Ottawa Student is Seeking YOUR Help with PHD Research

"Hello, my name is Suzanne Bell and I have made many lasting memories in Ottawa since moving here four years ago to pursue my PhD in Clinical Psychology. Ottawa has become my new home and I have developed a great passion for both research and clinical work. As part of my doctoral dissertation I am conducting a study on the experiences of women in intimate relationships."

Please complete my study at: www.surveymonkey.com/s/IntimateWomen

OR

If you do not wish to contribute your unique perspective (or are not a woman!) please pass this link along to as many people as possible

This is an area that has received very little research attention. Your insight will help researchers and healthcare professionals better understand the experiences of 50+ women and learn how to better assist them. Your assistance will also have the added benefit of helping me graduate and receive a PhD.

Thank you in advance for your time and please contact me for any and all of your questions related to this study or to request a hardcopy of the questionnaires

Call: XXX XXX-XXXX ext. XXXX or
Email: ----@gmail.com

*I am looking for women who are **50+ years old**, in a long-term, intimate relationship, fluent in English, and live in Canada*

uOttawa

This study has received ethics approval from the University of Ottawa's Research Ethics Board

Suzanne: XXX XXX-XXXX xXXXX
----@gmail.com
www.surveymonkey.com/s/IntimateWomen

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Study 2 Recruitment Poster

University of Ottawa Student is Seeking YOUR Help with PHD Research

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Please complete my study at: www.surveymonkey.com/s/IntimateWomen

OR

If you do not wish to contribute your unique perspective (or are not a woman!) please pass this link along to as many people as possible

This is an area that has received very little research attention. Your insight will help researchers and health care professionals better understand the experiences of 50+ women and learn how to better assist them. Your assistance will also have the added benefit of helping me graduate and receive a PhD.

Thank you in advance for your time and please contact me for any and all of your questions related to this study or to request a hardcopy of the questionnaires

Call: (XXX) XXX-XXXX ext. XXXX or
Email: ----@gmail.com

I am looking for women who are ***50+ years old****, in a long-term, intimate relationship, fluent in English, and live in Canada*

uOttawa

This study has received ethics approval from the University of Ottawa's Research Ethics Board

Study 2 Recruitment Business Card

Let's Talk About Sex

Women aged 50+, Your insight will help researchers and healthcare professionals better understand the experiences of women and learn how to better assist them.

Share Your Voice

Visit: http://www.surveymonkey.com/s/IntimateWomen

No computer? Prefer a paper copy? Have a question?
Call: ( ) - ext.
Or Email: @gmail.com

uOttawa

Study 2 Information Letter

The Experiences of Women 50+ in Intimate Relationships

My name is Suzanne and I am a doctoral student in the School of Psychology at the University of Ottawa and a member of the Human Sexuality Research Laboratory.

Our research laboratory is conducting a study on women's experiences and perceptions of their intimate relationships. To date there has been very little research within this area of study in women 50 years and older.

The purpose of this study is to gain insight into the importance older adults give to physically intimate aspects of their relationships, changes in sexuality that are experienced throughout the life course, and perceptions of the importance of sexuality in society.

In order to participant in this study you *must* be:

- **Female**
- **50 years of age or older**
- **A native English speaker**
- **Currently in a long-term, intimate relationship that has lasted one or more years**
- **Living in Canada**

If you choose to participate, you will be asked to complete anonymous questionnaires that will focus on topics such as relationship satisfaction and physical intimacy.

If you have any questions or would like more detail regarding this study, please email ----@gmail.com or leave a message at the Human Sexuality Research Laboratory at the University of Ottawa at XXX-XXX-XXXX ext. XXXX.

If this is something you would be interested in participating in, please email ----@gmail.com or call XXX-XXX-XXXX ext. XXXX if you would like a questionnaire package sent to you or go to http://www.surveymonkey.com/s/IntimateWomen to participate.

Thank you,

Suzanne Bell, BA
Doctoral Candidate
School of Psychology
University of Ottawa

Study 2 Debriefing Sheet

The Experiences of Women 50+ in Intimate Relationships

Thank You!

Your participation in our study is very helpful. The purpose of this study is to investigate the sexual experiences among women 50+ in long-term, intimate relationships.

If you have any questions or would like any further information about this research, please contact:

Dr. Elke Reissing
School of Psychology
University of Ottawa
XXX-XXX-XXXX ext. XXXX
----@uottawa.ca

or

Suzanne Bell
School of Psychology
University of Ottawa
XXX-XXX-XXXX ext. XXXX
----@gmail.com

Please see the handout provided to you for a list of referral individuals and organizations if you need to talk to someone

To enter the draw for the Tim Hortons gift certificates please call Suzanne Bell at XXX-XXX-XXXX ext. XXXX and leave your first name and email address or phone number

Study 2 Information and Resource Sheet

INFORMATION AND RESOURCE SHEET

-PSYCHOLOGICAL SERVICES-

Mental Health Helpline - **866-531-2600**
Provides information about counseling services and supports in Ontario

Dr. Elke Reissing, C.Psych.
Director of the Human Sexuality Laboratory at the University of Ottawa
Tel.: 613-562-5800, ex. 4944
Email: Reissing@uottawa.ca
Internet: www.socialsciences.uottawa.ca/hslab-labosh/index.asp

Gilmour Psychological Services
437 Gilmour St.
Ottawa, ON K2P 0R5
Tel.: 613-230-4709

University of Ottawa's Centre for Psychological Services
Vanier Hall, 4th Floor, 136 Jean-Jacques Lussier, Ottawa, K1N 6N5
Tel.: 613-562-5289
(Note: Doctoral students provide service under the supervision of faculty members. A sliding fee scale is in place.)

