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# Exploring the Relationship between Early Adaptive Schemas and Sexual Satisfaction

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#### ABSTRACT

*Rationale*: Early maladaptive schemas (EMS) develop from unmet core emotional needs during childhood and adolescence. EMS influence the way individuals perceive themselves and others, while also sharing associations with various sexual difficulties. Contrastingly, Early Adaptive Schemas (EAS) develop when core emotional needs are met. Yet, the potential influence of EAS on sexual wellbeing remains underinvestigated.

*Objective*: The current study assessed the relationship between EAS and sexual satisfaction as a primary component of sexual wellbeing.

*Method*: The study design was an online, cross-sectional survey. Participants included 732 adults (*Mage* = 32.05, *SDage* = 9.30), who completed self-report questionnaires assessing sexual satisfaction and EAS.

*Results*: Two, three-step hierarchical regressions evaluated the effect of EAS on sexual satisfaction, controlling for several potentially confounding variables. Results indicated that the only EAS that was associated with sexual satisfaction in both men and women was Realistic Expectations. EAS of Social Belonging and Success were associated with sexual satisfaction for women alone, whereas Self-Compassion was for men.

*Conclusion*: Findings provide preliminary evidence that EAS are associated with sexual satisfaction. As such, schema therapy may be a useful therapeutic framework for improving sexual satisfaction, when indicated.

#### Introduction

Sexual wellbeing is an integral component of most people's lives (Byers & Rehman, 2014). Strong links have been found between sexual wellbeing and several positive psychosocial factors. A study of 1,583 older adults found that participants with higher sexual satisfaction experienced greater life satisfaction and positive mental health (Heywood et al., 2018). Similarly, Chao et al. (2011) found that 28% of participants' quality of life was influenced by their level of sexual satisfaction. In contrast, Davison et al. (2009) found that of 421 adult women, those who were sexually dissatisfied experienced lower general well-being, compared with sexually satisfied women. Building on individual wellbeing, positive sexual wellbeing also supports intimate relationships. Fallis et al. (2016) assessed levels of sexual and relationship satisfaction among 117 heterosexual couples over a 2-year time period. Results indicated that

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men and women with greater sexual satisfaction initially report greater relationship satisfaction two-years later. Accordingly, the level at which individuals are sexually satisfied has implications for their general wellbeing and relationship functioning.

Importantly, sexual wellbeing is often challenged by the experience of sexual difficulties. A large survey conducted within the United States highlighted that 43% of women and 31% of men experience sexual dysfunction (Laumann et al., 1999). Smith et al. (2012) conducted interviews exclusively with women (N=2,525) aged 20–64 years, assessing the presence of sexual difficulties over two time periods. Initially, 66% of women reported having one or more sexual difficulties (e.g., lacking interest in sex and being unable to orgasm), with 36% reporting an additional difficulty 12 months later. Similarly, a large survey of men aged 40–80 years of age found that 26% experienced early ejaculation and 23% with erectile difficulties (Laumann,

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2009). The impact of sexual difficulties for men and women is often measured via self-reported sexual satisfaction.

# Sexual satisfaction

Sexual satisfaction is one of the most frequently measured dimensions of sexual wellbeing (Lorimer et al., 2019; Sundgren et al., 2022). Although, sexual satisfaction is also multifaceted, illustrated by different definitions and influential factors (Lawrance & Byers, 1995; Pascoal et al., 2014). Lawrance and Byers (1995) define sexual satisfaction as "an affective response arising from one's subjective evaluation of the positive and negative dimensions associated with one's sexual relationship" (p. 268). The Interpersonal Exchange Model of Sexual Satisfaction proposes that sexual satisfaction is dictated by the balance of rewards (i.e., pleasurable or satisfying experiences) and costs (i.e., effortful, painful, or unpleasant emotional experiences). Indeed, appraisals of rewards and costs can differ alongside equality between individual experiences within a relationship. As such, Lawrance and Byers (1995) theorize that sexual satisfaction is greater when there are many rewards, minimal costs, and the experiences balance of these factors exceeds expectations.

Public perceptions of sexual satisfaction can differ compared to theory and among subpopulations. Pascoal et al. (2014) asked a large sample of heterosexual couples "how do you define sexual satisfaction?" and thematically analyzed their responses. The first theme highlighted personal sexual wellbeing, related to an individual's positive physical and emotional experiences. This was described in terms of one's level of pleasure, positive feelings, desire, orgasm, sexual openness, and arousal. Secondly, dyadic processes were identified, which related to sexual satisfaction within a relationship including intimacy (i.e., mutuality, expressing emotions, and experiencing romance), ludic sexuality (i.e., one's creativity and acting out desires), and frequency of sexual activity. Among sexual minorities, perceptions of sexual satisfaction share similarities and differences from heterosexuals. In a subsequent study, Pascoal et al. (2019) asked 60 cisgendered people, who identified as lesbian, gay, or bisexual, their definition of sexual satisfaction. Three main themes and four subthemes were identified. The first theme related to intrapersonal experience, with subthemes of subjective experience (i.e., spirituality and losing control) and subjective sexual experience (i.e., sexual desire, excitement, orgasm, and pleasure). The second theme highlighted interpersonal experiences, with subthemes of dyadic processes (i.e., mutuality, connection, creativity, eroticisim, fantasy, and frequency) and emotions toward the other (i.e., affection, love, passion, and attraction). The final theme represented primary discourses, with subthemes of relationship context (i.e., exclusivity or openness to multiple partners) and sexual mintority identity (i.e., acceptance of one's sexual orientation and identity).

