

Personality and erectile dysfunction in heterosexual romantic relationships: results from men's self-reports and women's partner-reports

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Abstract

Personality dimensions have been found to be associated with a range of sexual attitudes and sexual behaviors. The present research aimed to replicate and extend previous work showing associations between basic personality dimensions and men's experience with erectile dysfunction (ED) in heterosexual romantic relationships. In Study 1, we collected men's self-reports of their own personality, perceptions of their female partner's personality, and experience with ED. In Study 2, we collected women's self-reports of their own personality, perceptions of their male partner's personality, and perceptions of their partner's experience with ED. In Study 3, we collected dyadic reports from heterosexual romantic couples regarding the personality dimensions of both partners and the male partner's experience with ED. Results from Studies 1 and 2 indicated that men's conscientiousness, emotional stability, and openness were negatively associated with ED according to the reports of both men and women. Women's agreeableness was negatively associated with the male partner's experience with ED according to the reports of both men and women. Results from Study 3 indicated that men's self-reported conscientiousness was negatively associated with their own experience with ED, and that women's self-reported conscientiousness and emotionality were negatively associated with their perceptions of their partner's experience with ED. Discussion explores potential explanations for the connections between these personality dimensions and men's experience with ED.

Keywords Personality · Erectile dysfunction · Romantic relationships · Sexual behavior

Erectile dysfunction (ED) refers to the inability to maintain an erection sufficient for satisfactory sexual intercourse (e.g., NIH Consensus Development Panel on Impotence, 1993). Much of the literature addressing ED has focused on its prevalence (e.g., Selvin et al., 2007), physiological underpinnings (e.g., Yafi et al., 2016), and connections with other health conditions such as diabetes and heart disease (e.g., Nicolosi et al., 2003). In addition, some research has addressed the psychological correlates of ED such as its associations with indicators of well-being (e.g., symptoms of depression and anxiety; Althof, 2002) and personality dimensions (e.g., Velten et al., 2019). The purpose of the present research was to replicate and extend previous research that has examined the associations that broad

personality dimensions have with ED in the context of heterosexual romantic relationships.

Previous research has shown that personality dimensions are associated with various sexual attitudes and sexual behaviors. For example, extraversion is associated with elevated levels of both general sexual activity and risky sexual behaviors (Allen & Walter, 2018). Emotional stability is negatively associated with sexual problems including ED, premature ejaculation, and delayed ejaculation (Peixoto & Nobre, 2016). Conscientiousness is positively associated with sexual inhibition due to threat of performance failure, whereas extraversion and emotional stability are negatively associated with sexual inhibition (Rettenberger et al., 2016).

Velten et al. (2019) examined the associations between personality dimensions and sexual functioning in German heterosexual romantic relationships with ED serving as one index of men's overall sexual functioning. The researchers reported that men's self-reported extraversion, conscientiousness, emotional stability, and openness were positively correlated with higher levels of

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sexual functioning (i.e., less experience with ED). These personality dimensions may be positively associated with the sexual functioning of men because they allow men to better navigate any sexual problems that may emerge in their romantic relationships (Roberts et al., 2007; Velten et al., 2019). For example, higher levels of emotional stability may allow men to communicate more calmly and effectively with their romantic partners about any sexual issues they experience. Taken together, these results suggest that the personality dimensions of men – with the exception of agreeableness – are associated with their sexual functioning.

Velten et al. (2019) also collected data from the female romantic partners of their male participants and found that extraversion was the only female personality dimension to be positively associated with men's sexual functioning. The reason for female extraversion being positively associated with the sexual functioning of their male partners is not clear. However, previous studies have found extraversion to be associated with sexual attractiveness (e.g., Bourdage et al., 2007; Lukaszewski & Roney, 2011; Schmitt & Buss, 2000), so it is possible that men may find their highly extraverted romantic partners to be particularly desirable, and this increased attraction may help mitigate issues with sexual functioning. Extraversion also has been shown to be positively associated with sexual functioning in women (Crisp et al., 2015; Velten et al., 2019) so this may offer another potential explanation for the association between female extraversion and the sexual functioning of their male partners.

Overview of the current research

The goal of the current research was to replicate and extend the findings of Velten et al. (2019) which addressed whether the personality dimensions of men and their female partners were associated with ED. We expected to replicate the pattern of results reported by Velten et al. such that men's self-reported extraversion, conscientiousness, emotional stability, and openness would be negatively associated with ED and that the extraversion levels of their female partners would be negatively associated with ED. We also conducted analyses to determine whether perceptions of the partner's personality dimensions were associated with ED (e.g., do men who perceive their female partner as being low in agreeableness report higher levels of ED?). Diverging from the methodology of Velten et al. who investigated men's and women's self-reports of their own sexual functioning, we focused on men's self-reports of their experience with ED and women's perceptions of their male partner's experience with ED. Results of analyses of data secured from independent samples of men (Study 1) and women (Study 2) are followed by results of dyadic analyses of data secured from a sample of heterosexual romantic couples (Study 3).