Sharon Klinck, M.Sc.
Offices in Kanata and Arnprior
Tel.: 613-752-1046
Toll Free: 1-866-388-6288

Nancy Smith, M.S.W., R.S.W.
Ottawa Couple and Family Institute
1869 Carling Avenue, Suite 201
Ottawa, ON K2H 1E6
Tel.: 613-722-5122 x303

Sandra Levine Slover, M.S.W., R.S.W.
1800 Bank St., Suite 200
Ottawa, ON K1V OW3
Tel.: 613-523-6400

-INTERNET RESOURCES-

List of Canadian Distress Centers

http://www.suicideprevention.ca/in-crisis-now/find-a-crisis-centre-now/

Find a Psychologist in Your Area
http://www.cpa.ca/public/findingapsychologist/

Help Guide
http://www.helpguide.org

Sex Info Online
http://www.soc.ucsb.edu/sexinfo/

Canadian Women's Health Network
http://www.cwhn.ca/en

Sexual Health Network
http://www.sexualhealth.com/

American Psychological Association Aging and Human Sexuality Resource Guide
http://www.apa.org/pi/aging/resources/guides/sexuality.aspx

Ottawa Seniors
http://www.ottawaseniors.com

-BOOKS-

Sex over 50
Block, J. D., & Bakos, S. C. (1999). Paramus, NJ: Reward Books.

Seasons of the heart: Men and women talk about love, sex, and romance after 60
Gross, Z. H. (2000). New York, NY: New World Library.

Appendix C

Inclusion Criteria

Eligibility

Firstly, just a few questions to make sure you are eligible to participate in this study:

Are you a female? ▢Yes ▢No
Are you 50 years of age or older? ▢Yes ▢No
Are you a native English speaker? ▢Yes ▢No
Do you live in Canada? ▢Yes ▢No
Are you currently in a long-term, intimate relationship that has lasted one or more years? ▢Yes ▢No

If you responded "Yes" to all of these questions please move on to the following pages in this package.

If you answered "No" to any of these questions, unfortunately you are not eligible to participate in this study. Thank you for your interest in this research and please check out the **Information and Resource** sheet included at the end of this package.

Appendix D

Consent Forms

Study 1 Consent Form (paper-based)

Title: The Experiences of Women 50+ in Intimate Relationships

Principal Investigator
Suzanne Bell
Tel: XXX-XXX-XXXX ext. XXXX
Email: ---@gmail.com

Supervisor
Dr. Elke Reissing
Psychology Department
University of Ottawa
Office VNR 4010
Tel: XXX-XXX-XXXX ext. XXXX
Email: ---@uottawa.ca

INFORMATION

Thank you for your interest in participating in our study!

There is so little information out there about 50+ women's sexual experiences; this research will be most valuable for health care professionals who work with these women. Participating in this study involves filling out a series of questionnaires that will take approximately 45 minutes to complete. Please complete the questionnaires within one sitting. The length of the survey is partially due to the lack of research in the area as well as the complexity of women's sexual experiences. With this research we are particularly interested in what types of factors are related to the sexual well-being of 50+ women within long-term, intimate relationships.

RISKS

You will be asked questions regarding your sexual experiences within your intimate relationships. This can cause a range of positive or negative emotions in some people. You are free to withdraw from the study at any time without consequence. In the case that any negative thoughts or feeling persist as a result of your participation in this study, a list of resources will be provided to you. You may also contact Dr. Elke Reissing, who is a licensed psychologist specializing in sexual health, whom you can speak to at no charge.

BENEFITS

There are several sections to this study. All of the sections are important to expanding our understanding of the sexual experiences of 50+ women. Past research in this area has been superficial and oversimplified; we do not want to follow in those footsteps.

You may find it interesting and enriching to reflect on some of the questions and responses. You will also have the opportunity to directly observe and learn about methods commonly used in psychology. Specifically, you will learn how researchers design studies to address psychological issues, thus enhancing your understanding of research methods. You will also help us gain a

better understanding of what is relevant to 50+ women within the realm of sexuality. Thank you again for giving some of your time to helping researchers and healthcare professionals better understand the experiences of women like you and learn how to better assist them. Your responses will serve to fill many gaps in our knowledge and move this field forward!

CONFIDENTIALITY

The information that you share will remain strictly confidential. The contents will be used only to explore the purpose of the research listed above. Your confidentiality will also be protected because the majority of your data will be polled with the data of other participants so that the specific answers that you give will never be discussed individually. If your written responses to a question are quoted, a participant ID will be assigned to the quote to assure confidentiality. Identifying information will not be collected on any of the questionnaires. If you fill out the questionnaire online and decide not to participate in the draw (described below) your responses will also be anonymous as we are not asking you any identifying questions.