Sánchez-Fuentes et al. (2014) conducted a systematic review of research publications about sexual satisfaction. Using the ecological systems theory (Bronfenbrenner, 1994), researchers highlight the vast quantity of factors associated with sexual satisfaction. Many (36%) studies used variables from more than one level. Of those that measured one level, the majority (36%) used variables within the microsystem, followed by the mesosystem (26.4%), macrosystem (1%), and exosystem (0.5%). Influential factors included, but are not limited to, age, sexual orientation, sexual functioning, relationship status, and life stressors (e.g., physical and mental health, parenting young children, and partner sexual dysfunction). Most but not all research suggests that sexual satisfaction decreases with age (Shahhosseini et al., 2014). Sexual orientation has been found to influence sexual satisfaction, with sexual minorities and heterosexual individuals based on differing perceptions and experiences (Pascoal et al., 2014; Pascoal et al., 2019; Shepler et al., 2018). Further, sexual functioning is often associated with sexual satisfaction. That is, individuals who possess healthy sexual function (i.e., no issues with desire, arousal, or orgasm) often experience greater sexual satisfaction than those with difficulties or dysfunctions (e.g., erectile dysfunction or pain during intercourse; Heywood et al., 2018; Ohri et al., 2021; Velten & Margraf, 2017; Wei et al., 2021). Past literature has found that one's level of sexual satisfaction also differs based on their relationship status (Birnie-Porter & Hunt, 2015; Kislev, 2020; Mallory,

2022). However, there are inconsistencies as to which relationship status is most sexually satisfied. Additional factors that are negatively associated with sexual satisfaction include physical or mental illnesses, parenting young children, and partner sexual dysfunction (Buczak-Stec et al., 2021; Heywood et al., 2018; Sánchez-Fuentes et al., 2014; Pascoal et al., 2018). Collectively, research demonstrates that sexual satisfaction may vary according to many factors (i.e., definitions, sexual orientation, psychosical stress). Another consideration exists in the influence of sex-related cognitions, such as Sexual Self-Schemas.

# Sexual self-schema

Sexual self-schemas are generalized thoughts about oneself as a sexual being that develop in response to past experiences (Andersen & Cyranowski, 1994; Andersen et al., 1999). They commonly impact how individuals process sexual information and influence behavior. Women with positive (i.e., passionate-romantic or open-direct) sexual selfschemas stereotypically tend to be more sexually experimental, have more sexual partners, and experience more loving and romantic relationships. In contrast, women exhibiting high levels of the negative (i.e., embarrassed-conservative) sexual selfschema usually experience more sexual inhibition, self-consciousness, and lack romantic relationships. Andersen et al. (1999) theorized that sexually schematic men experience passion and love, perceive themselves as powerful and aggressive, and are open-minded with liberal sexual attitudes. These men usually experience more frequent sexual relationships, variety in sexual behaviors, and romantic relationships. Whereas sexually aschematic men stereotypically experience a limited range of sexual activities, with less sexual partners.

Individuals who have experienced sexual trauma or dysfunction often exhibit altered thoughts and sexual self-schemas, which impact sexual satisfaction. Blain et al. (2011) found that among female sexual assault survivors, those who reported more negative thoughts of themselves indicated greater negative sexual self-schemas. In contrast, those who experienced fewer negative thoughts of the world and others exhibited more positive sexual self-schemas. Sexual self-schemas can vary among women experiencing vaginismus, who tend to exhibit significantly less positive sexual self-schema compared to women without sexual dysfunction (Reissing et al., 2003). Examining differences in self-schemas among gynaecological cancer survivors, Carpenter et al. (2009) found that those who endorsed positive schemas experienced greater sexual satisfaction and quality of life. Collectively, the relationship between psychological injury, sexual dysfunction, and self-schemas aligns with broader literature suggesting that past experiences can shape individuals' sexual thoughts of themselves, which can influence many psychosocial outcomes including sexual satisfaction.

# Schema theory

Schema therapy is a psychological intervention used to treat complex psychopathology including borderline personality disorder, chronic major depressive disorder, and avoidant personality disorder (Arntz et al., 2022; Dickhaut & Arntz, 2014; Nenadić et al., 2017; Renner et al., 2016; Taylor & Arntz, 2016). Theorized by Jeffrey Young, an Early Maladaptive Schema (EMS) develops when core emotional needs (e.g., attachment to others, realistic limits, autonomy, and emotional expression) are not met during childhood (Bach et al., 2018; Young et al., 2006). Additional factors that contribute to the development of EMS include adverse early life experiences, particularly with one's nuclear family (Quinta Gomes & Nobre, 2012), temperament, culture, birth order, and the quality of parental marriages (Louis et al., 2018). Individuals who experience particularly distressing circumstances (e.g., sexual assault, natural disaster, domestic violence) can also develop EMS later in life (Louis et al., 2018).

EMS are associated with sexual difficulties (Oliveira & Nobre, 2013; Quinta Gomes & Nobre, 2008; Quinta Gomes & Nobre, 2012). Quinta Gomes and Nobre (2012) explored the relationship between EMS and sexual dysfunction using a sample of 242 men with varying levels of sexual functioning. Findings indicated that participants diagnosed with sexual dysfunction reported significantly higher levels of dependence and incompetence (i.e., difficulty managing everyday responsibilities independently) than those with high sexual functioning. Similarly, Quinta Gomes and Nobre (2008) found that men with lower sexual functioning experienced significantly more vulnerability to harm (i.e., fearfulness of inevitable catastrophe) than men with higher sexual functioning. Oliveira and Nobre (2013) found that of 244 women, those with a diagnosis of sexual dysfunction (e.g., hypoactive sexual desire, orgasmic disorder, or vaginismus), demonstrated significantly higher scores on failure (i.e., perceived likelihood of failure) and vulnerability to harm EMS than those with no sexual difficulties. They also scored significantly higher on dependence and incompetence than those with subclinical sexual dysfunction.

More recently, Mohammadi et al. (2021) found that women with orgasmic disorder scored significantly higher on all EMS domains (i.e., disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, and hypervigilance and inhibition) than those without. Similarly, Efrati et al. (2021) found that of individuals with Compulsive Sexual Behaviors, those with clinical severity reported higher EMS domain scores than non-clinical individuals. Finally, Hashemian et al. (2015) found EMS, specifically mistrust, emotional deprivation, abandonment, and defectiveness were negatively associated with sexual satisfaction in a non-clinical sample. Taken together, there is growing evidence to suggest that EMS are related to a broad range of sexual problems and overlap with sexual self-schemas.

In contrast to EMS, individuals may develop early adaptive schemas (EAS) due to having their core emotional needs met by family and members within their sociocultural network (Taylor & Arntz, 2016). EAS consist of "memories, cognitions, beliefs, bodily sensations, and neurological reactions regarding oneself and one's relationships with others" (Louis et al., 2018, p. 1200). EAS create broad, pervasive, and enduring themes that strongly influence individual's perceptions of themselves and others (Videler et al., 2020). EAS are conceptualized as distinct dimensions, rather than the opposite of corresponding EMS (Louis et al., 2018). Although EAS and EMS are negatively associated (Louis et al., 2018), an individual can experience both at the same time, which highlights the complexity of how people interpret and respond to specific circumstances (Paetsch et al., 2022). EAS are associated with positive functions and behavioral dispositions including agreeableness, conscientiousness, and openness (Louis et al., 2018). Life outcomes often include healthy interpersonal relationships, independent functioning, continuation of having core emotional needs met, and reduced harm to others (Lockwood & Perris, 2012). For example, individuals who have been harmed, abused, or taken advantage of within early-life relationships may develop an EMS of mistrust and abuse, resulting in suspiciousness toward others. Alternatively, an individual may develop an EAS of basic trust in others if they have previously experienced relationships that are free from abuse and involve honesty, trust, and loyalty.

Core emotional need	Early adaptive schema <sup>a</sup>	Description
Connection and Acceptance	Emotional Fulfillment Social Belonging Emotional Openness/Spontaneity Success	Feeling full emotional support in intimate relationships Feeling of acceptance by and connection to others Being comfortable in expressing feelings to others Feeling competent at work, school, and capable of achievements
Healthy Autonomy	Basic Health and Safety Self-Reliance/Competence Healthy Boundaries/Developed Self Stable Attachment	Realistic sense of safety and confidence in future security and wellbeing Feeling capable of independently coping with everyday life Having developed a healthy independence from one's parents Confidence that (close) relationships will maintain and ability to trust others
Reasonable Limits	Empathic Consideration/Respect for Others Healthy Self-Control/Self-Discipline Self-Directedness	Showing consideration for others' needs and feelings Ability to follow long-term goals involving delayed gratification and persistence Valuing what matters to oneself without the need of having others notice
Healthy and Realistic Standards	Realistic Expectations Forgiveness/Self-Compassion Healthy Self-Interest/Self-Care	Being content with one's performances without having to be the best Forgiving oneself for mistakes Ability to healthily balance considering one's own needs and helping others

 Table 1. Overview of Early Adaptive Schemas and Associated Needs.

Note. <sup>a</sup>EAS are derived from Louis et al. (2018). EAS basic trust, self-acceptance, assertiveness and optimism were removed or combined with other subscales due to factor loading. Descriptions obtained from Paetsch et al. (2022) with permission to reproduce.

There are 14 EAS that develop in response to having one's core emotional needs met during childhood (Lockwood & Perris, 2012; see Table 1). Accordingly, fulfilled emotional needs can translate to more positive beliefs about oneself and others. Thus, it is plausible that this may also impact people's relationships, intimacy, and sex lives, including sexual satisfaction. However, research has yet to explore the relationship between EAS and adult sexual satisfaction. Being that previous research has linked EMS with sexual difficulties and past experiences with sexual self-schemas and sexual satisfaction, it may be that EAS are similarly associated with sexual satisfaction. On this premise, the current study aimed to explore the relationship between EAS and sexual satisfaction. It was hypothesized that EAS would be significantly positively related to higher levels of sexual satisfaction, after controlling for sexual functioning and life stressors. Due to the lack of research, no specific predictions were made about which EAS would be significant specifically. Research highlighting these relationships has potential implications for individuals seeking to improve their sexual satisfaction.

# Method

#### **Participants**

Only adult participants ( $\geq 18$  years) were recruited. A total of 1,481 participants completed the survey, of which 618 were removed due to incomplete or inappropriate responses. Participants who selected "other" as their sex assigned at birth or chose to complete sex-specific questionnaires that differed from their sex assigned at birth were excluded (n=70). These participants were excluded to prevent altered validity of results due to the sexual functioning measures using sex-specific language (e.g., vaginal penetration and erection). The completed survey participants pool (N = 793) used in the analysis consisted of 467 females (59%) and 326 males (41%). Significantly more women completed the survey, compared with men,  $\chi^2$  (1, N = 1,335) = 12.85, p < .001. Participant ages ranged from 18 to 77 years old (M = 32.05, SD = 9.30). Analysis of total responses revealed no significant age differences between participants who completed the survey, compared with incomplete responders,

t(970.38) = 1.55, p = .123, d = 0.09, 95% CI [-.02-.20; two tailed]. Most participants were in a relationship including those that were married (50.6%) or partnered (19.0%), compared with those that were single (24.2%), separated or wid-owed (1.8%), divorced (3.8%), or classified as other (0.8%). The majority (64.2%) of participants identified as heterosexual, cisgender, and endosex, with the remainder identifying as LGBTQIA+.

As a factor known to influence sexual wellbeing, partner sexual wellbeing was measured. Of partnered participants, 21.9% knew or suspected their partner experienced sexual dysfunction. Less than half (32.7%) reported having children under 18 years of age primarily in their care. Most participants reported their country of residence as North America (63.9%), other participants lived in Australia (18.7%), the United Kingdom (2.9%) or other nations. Most obtained a Bachelor Degree or higher level of education (67%), followed by non-university industry training (19%), secondary school (13.2%), and primary school (0.8%). Respectively, 13.1% and 11.9% of participants reported experiencing current physiological (e.g., cardiovascular disease, cancer, or erectile dysfunction) or psychiatric (i.e., major depressive disorder, generalized anxiety disorder, or posttraumatic stress disorder) conditions.

#### Design

The study was an online, cross-sectional survey. Nineteen predictor variables and two outcome variables were included in the study. Predictor variables included age, sexual functioning, sexual orientation, presence of a life stressor (i.e., physical and/or mental health condition, partner sexual dysfunction, and dependent residing within the household), relationship status, and 14 EAS. Outcome variables included male and female sexual satisfaction.