Your responses to the questionnaires will be kept for 10 years after publication at which point all data files, and hard copies of the questionnaires will be destroyed/deleted from the computer and cache.

COMPENSATION

To thank you for your contribution to the research project, you will be given the option to enter your name in a draw to win one of three Tim Hortons gift certificates valued at $20. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

Once all the data have been collected for this research project, three names will be randomly selected amongst those who have entered and the people whose names have been drawn will be informed by email or phone. To win the prize, the person must correctly answer a skill testing question. If the people cannot be reached within 14 days from the date of the draw, the prize will be awarded to other names that are randomly selected and so on until the prize has been awarded. The odds of winning a prize will depend on the number of eligible entries received. The prize must be accepted as awarded or forfeited and cannot be redeemed for cash.

Your name, phone, or email address that you provide when you enter the draw is collected for the purposes of contacting you if your name is selected in the draw. Your name and the contact information you have provided will be kept confidential and then destroyed once the prizes have been awarded.

We reserve the right to cancel the draw or cancel the awarding of the prize if the integrity of the draw or the research or the confidentiality of participants is compromised. The draw is governed by the applicable laws of Canada.

CONTACT

If you have questions at any time about the study or the procedures, or you experience any adverse effects as a result of participating in this study you may contact the principle investigator, Suzanne Bell at XXX-XXX-XXXX ext. XXXX or ---@gmail.com, or the project supervisor Dr. Elke Reissing, at the Psychology Department, University of Ottawa, Office VNR 4010, at XXX-XXX-XXXX ext. XXXX or ---@uottawa.ca. This project has received ethics approval from the University of Ottawa Research Ethics Board. If you have any questions regarding the ethical conduct of this study, you may contact the Protocol Officer for Ethics in Research, University of Ottawa, Tabaret Hall, 550 Cumberland Street, Room 154, Ottawa, ON K1N 6N5, by phone at XXX-XXX-XXXX or by email at ----@uottawa.ca.

PARTICIPATION

Your participation in this study is voluntary; you may decline to participate without penalty. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. Given the anonymous nature of the data you can withdraw from the study by not returning the questionnaire; however, once it has been returned, it will be impossible to track individual questionnaires. You also have the right to not answer any questions you do not feel comfortable answering and still remain in the study.

FEEDBACK AND PUBLICATION

The data obtained from this study will be used to create peer-reviewed scientific publications and will be presented at scholarly conferences of professionals and/or to health care professionals.

Please keep a copy of the consent form for your personal records.

By completing and returning the questionnaire to the researcher, you are agreeing to participate in the proposed research project

Study 1 Consent Form (online version)

UNIVERSITY OF OTTAWA
INFORMATION SHEET

PROJECT: The Experiences of Women 50+ in Intimate Relationships
PRINCIPAL INVESTIGATOR: Suzanne Bell
PROJECT SUPERVISOR: Dr. Elke Reissing

INFORMATION

Thank you for your interest in participating in our study!

There is so little information out there about 50+ women's sexual experiences; this research will be most valuable for health care professionals who work with these women. Participating in this study involves filling out a series of questionnaires that will take approximately 45 minutes to complete. Please complete the questionnaires within one sitting. The length of the survey is partially due to the lack of research in the area as well as the complexity of women's sexual experiences. With this research we are particularly interested in what types of factors are related to the sexual well-being of 50+ women within long-term, intimate relationships.

RISKS

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CONFIDENTIALITY

The information that you share will remain strictly confidential. The contents will be used only to explore the purpose of the research listed above. Your confidentiality will also be protected because the majority of your data will be polled with the data of other participants so that the specific answers that you give will never be discussed individually. If your written responses to a question are quoted, a participant ID will be assigned to the quote to assure confidentiality. Identifying information will not be collected on any of the questionnaires. In addition, this survey will not leave any markers or save anything to your computer and the internet company hosting the survey will not collect IP addresses so your confidentiality and anonymity are protected there as well. Finally, because this survey is being hosted through SurveyMonkey, which is an American company, it could be subject to the USA Patriot Act which allows American authorities access to it.

Your responses to the questionnaires will be kept for 10 years after publication at which point all data files will be destroyed/deleted from the computer and cache.

COMPENSATION

To thank you for your contribution to the research project, you will be given the option to enter your name in a draw to win one of three Tim Hortons gift certificates valued at $20. The draw is open to all research participants who enter their name in the draw, regardless of whether they decide to withdraw from further participating in the research project.

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FEEDBACK AND PUBLICATION

The data obtained from this study will be used to create peer-reviewed scientific publications and will be presented at scholarly conferences of professionals and/or to health care professionals.

By completing and submitting the questionnaire to the researcher, you are agreeing to participate in the proposed research project.