#### **Power analysis**

A priori power analysis was calculated using G\*Power (Faul et al., 2007). The sample size for the current study (female n = 467; male n = 326) was considered adequate given the analysis indicated that 153 would be the required sample to detect a

medium effect size ( $f^2 = 0.15$ ) using standard alpha ( $\alpha = .05$ ), power of .80, and 19 predictor variables.

#### Measures

#### Demographic questions

Demographic information included age, sex, gender, sexual orientation, relationship status, physical or mental health conditions, partner sexual dysfunction, whether dependents were residing within the home, obtained educational qualifications, and country of residence.

# Sexual satisfaction

The New Sexual Satisfaction Scale (NSSS; Štulhofer et al., 2010) was used to measure sexual satisfaction. The NSSS is a 20-item measure used to assess participants' personal experiences and perceptions in relation to their partner's sexual behaviors and reactions over the past six months. Items are scored on a 5-point Likert scale ranging from 1 (*not at all satisfied*) to 5 (*extremely satisfied*). Total scores range from 20 to 100, with higher scores indicating greater sexual satisfaction. The NSSS displayed high internal consistency with the current sample (a = .96).

#### Early adaptive schemas

The Young Positive Schema Questionnaire (YPSQ; Louis et al., 2018) is a 56-item measure that assesses 14 EAS. The YPSQ consists of statements that describe thoughts about oneself and others (e.g., for much of my life, I have felt that I am special to someone). Items are scored on a 6-point Likert scale ranging from 1 (*completely untrue of me*) to 6 (*describes me perfectly*). Total scores range from 3 to 30, with higher scores indicating stronger presence of the EAS. The YPSQ displayed high internal consistency in the current sample (a = .98), while subscales ranged from acceptable to excellent ( $\alpha = .77-.92$ ).

# Sexual functioning

Sexual function among female participants was measured using the Female Sexual Functioning Index (FSFI; Rosen, 2000). The FSFI is a 19-item questionnaire that assesses sexual desire, arousal, lubrication, orgasm, satisfaction, and pain over the past four weeks. Items are scored on a 5–6point Likert scale, with varied response options (e.g., very high to very low or none at all, no sexual activity to almost never or never, and very satisfied to very dissatisfied). Full-scale scores range from 15.40 to 36, with higher scores indicating greater sexual functioning. The FSFI displayed high internal consistency with the current sample (a = .92). Congruent with Rosen, only women who reported having engaged in sexual activity in the past four weeks were included within the analysis.

The International Index of Erectile Function (IIEF; Rosen et al., 1997) is a 15-item measure that assesses sexual functioning in men including erectile function, orgasmic function, sexual desire, intercourse satisfaction, and overall satisfaction. Men scoring less than or equal to 25 were classified as having erectile dysfunction (Rosen, Cappelleri, & Gendrano, 2002). Items are scored on a 5-6-point Likert scale, with varied response options (e.g., no sexual activity to almost always/ always, no attempts to  $\geq 11$  attempts, and no intercourse to very highly enjoyable). Total scores, involving the sum of all subscales, range from 10 to 75, with higher scores indicating greater sexual functioning. The IIEF displayed high internal consistency with the current sample (a = .93). Following Rosen, participants who had not engaged in sexual activity were included within the analysis.

#### Procedure

Approval to conduct this research was provided by the University of the Sunshine Coast Human Research Ethics Committee (#S201486). Participants were recruited between November 2020 and August 2021 through the community and internationally via snowballing techniques, using a link shared through social media (i.e., Facebook and Reddit). Both sex-related and non-sex-related forums were utilized for survey distribution. Participants were directed to an online survey, Qualtrics, which displayed the research project information sheet, the previously mentioned questionnaires, and collected data. Responses were anonymous and confidential.

Table 2. Summary of means, standard deviations, and bivariate correlations between study variables for female dataset (N = 467).

Variable	М	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. FSS	71.34	16.42	-														
2. Emotional fulfillment	4.22	0.94	.37	-													
3. Success	4.25	0.98	.37	.68	-												
4. Empathic consideration	4.27	0.86	.30	.62	.64	-											
5. Optimism	4.05	1.01	.37	.66	.66	.61	-										
6. Emotional openness	4.21	0.99	.37	.73	.68	.64	.63	-									
7. Self-compassion	3.86	1.06	.30	.52	.46	.51	.67	.54	-								
8. Healthy boundaries	4.44	1.04	.26	.59	.66	.64	.56	.61	.43	-							
9. Social belonging	4.07	0.92	.37	.66	.57	.54	.67	.66	.68	.51	-						
10. Self-control	4.14	0.94	.32	.60	.69	.61	.70	.60	.52	.55	.64	-					
11. Realistic expectations	4.10	0.99	.44	.63	.60	.66	.73	.63	.67	.59	.65	.65	-				
12. Self-directedness	4.24	0.95	.34	.67	.66	.67	.71	.64	.65	.59	.67	.73	.76	-			
13. Self-care	4.38	0.98	.33	.72	.71	.67	.68	.71	.58	.62	.63	.66	.69	.72	-		
14. Stable attachment	4.15	1.01	.37	.75	.65	.62	.74	.64	.62	.56	.71	.61	.65	.67	.65	-	
15. Self-reliance	4.39	1.00	.31	.59	.73	.61	.66	.59	.49	.69	.54	.66	.62	.66	.68	.64	-

Note. FSS: female sexual satisfaction; All correlations p < .001.

Table 3. Summary of means, standard deviations, and bivariate correlations between study variables for male dataset (N = 326).