You should print a copy of the consent form to keep for your personal records

Appendix E

Quality Assessment Measures and Data Extraction Form

Study 1 Quantitative Studies Quality Assessment Form

Quantitative Studies Quality Assessment

Study Code:
Rater Name:

Criteria		Yes (2)	Partial (1)	No (0)	N/A
1	Question/objective sufficiently described?				
2	Study design evident and appropriate?				
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?				
4	Subject (and comparison group, if applicable) characteristics sufficiently described?				
5	If interventional and random allocation was possible, was it described?				
6	If interventional and blinding of investigators was possible, was it reported?				
7	If interventional and blinding of subjects was possible, was it reported?				
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement/misclassification bias? Means of assessment reported?				
9	Sample size appropriate?				
10	Analytic methods described/justified and appropriate?				
11	Some estimate of variance is reported for the main results?				
12	Controlled for confounding?				
13	Results reported in sufficient detail?				
14	Conclusions supported by the results?				

Total	
Total/Qs	

Weaknesses of Note:

Strengths of Note:

Study 1 Qualitative Studies Quality Assessment Form

Qualitative Studies Quality Assessment

Study Code:
Rater Name:

Criteria		Yes (2)	Partial (1)	No (0)
1	Question/objective sufficiently described?			
2	Study design evident and appropriate?			
3	Context for the study clear?			
4	Connection to a theoretical framework/wider body of knowledge?			
5	Sampling strategy described, relevant and justified?			
6	Data collection methods clearly described and systematic?			
7	Data analysis clearly described and systematic			
8	Use of verification procedure(s) to establish credibility			
9	Conclusions supported by the results?			
10	Reflexivity of the account?			

Total	
Total/Qs	

Weaknesses of Note:

Strengths of Note:

Study 1 Data Extraction form

Systematic Review Data Extraction Form

RQ: What factors are related to the maintenance of sexual activity in older adulthood?

GENERAL INFORMATION

Report ID:	
Study citation *(title, year)*:	
Date form completed *:*	
Included/Excluded	

PARTICIPANTS

	Descriptions as stated in paper	**Location in text**
Sampling procedure and setting	Representativeness (/5) – poor, fair, good, very good, excellent	
Inclusion criteria		
Withdrawals/exclusions Why?		
Total # of Participants # of Relevant		
Total Age Range Age range for analysis Mean/median age		
Sex of participants	□Male □Female □Male/Female □Undefined	
Notes		

METHOD

	Descriptions as stated in paper			**Location in text**
Design	□ Observational □ Cohort □ Case-Control □ Cross-Sectional □ Qualitative		□ Intervention	
Data collection	□Interviews □Questionnaires □Chart review □Other:			
Sexual activities investigated	(relevant ones)			
Measurement of sexual activities Validated?				
Correlates	Variable	Measurement	Validated?	

Intervention				
Notes				

RESULTS

Descriptions as stated in paper			**Location in text**
Statistical analyses			
Qualitative analyses			
Sexual Activity	Correlate (+/-)	Significance	
Sexual Activity	Intervention	Significance	
Notes			

NOTES

Appendix F

Study 2 Survey Instrument

BACKGROUND QUESTIONS

Before we get started, we would like to know a few things about you so we can make better sense of your story.

1. What is your age (years)? ______

2. What is your sexual orientation?
   □Heterosexual □Gay/Lesbian □Bisexual □Other
   Please specify "Other":____

3. Which of the following best describes your current relationship status?
   □ Married
   □ In a domestic partnership or civil union
   □ Single, but cohabiting with a significant other
   □ Single, living alone, but in a committed relationship
   □ Other
   Please specify "Other":____

4. What is the length of this relationship (years)? ______

5. How many live-in relationships have you had over the course of your lifetime? ______

6. How many children do you have? ______

7. How many children (young or adult) currently live in your household? ______

8. What is the highest level of education you have completed?
   □Some elementary school □Elementary school □Some high school
   □High school diploma □Some college □College degree
   □Some undergraduate □Undergraduate degree □Some graduate
   □Graduate degree □Post-doctoral □Did not attend school

9. Which of the following categories best describes your employment status?
   □Full-time employed □Part-time employed □Student
   □Retired □Unemployed □Homemaker
   □Carer □Long-term sick or incapacity benefit
   □Other
   Please specify "other":____
   If you are working, what is your principal employment?
   ____
   If you are retired, what was your principle employment?
   ____

10. What is your approximate current household income?
    □$0-$24 999 □$25 000-$49 999 □$50 000-$74 999
    □$75 000-$99 999 □$100 000+

11. People living in Canada come from many different cultural backgrounds. Are you (check all that apply):
    □White
    □Chinese
    □South Asian (e.g., East Indian, Pakistani, Sri Lankan)
    □Black
    □Filipino
    □Latin American
    □Southeast Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese)
    □Arab
    □West Asian (e.g., Afghan, Iranian)
    □Japanese
    □Korean
    □Aboriginal (e.g., North American Indian, Métis, Inuit)
    □Other
    Please specify "Other":____

12. Were you born in Canada? □Yes □No

13. If you were not born in Canada, in what year did you come to Canada?
    ____

14. Is religion important to you? □Yes □No

15. Do you identify with any of the following religions (please check all that apply):
    □Protestantism □Catholicism □Christianity
    □Judaism □Islam □Buddhism
    □Hinduism □Native American □Inter/Non-denominational
    □No religion □Other
    Please specify "Other":____

16. How often do you practice/attend religious activities?
    □Daily □A few times a week □Once a week
    □Once a month □Once a year □Never

Now we would like to ask some questions about your current health.