Variable	М	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. MSS	72.56	16.95	-														
2. Emotional fulfillment	4.13	0.92	.49	-													
3. Success	4.14	0.93	.41	.69	-												
4. Empathic consideration	4.23	0.91	.46	.69	.69	-											
5. Optimism	4.03	0.99	.49	.72	.74	.65	-										
6. Emotional openness	4.02	1.00	.43	.74	.69	.61	.67	-									
7. Self-compassion	3.88	1.06	.46	.57	.57	.57	.73	.55	-								
8. Healthy boundaries	4.23	1.04	.46	.69	.70	.71	.71	.66	.51	-							
9. Social belonging	4.04	0.96	.43	.76	.77	.65	.76	.77	.64	.68	-						
10. Self-control	4.03	0.93	.49	.63	.74	.64	.76	.70	.62	.72	.74	-					
11. Realistic expectations	3.99	0.91	.50	.63	.67	.65	.75	.68	.63	.66	.66	.70	-				
12. Self-directedness	4.23	0.95	.46	.69	.69	.73	.77	.67	.67	.68	.72	.70	.71	-			
13. Self-care	4.30	1.00	.36	.66	.77	.64	.75	.63	.59	.64	.74	.70	.69	.76	-		
14. Stable attachment	4.10	0.96	.45	.74	.68	.66	.77	.65	.63	.66	.69	.66	.67	.74	.70	-	
15. Self-reliance	4.29	1.02	.48	.68	.76	.72	.78	.64	.60	.74	.71	.74	.69	.74	.75	.76	_

Note. MSS: male sexual satisfaction; All correlations p < .001.

## Results

#### Preliminary analysis

Descriptive statistics and correlations between study variables are presented (see Tables 2 and 3). Most YPSQ scores were slightly above normative values (Louis et al., 2018). Mean sexual functioning and sexual satisfaction scores were below normative values for controls in males and females (Rosen, 2000; Rosen et al., 1997; Štulhofer et al., 2010). The YPSQ subscales exhibited intercorrelations ranging from .26 to .78, all of which were significant (p < .001).

# Assumptions

The assumption of normality (p < .05) was violated for all variables. However, the Kolmogorov-Smirnov test has been found to yield significant results in large samples (Field, 2018). Additionally, visual inspection of histograms and Q–Q plots indicated approximate normal distribution for all except female and male sexual functioning. A total of 48 univariate outliers (scores that is > 3 SD from the mean) were identified using boxplots. All outliers were investigated and not removed due to being representative of the intended sample. Durbin-Watson scores were considered to approximate a value of two, indicating independence of errors. Collinearity was considered potentially problematic due to several predictor variables having Tolerance values of less than 0.2 (.18–.19). However, the further investigation highlighted that all Tolerance values were greater than 0.1, Variance Inflation Factor scores were  $\leq$  10, and bivariate correlations between predictor variables were acceptable ( $r \leq .85$ ; Field, 2018). All cases reported a Cook's distance below one (Cook & Weisberg, 1982). Fifty-seven cases were removed due to their Mahalanobis distance exceeding the critical  $\chi^2$  value ( $\alpha$  = .001; Tabachnick & Fidell, 2018). Histograms and normal probability plots adhered to the bell curve and diagonal line respectively, and scatterplots demonstrated appropriate spread, indicating

the residuals met the assumptions of normality, linearity, and homoscedasticity.

# Statistical analyses

The data was transferred to Statistical Pack for the Social Sciences for analysis. Results were considered significant at p < .05. To assess whether EAS predicted high sexual satisfaction in males and females, two separate hierarchical multiple regression analyses were conducted. To control for their possible influence on the outcome variables, age, sexual function, and sexual orientation were entered in the first block, following previous research (Mark et al., 2015; Ohri et al., 2021; Traeen, 2017). The second block included the presence of a life stressor, defined as a physical or mental health condition, partner sexual dysfunction, or a dependent residing within the household, and relationship status (Ahlborg et al., 2008; Aslan et al., 2021; Östman, 2014; Pascoal, 2018; Wei et al., 2021). These variables were originally measured separately using a dichotomous

scale (i.e., yes or no) and were recoded into a new dichotomous variable (i.e., presence of a life stressor). Relationship status was initially measured using a categorical variable (e.g., single, partnered, married) and was recoded into a new dichotomous variable (i.e., in a relationship and not in a relationship). The third block included the 14 subscales from the YPSQ. Total scores for female sexual satisfaction (FSS) and male sexual satisfaction (MSS) were entered as the outcome variables in separate hierarchical multiple regression analyses. Variables were entered into the regression model in line with Cohen et al.'s (2003) rationale, by which Block 1 related to the person, Block 2 related to those in relation, and Block 3 included other predictors.

#### Main analyses

Two separate hierarchical multiple regression analyses were conducted to assess which, if any, EAS were associated with sexual satisfaction, as measured by NSSS. Several variables were

Variable	В	95% CI	SE B	β	R <sup>2</sup>	$\Delta R^2$
Step 1					.31***	.31***
Constant	28.83	18.59, 39.06	5.21			
Age	0.08	-0.07, 0.23	0.08	0.04		
Sexual functioning	1.80	1.54, 2.07	0.13	0.55***		
Sexual orientation	-4.90	-7.54, -2.26	1.34	-0.15***		
Step 2					.34***	.02***
Constant	19.28	7.28, 31.28	6.11			
Age	0.11	-0.04, 0.26	0.08	0.06		
Sexual functioning	1.76	1.50, 2.02	0.13	0.54***		
Sexual orientation	-4.12	-6.76, -1.49	1.34	-0.12**		
Life stressor	5.25	2.56, 7.95	1.37	0.16***		
Relationship status	0.84	-2.21, 3.88	1.55	0.02		
Step 3					.44***	.10***
Constant	10.07	-2.18, 22.33	6.34			
Age	0.09	-0.06, 0.24	0.08	0.05		
Sexual functioning	1.48	1.22, 1.74	0.13	0.45***		
Sexual orientation	-4.06	-6.57, -1.55	1.28	-0.12**		
Life stressor	3.04	0.41, 5.67	1.34	0.09*		
Relationship status	-0.14	-3.02, 2.75	1.47	-0.00		
Emotional fulfillment	1.71	-0.90, 4.32	1.33	0.10		
Success	3.19	0.85, 5.53	1.19	0.19**		
Empathetic consideration	-0.14	-2.67, 2.38	1.29	-0.01		
Basic health/Optimistic	-0.89	-3.45, 1.67	1.30	-0.05		
Emotional openness	0.16	-2.27, 2.59	1.24	0.01		
Self-compassion	-0.76	-2.69, 1.18	0.98	-0.05		
Healthy boundaries	-1.64	-3.54, 0.26	0.97	-0.10		
Social belonging	2.65	0.14, 5.16	1.28	0.14*		
Self-control	-0.55	-2.91, 1.81	1.20	-0.03		
Realistic expectations	4.83	2.43, 7.22	1.22	0.29***		
Self-directedness	-0.30	-2.89, 2.30	1.32	-0.02		
Self-care	-2.36	-4.79, -0.07	1.24	-0.14		
Stable attachment	0.47	-1.87, 2.80	1.19	0.03		
Self-reliance	-0.96	-3.16, 1.24	1.12	-0.06		

Table 4. Hierarchical multiple regression analysis predicting female sexual satisfaction from EAS.