17. Has it been more than 12 months since your last period?
    □Yes □No

18. When was your last period? ____month ____year

19. How would you describe your physical health?
☐1 ☐2 ☐3 ☐4 ☐5
Poor Excellent

20. How do you evaluate your physical fitness level?
☐Not fit (sedentary)
☐Moderately fit (engage in moderate physical activities)
☐Fit (specifically seek out activities for physical fitness)

21. How would you describe the physical health of your partner?
☐1 ☐2 ☐3 ☐4 ☐5
Poor Excellent

22. Have you ever been diagnosed as having (please check all that apply):

☐None	☐Asthma/lung disease	☐Cancer
☐Diabetes	☐Heart disease	☐High blood pressure
☐Stroke	☐Seizures	☐Incontinence
☐Urinary tract infection	☐Liver disease	☐Other

Please specify "Other":
____
____

Dates of diagnoses:
____
____

23. Are you taking any prescribed medications? ☐Yes ☐No
If yes, please specify:_______________________________________
____
____
____
____
____
____

24. Are you taking any natural health products (e.g., vitamins, herbal remedies, homeopathic medicines)?
☐Yes ☐No
If yes, please specify:_______________________________________
____
____
____
____
____
____

25. Have you been admitted into a hospital within the past year? □Yes □No
    If yes, please specify:____

26. How would you describe your mental health?
    □1 □2 □3 □4 □5
    Poor Excellent

27. How would you describe the mental health of your partner?
    □1 □2 □3 □4 □5
    Poor Excellent

28. Have you ever been diagnosed as having a (please check all that apply):
    □None □Mood disorder □Anxiety disorder
    □Psychotic disorder □Sexual disorder □Eating disorder
    □Sleep disorder □Cognitive disorder □Personality disorder
    □Other
    Please specify "Other":
    ____
    ____
    Dates of diagnoses:
    ____
    ____

29. Are you currently receiving any psychological treatment? □Yes □No
    If yes, please specify:____

Now we would like to ask some questions about how you live.

30. Which of these terms best describes your tobacco smoking?
    □Regular smoker □Occasional smoker □Ex-smoker
    □Lifetime non-smoker
    For the regular and occasional smokers, how many packs of cigarettes or equivalent do you smoke in a week? ______ packs/week

31. In a typical week, how many units of alcohol do you drink? ______
    (NOTE: One unit of alcohol is half a pint of beer, a small glass of wine, or a standard measure of spirits)

Thank you for all of this information! We want to have a detailed idea of the characteristics of the people participating in this study so that the results of this research can be interpreted in a meaningful way.

Some of the following questions in this survey may touch on sensitive subjects for you. We really appreciate your contributions and insight into these questions so that healthcare professionals can better help women who may struggle in these areas. There is very little information out there, so the help you provide will be that much more beneficial for other women.

SEXUAL EXCITATION AND INHIBITION

Instructions: This questionnaire asks about things that might affect your sexual arousal. Other ways that we refer to sexual arousal are feeling ‘‘turned on,’’ ‘‘sexually excited,’’ and ‘‘being in a sexual mood.’’

Women described their sexual arousal in many different ways. These can include genital changes (being ‘‘wet,’’ tingling sensations, feelings of warmth, etc.), as well as non-genital sensations (increased heart rate, temperature changes, skin sensitivity, etc.) or feelings (anticipation, heightened sense of awareness, feeling ‘‘sexy’’ or ‘‘sexual,’’ etc.).

We are interested in what would be the most typical reaction for you now. You may read a statement that you feel does not apply to you, or may have applied to you in the past but doesn’t now. In such cases please indicate how you think you would respond, if you were currently in that situation. Some of the questions sound very similar but are in fact different.

Please read each statement carefully and then circle the number to indicate your answer. Don’t think too long before answering. Please give your first reaction to each question.

1. **When I think about someone I find sexually attractive, I easily become sexually aroused.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

2. **Fantasizing about sex can quickly get me sexually excited.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

3. **Certain hormonal changes definitely increase my sexual arousal.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

4. **Sometimes I am so attracted to someone, I cannot stop myself from becoming sexually aroused.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

5. **I get very turned on when someone wants me sexually.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

6. **When I see someone dressed in a sexy way, I easily become sexually aroused.**

1	2	3	4
Strongly Disagree			*Strongly Agree*

7. Just being physically close with a partner is enough to turn me on.
1 2 3 4
Strongly Disagree *Strongly Agree*

8. Seeing an attractive partner's naked body really turns me on.
1 2 3 4
Strongly Disagree *Strongly Agree*

9. With a new partner, I am easily aroused.
1 2 3 4
Strongly Disagree *Strongly Agree*

10. Feeling overpowered in a sexual situation by someone I trust increases my arousal.
1 2 3 4
Strongly Disagree *Strongly Agree*