Note. CI = confidence interval; B = unstandardized beta coefficient; SE = standard error;  $\beta$  = standardized beta coefficient. \*p < .05. \*\*p < .01. \*\*\*p < .001.

controlled for including age, sexual function, sexual orientation, the presence a life stressor (including physical or mental health condition, a partner with sexual dysfunction, or dependents living within the home), and relationship status.

In predicting FSS, as shown in Table 4, step 1 of the included, age, sexual function, and sexual orientation, which accounted for a significant 31% of variance in FSS,  $R^2 = .31$ , F (3, 430) = 65.76, p < .001. On step 2, relationship status and life stressor were added to the regression equation, and accounted for an additional significant 2% of variance in FSS,  $\Delta R^2 = .02$ ,  $\Delta F (2, 428) = 7.50$ , p < .001. On step 3, EAS were added to the regression equation, which accounted for an additional significant 10% variance in FSS,  $\Delta R^2 = .10$ ,  $\Delta F$ (14, 414) = 5.43, p < .001. In combination, all outcome variables accounted for 44% variance in FSS,  $R^2 = .44$ , F (19, 414) = 17.16, p < .001. By Cohen's (1988) conventions, a combined effect of this magnitude can be considered "large"  $(f^2 = .79)$ . Of the 14 EAS, significant predictors included Success, Social Belonging, and Realistic

Expectations, which respectively accounted for 0.96% 0.58%, and 2.13% of unique variance in FSS. That is, greater Success, Social Belonging, and Realistic Expectations were associated with greater FSS. All other EAS did not contribute significantly to the variance in FSS scores. Sexual functioning, sexual orientation, and life stressor significantly predicted FSS, respectively accounting for 16.97%, 1.37%, and 0.69% unique variance in FSS.

In predicting MSS, as shown in Table 5, step 1 included age, sexual functioning, and sexual orientation, which accounted for a significant 25% of variance in MSS,  $R^2 = .25$ , F(3, 298) =33.39, p < .001. On step 2, relationship status and life stressor were added to the regression equation, and accounted for an additional nonsignificant 1% of variance in MSS,  $\Delta R^2 = .01$ ,  $\Delta F(2, 296) = 1.50$ , p = .225. On step 3, EAS were added to the regression equation, which accounted for an additional significant 17% variance in MSS,  $\Delta R^2 = .17$ ,  $\Delta F(14, 282) = 5.93$ , p < .001. In combination, all predictor variables accounted for 43% variance in MSS,  $R^2 = .43$ ,

Table 5. Hierarchical multiple regression analysis predicting male sexual satisfaction from EAS

Table 5. Hierarchical multi	ple regression	n analysis predictin	g male sexu	ial satisfaction fi	rom EAS.	
Variable	В	95% Cl	SE B	β	R <sup>2</sup>	$\Delta R^2$
Step 1					.25***	.25***
Constant	47.15	36.84, 57.45	5.24			
Age	-0.20	-0.38, -0.01	0.09	-0.11*		
Sexual functioning	0.65	0.52, 0.78	0.07	0.49***		
Sexual orientation	-2.38	-5.72, 0.95	1.69	-0.07		
Step 2					.26	.01
Constant	46.11	32.17, 60.06	7.09			
Age	-0.14	-0.33, 0.06	0.10	-0.07		
Sexual functioning	0.65	0.52, 0.79	0.07	0.49***		
Sexual orientation	-2.83	-6.19, 0.54	1.71	-0.08		
Life stressor	1.89	-2.41, 6.19	2.18	0.05		
Relationship status	-1.84	-5.89, 2.20	2.05	-0.06		
Step 3					.43***	.17**'
Constant	22.57	7.92, 37.23	7.44			
Age	-0.23	-0.42, -0.04	0.10	-0.12*		
Sexual functioning	0.39	0.25, 0.53	0.07	0.29***		
Sexual orientation	-0.58	-3.82, 2.66	1.65	-0.02		
Life stressor	1.69	-2.31, 5.69	2.03	0.05		
Relationship status	-0.52	-4.28, 3.25	1.91	-0.02		
Emotional fulfillment	0.36	-3.46, 4.16	1.94	0.02		
Success	-0.24	-3.78, 3.31	1.80	-0.01		
Empathetic consideration	0.33	-3.06, 3.71	1.72	0.02		
Basic health/Optimistic	-0.45	-4.01, 3.11	1.81	-0.03		
Emotional openness	-1.17	-4.55, 2.22	1.72	-0.07		
Self-compassion	2.85	0.40, 5.30	1.25	0.17*		
Healthy boundaries	1.19	-1.67, 4.04	1.45	0.08		
Social belonging	-1.20	-4.86, 2.45	1.86	-0.07		
Self-control	2.50	-0.99, 6.00	1.78	0.14		
Realistic expectations	4.25	0.91, 7.59	1.70	0.23*		
Self-directedness	1.86	-1.52, 5.25	1.72	0.11		
Self-care	-2.98	-5.96, -0.00	1.51	-0.18		
Stable attachment	1.22	-2.00, 4.44	1.64	0.07		
Self-reliance	0.42	-2.64, 3.49	1.56	0.03		

Note. Cl = confidence interval; B = unstandardized beta coefficient; SE = standard error;  $\beta$  = standardized beta coefficient. \*p < .05. \*\*\*p < .001.