11. It turns me on if my partner ''talks dirty'' to me during sex.
1 2 3 4
Strongly Disagree *Strongly Agree*

12. If a partner is forceful during sex, it reduces my arousal.
1 2 3 4
Strongly Disagree *Strongly Agree*

13. Dominating my partner is arousing to me.
1 2 3 4
Strongly Disagree *Strongly Agree*

14. Often just how someone smells can be a turn on.
1 2 3 4
Strongly Disagree *Strongly Agree*

15. Particular scents are very arousing to me.
1 2 3 4
Strongly Disagree *Strongly Agree*

16. Seeing a partner doing something that shows his/her talent can make me very sexually aroused.
1 2 3 4
Strongly Disagree *Strongly Agree*

17. If I see a partner interacting well with others, I am more easily sexually aroused.
1 2 3 4
Strongly Disagree *Strongly Agree*

18. Someone doing something that shows he/she is intelligent turns me on.

1	2	3	4
Strongly Disagree			*Strongly Agree*

19. Eye contact with someone I find sexually attractive really turns me on.

1	2	3	4
Strongly Disagree			*Strongly Agree*

20. Having sex in a different setting than usual is a real turn on for me.

1	2	3	4
Strongly Disagree			*Strongly Agree*

21. I find it harder to get sexually aroused if other people are nearby.

1	2	3	4
Strongly Disagree			*Strongly Agree*

22. I get really turned on if I think I may get caught while having sex.

1	2	3	4
Strongly Disagree			*Strongly Agree*

23. If it is possible someone might see or hear us having sex, it is more difficult for me to get aroused.

1	2	3	4
Strongly Disagree			*Strongly Agree*

24. I really need to trust a partner to become fully aroused.

1	2	3	4
Strongly Disagree			*Strongly Agree*

25. If I think that I am being used sexually it completely turns me off.

1	2	3	4
Strongly Disagree			*Strongly Agree*

26. It is easier for me to become aroused with someone who has ''relationship potential.''

1	2	3	4
Strongly Disagree			*Strongly Agree*

27. It would be hard for me to become sexually aroused with someone who is involved with another person.

1	2	3	4
Strongly Disagree			*Strongly Agree*

28. If I am uncertain about how a partner feels about me, it is harder for me to get aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

29. If I think a partner might hurt me emotionally, I put the brakes on sexually.

1 2 3 4
Strongly Disagree *Strongly Agree*

30. Unless things are ‘‘just right’’ it is difficult for me to become sexually aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

31. When I am sexually aroused, the slightest thing can turn me off.

1 2 3 4
Strongly Disagree *Strongly Agree*

32. It is difficult for me to stay sexually aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

33. If I am worried about taking too long to become aroused, this can interfere with my arousal.

1 2 3 4
Strongly Disagree *Strongly Agree*

34. If I think about whether I will have an orgasm, it is much harder for me to become aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

35. Sometimes I feel so ‘‘shy’’ or self-conscious during sex that I cannot become fully aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

36. If I am concerned about being a good lover, I am less likely to become aroused.

1 2 3 4
Strongly Disagree *Strongly Agree*

YOUR RELATIONSHIP

These questions help us better contextualize your responses to other questions in this survey.

Please mark the letter for each item which best answers that item for you.

How well does your partner meet your needs?

A	B	C	D	E
Poorly		*Average*		*Extremely Well*

In general, how satisfied are you with your relationship?

A	B	C	D	E
Unsatisfied		*Average*		*Extremely Satisfied*

How good is your relationship compared to most?

A	B	C	D	E
Poor		*Average*		*Excellent*

How often do you wish you hadn’t gotten in this relationship?

A	B	C	D	E
Never		*Average*		*Very Often*

To what extent has your relationship met your original expectations?

A	B	C	D	E
Hardly At All		*Average*		*Completely*

How much do you love your partner?

A	B	C	D	E
Not much		*Average*		*Very Much*

How many problems are there in your relationship?

A	B	C	D	E
Very few		*Average*		*Very Many*

SEXUAL BEHAVIOURS

Below is a list of sexual experiences that people have. We would like to know which of these sexual behaviours you have experienced. Please indicate those experiences you have personally had by placing an "X" (☒) under the YES *column for that experience. If you have not had the experience place your check under the* NO *column. In addition, if you have had the experience during the past two months please place an additional check under the column marked* PAST 60 DAYS*. Make you marks carefully and do not skip any items.*

	YES	NO	PAST 60 DAYS
1. Male lying prone on female	☐	☐	☐
2. Stroking and petting your sexual partner's genitals	☐	☐	☐
3. Erotic embrace (clothed)	☐	☐	☐
4. Intercourse-vaginal entry from rear	☐	☐	☐
5. Having genitals caressed by your sexual partner	☐	☐	☐
6. Mutual oral stimulation of genitals	☐	☐	☐
7. Oral stimulation of your partner's genitals	☐	☐	☐
8. Intercourse side-by-side	☐	☐	☐
9. Kissing of sensitive (non-genital) areas of the body	☐	☐	☐
10. Intercourse – sitting position	☐	☐	☐
11. Masturbating alone	☐	☐	☐
12. Male kissing female's nude breasts	☐	☐	☐
13. Having your anal area caressed	☐	☐	☐
14. Breast petting (clothed)	☐	☐	☐
15. Caressing your partner's anal area	☐	☐	☐
16. Intercourse- female superior position	☐	☐	☐
17. Mutual petting of genitals to orgasm	☐	☐	☐
18. Having your genitals orally stimulated	☐	☐	☐
19. Mutual undressing of each other	☐	☐	☐
20. Deep kissing	☐	☐	☐
21. Intercourse – male superior position	☐	☐	☐
22. Anal intercourse	☐	☐	☐
23. Kissing on the lips	☐	☐	☐
24. Breast petting (nude)	☐	☐	☐