F(19, 282) = 11.09, p < .001. By Cohen's (1988) conventions, a combined effect of this magnitude can be considered "large" ( $f^2 = .75$ ). Of the 14 EAS, Self-Compassion and Realistic Expectation respectively accounted for 1.06% and 1.27% unique variance in MSS. That is, greater Self-Compassion and Realistic Expectations were associated with greater MSS. In addition, age and sexual functioning significantly predicted MSS, respectively accounting for 1.9% and 6.15% unique variance in MS.

# Discussion

This study aimed to assess the relationship between EAS and sexual satisfaction. It was hypothesized that EAS would be positively associated with sexual satisfaction. Findings indicated that 5 out of 14 EAS were significantly associated with greater sexual satisfaction. In support of the hypothesis, greater Success, Social Belonging, and Realistic Expectations were associated with sexual satisfaction in women. Further, higher levels of Self-Compassion and Realistic Expectations were associated with higher levels of sexual satisfaction in men. Importantly, Findings should be interpreted with caution given that significant EAS accounted for between 0.58% and 2.13% variance in sexual satisfaction, suggesting that sexual satisfaction is marginally related to EAS, in addition to other factors. In exploring how this study fits within past literature, the authors draw upon research on both sexual satisfaction and dissatisfaction. While the two concepts are not synonymous, literature on sexual dissatisfaction may be useful to understand the relationship between constructs, particularly when juxtaposed with sexual satisfaction literature.

Results indicated a positive relationship between Social Belonging and sexual satisfaction in women. Individuals who score highly on the Social Belonging EAS report seeking out connection and feeling accepted by others (e.g., "*I feel as connected as I want to be with other people*"). Louis et al. (2018) suggest that individuals develop a sense of social belonging when their primary caregiver meets their emotional need for connection and acceptance. Indeed, attachment theory suggests securely attached adults experience greater ability to connect with romantic partners (Bowlby, 2004). Supporting this, Péloquin et al. (2013) found that among couples living together, those with low attachment-related avoidance experienced higher sexual satisfaction. Further, among couples attending therapy, those who experience a reduction of attachment avoidance also report higher sexual satisfaction over the course of treatment (Wiebe et al., 2019). Within the context of romantic relationships, feeling connected to and accepted by one's partner contributes to feeling satisfied within the relationship (Gottman & Gottman, 2015). Using a sample of 53 primarily heterosexual couples, Kappen et al. (2018) found an association between mindfulness and relationship satisfaction, mediated by partner acceptance. That is, among individuals who are mindful (i.e., connected to the present moment), those who are able and willing to accept their partner's imperfections experience improved relationship satisfaction. Further, the positive association between relationship and sexual satisfaction has been well documented (Fallis et al., 2016; Ziaee et al., 2014). As such, it may be that women with a high sense of Social Belonging experience more secure attachment and greater connection with their romantic or intimate partner, which increases their sexual satisfaction. Additional research exploring the relationship between these constructs would be required to confirm this explanation.

Among women, higher scores of Success were associated with greater sexual satisfaction. Success relates to one's perception of themselves as competent and capable at achieving their goals (e.g., "I am as capable as most other people in areas of work and achievement"). When individuals perceive themselves as successful, they often experience higher levels of self-esteem. Self-esteem may be exhibited when individuals perceive themselves as able, valuable, and important (Zayed & El-Hadidy, 2020). Past research using clinical and community samples has highlighted the positive association between self-esteem and sexual satisfaction (Gozuyesil et al., 2017; Higgins et al., 2011; Jamali et al., 2018; Lin & Lin, 2018; Ramezani et al., 2012). For example, Higgins et al. (2011) utilized survey data from university students in the United States to explore factors

indicated that women with high levels of selfesteem were 2.8 times more likely to be sexually satisfied, compared with those with poor selfesteem. Comparatively, men were 11.1 times more likely under the same circumstances. Given the lack of relationship between Success and sexual satisfaction for men in the current sample, the relationship between this EAS and sexual satisfaction may vary according to factors not measured in the current study, such as general life satisfaction, a sense of achievement across work or academic contexts (Branecka-Woźniak et al., 2020; Woloski-Wruble et al., 2010), or using sex to reduced stress and feel physically and mentally replenished after work (Hahn et al., 2012).

Results indicated that high levels of Realistic Expectations (e.g., "I like to do well but don't have to be the best") were associated with greater sexual satisfaction in women and men. The Interpersonal Exchange Model of Sexual Satisfaction highlights the importance of one's subjective evaluation of positive and negative sexrelated dimensions. If an individual's experience is greater than their expectation, they will likely be sexually satisfied. The importance of regulating expectations regarding sex and sexual satisfaction is underscored given the prevalence of sexual difficulties for men and women (Laumann et al., 1999; Smith et al., 2012) alongside "idealized" sex frequently portrayed by pornography (Kirby, 2021; Litsou et al., 2021).

Indeed, past research has highlighted the relationship between sexual perfectionism, perfectionistic cognitions during sex (e.g., I can't feel satisfied unless things are done perfectly), and self-blame if sexual difficulties arise (Stoeber & Harvey, 2016; Stoeber et al., 2013). Developed by Metz and McCarthy (2007, p. 1), the "Good-Enough Sex" model describes the importance of realistic expectations for sexual satisfaction. It advocates for individuals to adopt a flexible attitude toward sex and abandon the goal of perfect performance. As such, having realistic, as opposed to idealized or unrealistic expectations, increases the likelihood of having a sexual satisfying experience, even when sexual issues occur. Taken together, past theory and current findings highlight the importance of having realistic

Male sexual satisfaction was greater for individuals with high Self-Compassion (e.g., "Even when I fail at something, I don't feel that I should be made to suffer for it"). Self-compassion involves being non-judgement toward oneself, focusing on shared experiences amongst oneself and others, and remaining mindful when evaluating situations (Neff, 2011). As discussed, male perceptions of sex may be influenced by unrealistic media depictions (e.g., pornography), idealizappearance and ing esthetic performance (Mattebo et al., 2012). Thus, one's inability to achieve such expectations can be perceived as an attack on their masculinity or self-worth. Distress may also arise from sexual difficulties thereby reducing sexual satisfaction (Fischer & Traeen, 2022; Hendrickx et al., 2016) and sexual satisfaction may be further reduced in the presence of self-punishing thoughts (Davis et al., 2017). Yet, despite experiencing distress, self-compassion may continue to preserve sexual satisfaction (Ferreira et al., 2020), highlighting the possibility of this EAS being protective for men.

ing sex-related anxiety and maladaptive thinking.