FREQUENCY OF SEXUAL ACTIVITY

Below we would like you to indicate the frequency with which you typically engage in certain sexual activities. Please indicate how often you experience each of the sexual activities below by placing an "X" (☒) in the category that is closest to your personal frequency. Categories range from "NOT AT ALL" to "4 OR MORE TIMES A DAY". Please do not skip any items.

	NOT AT ALL	LESS THAN 1 MONTH	1-2/ MONTH	1/ WEEK	2-3/ WEEK	4-6/ WEEK	1/ DAY	2-3/ DAY	4 OR MORE/ DAY
Intercourse	☐	☐	☐	☐	☐	☐	☐	☐	☐
Masturbation	☐	☐	☐	☐	☐	☐	☐	☐	☐
Kissing and Petting	☐	☐	☐	☐	☐	☐	☐	☐	☐
Sexual Fantasies	☐	☐	☐	☐	☐	☐	☐	☐	☐

What would be your ideal frequency of sexual intercourse? _________
At what age did you first become interested in sexual activity? _________
At what age did you first have sexual intercourse? _________

SEXUAL DISTRESS

Below is a list of feelings and problems that women sometimes have concerning their sexuality.

1. **In the last 30 days, how often did you feel distressed about your sex life?**
   0.Never
   1.Rarely
   2.Occasionally
   3.Frequently
   4.Always

2. **In the last 30 days, how often did you feel unhappy about your sexual relationship?**
   0.Never
   1.Rarely
   2.Occasionally
   3.Frequently
   4.Always

3. **In the last 30 days, how often did you feel guilty about sexual difficulties?**
   0.Never
   1.Rarely
   2.Occasionally
   3.Frequently
   4.Always

4. **In the last 30 days, how often did you feel frustrated by your sexual problems?**
   0.Never
   1.Rarely
   2.Occasionally
   3.Frequently
   4.Always

5. **In the last 30 days, how often did you feel stressed about sex?**
   0.Never
   1.Rarely
   2.Occasionally
   3.Frequently
   4.Always

6. In the last 30 days, how often did you feel inferior because of sexual problems?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

7. In the last 30 days, how often did you feel worried about sex?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

8. In the last 30 days, how often did you feel sexually inadequate?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

9. In the last 30 days, how often did you feel regrets about your sexuality?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

10. In the last 30 days, how often did you feel embarrassed about sexual problems?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

11. In the last 30 days, how often did you feel dissatisfied with your sex life?

0.Never
1.Rarely
2.Occasionally
3.Frequently
4.Always

12. In the last 30 days, how often did you feel angry about your sex life?

0.Never

1.Rarely

2.Occasionally

3.Frequently

4.Always

SEXUAL FUNCTIONING

INSTRUCTIONS: 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. Your responses will be kept completely confidential. 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 difficult

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

WHY DO YOU HAVE SEX

Thanks for all of your effort in completing these questions!

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

1. Because sex is fun.
▢Not at all ▢Moderately ▢Totally

2. Because my partner demands it of me.
▢Not at all ▢Moderately ▢Totally

3. Because sex is important to me.
▢Not at all ▢Moderately ▢Totally

4. Because sexuality is a normal and important aspect of human development.
▢Not at all ▢Moderately ▢Totally

5. I don't know; I feel it's not worth it.
▢Not at all ▢Moderately ▢Totally

6. Because sexuality brings so much to my life.
▢Not at all ▢Moderately ▢Totally

7. Because I enjoy sex.
▢Not at all ▢Moderately ▢Totally

8. To prove to myself that I am sexually attractive.
▢Not at all ▢Moderately ▢Totally

9. To avoid conflicts with my partner.
▢Not at all ▢Moderately ▢Totally

10. I don't know; it feels like a waste of time.
▢Not at all ▢Moderately ▢Totally

11. Because sexuality is a key part of who I am.
▢Not at all ▢Moderately ▢Totally

12. Because I don't want to be criticized by my partner.
▢Not at all ▢Moderately ▢Totally

13. Because I feel it's important to experiment sexually.
▢Not at all ▢Moderately ▢Totally

14. I don't know; actually, I find it boring.
☐Not at all ☐Moderately ☐Totally

15. Because I value sexual activity.
☐Not at all ☐Moderately ☐Totally

16. To show myself that I am sexually competent.
☐Not at all ☐Moderately ☐Totally

17. Because sexuality is a meaningful part of my life.
☐Not at all ☐Moderately ☐Totally

18. For the pleasure I feel when my partner stimulates me sexually.
☐Not at all ☐Moderately ☐Totally

19. Because sexuality fulfills an essential aspect of my life.
☐Not at all ☐Moderately ☐Totally

20. To live up to my partner's expectations.
☐Not at all ☐Moderately ☐Totally

21. Because I think it is important to learn to know my body better.
☐Not at all ☐Moderately ☐Totally

22. To prove to myself that I am a good lover.
☐Not at all ☐Moderately ☐Totally

23. Because sex is exciting.
☐Not at all ☐Moderately ☐Totally

24. Because I feel it's important to be open to new experiences.
☐Not at all ☐Moderately ☐Totally

25. I don't know; sex is a disappointment to me.
☐Not at all ☐Moderately ☐Totally

26. To prove to myself that I have sex-appeal.
☐Not at all ☐Moderately ☐Totally

HEALTH

Sexual experiences do not exist in a vacuum. We would like to ask more general questions about your health to help us get a better overall picture of you.

Please answer the 36 questions of the **Health Survey** completely, honestly, and without interruptions.

GENERAL HEALTH:

In general, would you say your health is:
☐Excellent ☐Very Good ☐Good ☐Fair ☐Poor

Compared to one year ago, how would you rate your health in general now?
☐Much better now than one year ago
☐Somewhat better now than one year ago
☐About the same
☐Somewhat worse now than one year ago
☐Much worse than one year ago

LIMITATIONS OF ACTIVITIES:
The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Lifting or carrying groceries.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Climbing several flights of stairs.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Climbing one flight of stairs.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Bending, kneeling, or stooping.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Walking more than a mile.
☐Yes, Limited A Lot ☐Yes, Limited A Little ☐No, Not Limited At All

Walking several blocks.
▢Yes, Limited A Lot ▢Yes, Limited A Little ▢No, Not Limited At All

Walking one block.
▢Yes, Limited A Lot ▢Yes, Limited A Little ▢No, Not Limited At All

Bathing or dressing yourself.
▢Yes, Limited A Lot ▢Yes, Limited A Little ▢No, Not Limited At All

PHYSICAL HEALTH PROBLEMS:
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

Cut down the amount of time you spent on work or other activities.
▢Yes ▢No

Accomplished less than you would like.
▢Yes ▢No

Were limited in the kind of work or other activities.
▢Yes ▢No

Had difficulty performing the work or other activities (for example, it took extra effort).
▢Yes ▢No

EMOTIONAL HEALTH PROBLEMS:
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

Cut down the amount of time you spent on work or other activities.
▢Yes ▢No

Accomplished less than you would like.
▢Yes ▢No

Didn't do work or other activities as carefully as usual.
▢Yes ▢No

SOCIAL ACTIVITIES:

Have emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?
▢Not at all ▢Slightly ▢Moderately ▢Severe ▢Very Severe

PAIN:

How much bodily pain have you had during the past 4 weeks?
▢None ▢Very Mild ▢Mild ▢Moderate ▢Severe ▢Very Severe

During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
▢Not At All ▢A Little Bit ▢Moderately ▢Quite A Bit ▢Extremely

ENERGY AND EMOTIONS:
These questions are about how you feel and how things have been with you during the last 4 weeks. For each question, please give the answer that comes closest to the way you have been feeling.

Did you feel full of pep?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Have you been a very nervous person?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Have you felt so down in the dumps that nothing could cheer you up?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Have you felt calm and peaceful?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Did you have a lot of energy?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Have you felt downhearted and blue?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Did you feel worn out?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Have you been a happy person?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

Did you feel tired?
▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

SOCIAL ACTIVITIES:

During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

▢All Of The Time
▢Most Of The Time
▢A Good Bit Of The Time
▢Some Of The Time
▢A Little Bit Of The Time
▢None Of The Time

GENERAL HEALTH:

How true or false is each of the following statements for you?

I seem to get sick a little easier than other people.

▢Definitely True ▢Mostly True ▢Don't Know ▢Mostly False
▢Definitely False

I am as healthy as anybody I know.

▢Definitely True ▢Mostly True ▢Don't Know ▢Mostly False
▢Definitely False

I expect my health to get worse.

▢Definitely True ▢Mostly True ▢Don't Know ▢Mostly False
▢Definitely False

My health is excellent.

▢Definitely True ▢Mostly True ▢Don't Know ▢Mostly False
▢Definitely False

SEXUAL SATISFACTION

Thinking about your sex life during the last six months, please rate your satisfaction with the following aspects:

1. **The intensity of my sexual arousal.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

2. **The quality of my orgasms.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

3. **My "letting go" and surrender to sexual pleasure during sex.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

4. **My focus/concentration during sexual activity.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

5. **The way I sexually react to my partner.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

6. **My body's sexual functioning.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

7. **My emotional opening up in sex.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

8. **My mood after sexual activity.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

9. **The frequency of my orgasms.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

10. **The pleasure I provide to my partner.**
☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

11. The balance between what I give and receive in sex.

☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

12. My partner's emotional opening up during sex.

☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

13. My partner's initiation of sexual activity.

☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

14. My partner's ability to orgasm.

☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied

15. My partner's surrender to sexual pleasure ("letting go").

☐Not at all satisfied ☐A little satisfied ☐Moderately satisfied
☐Very satisfied ☐Extremely satisfied