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Alternatively, the relationship between selfcompassion and sexual satisfaction may be a product of improve relationship satisfaction. Günaydin (2022) found that self-compassion significantly predicted marital satisfaction in a large sample of married couples. Similarly, self-compassion has been associated with increased relationship satisfaction and reduced sexual distress in couples experiencing sexual difficulties (Santerre-Baillargeon et al., 2018). When engaging in sexual activity, individuals may experience unpleasant emotions (e.g., anxiety, fear, guilt, and shame) due to underlying beliefs or past experiences. By adopting a mentality of self-compassion, men may regulate the significance of underlying insecurities or pressure to perform and protect against damaged self-esteem should sexual problems occur.

Past research has highlighted the influence of relational factors on sexual satisfaction (Byers, 2005; Freihart et al., 2020; Rehman et al., 2013; Sánchez-Fuentes et al., 2014). Thus, the small variances in the current study may be explained by the omission of specific relationship factors from analysis. McNulty et al. (2016) and Quinn-Nilas (2020) both longitudinally assessed the relationship between marital or relationship satisfaction and sexual satisfaction using large samples. While findings differed in the trajectory of these variables over time, both studies highlighted that the extent of changes in marital or relationship satisfaction over time was strongly related to changes of sexual satisfaction in the same direction. As such, there is strong evidence for the bidirectional relationship between sexual satisfaction and marital and relationship satisfaction. Other relationship factors that often influence couples sexual satisfaction include physical intimacy, relationship duration, communication, partner support, stability, and conflict resolution (Carvalheira & Alexandre Costa, 2015; Heiman et al., 2011; Rehman et al., 2013; Sánchez-Fuentes et al., 2014). Accordingly, it may be that factors from the mesosystem are more influential than those from the microsystem, particularly among those who are in relationships. Being that the majority of participants were in relationships, it is plausible that small variances of EAS on sexual satisfaction may have occurred due to uncontrolled relationship factors.

Congruent with previous research, both men and women's level of sexual satisfaction related to their sexual function, with higher levels of dysfunction apparent with lower sexual satisfaction (Ohri et al., 2021; Wei et al, 2021). Additionally, women who identified as LGBTQIA + or reported the presence of a life stressor experienced lower sexual satisfaction. Such individuals are often marginalized and experience discrimination and prejudice, which impacts subjective wellbeing and physical and mental health (Drydakis, 2021; van der Star & Bränström, 2015). Past research indicates that sexual satisfaction among lesbian and bisexual women may be influenced by the level of internalized homonegativity and the frequency of negative external reactions related to their sexual orientation (Kuyper & Vanwesenbeeck, 2011). In addition, women experiencing life stressors including physical or mental health conditions, partner sexual dysfunction, or children living within the household, have similarly been found to experience lower sexual satisfaction (Ahlborg et al., 2008; Aslan et al., 2021; Östman, 2014; Pascoal, 2018; Wei et al, 2021). Lastly, findings indicated

that older men experienced less sexual satisfaction than younger men. This may be due to increases in sexual dysfunction and general illnesses with age (Erens et al., 2019).

# **Clinical implications**

Current findings may have implications for clinicians and health professionals. Results provide preliminary support for further research and application of Schema Theory to assist with conceptualizing clients' sexual satisfaction problems, with a particular focus on relevant EAS (i.e., Success, Social Belonging, Realistic Expectations, and Self-Compassion). Using case studies, it may be beneficial to explore how the principles of Schema Theory can be formulated into useful strategies for clients (e.g., building awareness of EAS, experiential techniques to strengthen EAS) in different clinical populations.

## Limitations and future research

The current study is not without limitations. Despite having a theoretical rationale for hypothesizing EAS as a variable that may predict sexual satisfaction, the results are correlational and causation cannot be inferred. The significance of EAS was only supported by small variances in sexual satisfaction, suggesting that other extraneous factors were not controlled. Future studies may benefit from controlling additional covariates (e.g., menopausal status, specific physical and mental health conditions, and relationship satisfaction) or specific behaviors that occur due to EAS (e.g., forming and maintaining intimate relationships, freely expressing emotions, or asserting one's needs). Thirdly, The YPSQ is a relatively new measure that requires further evaluation with diverse populations and examining the relationship between EAS and other constructs. Differing from the Sexual Self-Schema Scale for Women (Nowosielski et al., 2018), the YPSQ measures non-sexual thoughts of oneself, others, and the future. A modified version of the YPSQ with more sex-specific language may be a worthwhile area of exploration (e.g., I am usually comfortable expressing my feelings and sexual needs to others, when I want to).

Due to schemas being influenced by personal, relational, and cultural experiences, exploring the association between these factors (e.g., interpersonal conflict, objectification, prescribed social expectations, pornography), EAS, and sexual satisfaction may be worthy of future study. Fourthly, specific sexual and gender minority groups were not analyzed separately. As such, the implications of these results for LGBTQIA+ individuals are limited. Past literature has indicated that sexual satisfaction can vary across sexual orientation (McClelland, 2010; McClelland, 2014; Pascoal et al., 2019). Therefore, research evaluating the influence of sexual orientation and gender identity on studied variables may be beneficial. Lastly, the current study was conducted when COVID-19 resulted in people in several countries being unable to leave their homes, among other altered lifestyle factors. Therefore, such factors may have impacted participants' responses regarding their sexual functioning and satisfaction.

### Conclusion

The present study found that Social Belonging, Success, and Realistic Expectations increased sexual satisfaction in women. Men with Self-Compassion and Realistic Standards experienced greater sexual satisfaction. Given that this is the first study to demonstrate the relationship between EAS and sexual satisfaction, it sets a precedent for future research to explore the influence of specific profiles of EMS, EAS, and individual coping styles.

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No potential conflict of interest was reported by the author(s).

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# Data availability statement

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