Study 1: men's reports

Study 1 was intended to replicate the associations between personality dimensions and ED reported by Velten et al. (2019). We accomplished this by asking men to provide self-reports of their personality, their perceptions of their female partners' personality, and their experience with ED. We used the "Big Five" model of personality for Study 1 because it is the most widely researched structural model of personality and it attempts to capture the breadth of personality using the following five dimensions (e.g., Costa et al., 1992): extraversion, agreeableness, conscientiousness, emotional stability, and openness.

Method

Participants and procedure

The data reported in Study 1 were collected in September, 2020 as part of a larger project concerning whether ED is associated with jealousy and partner-directed violence. Part of that larger project has been reported elsewhere (e.g., Study 1 of Vance et al., 2022a, b). IRB approval was obtained prior to data collection. The initial sample included 299 men recruited via Amazon's Mechanical Turk (MTurk) who participated in exchange for \$2.00 USD. Participants were required to be heterosexual men between the ages of 18 and 45 years who were currently in a romantic relationship of at least 6 months duration. Data were excluded for a total of 96 participants: 43 were excluded for reporting a sexual orientation other than "heterosexual," 2 were excluded for reporting they were not currently in a romantic relationship, 35 were excluded for reporting they were currently in a romantic relationship for less than 6 months, 2 were excluded for reporting they were over 45 years of age, and 62 were excluded for completing the survey in less than 10 min which suggested that they did not complete the survey with care (the average completion time was 30.96 min [SD = 51.73 min] after excluding participants who completed the survey in less than 10 min). The final sample consisted of 203 heterosexual men with a mean age of 30.48 years (SD = 5.03) and a racial/ethnic composition as follows: 65.5% White, 12.8% Black, 6.4% Latino, 4.9% Asian, 7.4% Native American,



0.5% Middle Eastern, and 2.5% Biracial. Participants reported involvement in a romantic relationship lasting an average of 39.43 months (SD = 47.54).

Measures

Personality The Ten-Item Personality Inventory (TIPI; Gosling et al., 2003) was used to assess the following personality dimensions of the participants: extraversion (2 items; e.g. "I see myself as extroverted, enthusiastic" $[\alpha = 0.42]$), agreeableness (2 items; e.g., "I see myself as sympathetic, warm" [$\alpha = 0.14$]), conscientiousness (2 items; e.g., "I see myself as dependable, self-disciplined" $[\alpha = 0.34]$), emotional stability (2 items; e.g., "I see myself as calm, emotionally stable" [$\alpha = 0.37$]), and openness (2 items; e.g., "I see myself as open to new experiences, complex" $[\alpha = 0.16]$). Participants were asked to provide their level of agreement with each statement using a response scale that ranged from 1 (Strongly disagree) to 7 (Strongly agree). Composite scores for each personality dimension were created by calculating the average of the constituent items. A modified version of the TIPI was also used to assess the participant's perception of their female partner's: extraversion (2 items; e.g. "I see my partner as extroverted, enthusiastic" [$\alpha = -0.05$]), agreeableness (2 items; e.g., "I see my partner as sympathetic, warm" $[\alpha = 0.25]$), conscientiousness (2 items; e.g., "I see my partner as dependable, self-disciplined" [$\alpha = 0.26$]), emotional stability (2 items; e.g., "I see my partner as calm, emotionally stable" [$\alpha = 0.39$]), and openness (2 items; e.g., "I see my partner as open to new experiences, complex" [$\alpha = 0.12$]).

Erectile dysfunction The International Index of Erectile Function (IIEF-5; Rosen et al., 1999) was used to assess erectile function over the past 6 months (5 items; e.g. "When you had erections with sexual stimulation, how often were your erections hard enough for penetration?" [$\alpha = 0.88$]).

¹ The internal consistency estimates for the TIPI were low in both Studies 1 and 2. This issue has been noted in previous studies that have used the TIPI (e.g., Gosling et al., 2003; Muck et al., 2007; Myszkowski et al., 2019; Storme et al., 2016). The most common explanation for this pattern is the brevity of the instrument because internal consistency estimates tend to be negatively impacted for short instruments (e.g., Gosling et al., 2003; Oshio et al., 2014; Storme et al., 2016). However, it has also been suggested that internal consistency estimates – such as Cronbach's alpha – may not be appropriate for brief measures such as the TIPI which may be constructed using formative models rather than reflective models (see Myszkowski et al., 2019, for an extended discussion). We also calculated Spearman-Brown tests of reliability, but these revealed similarly low levels of internal consistency.



Table 1 Study 1: Men's Self-Reports of Personality Traits and ED

| | Erectile Dysfunction | | |
|---------------------|----------------------|--------|--|
| | \overline{R} | β | |
| Extraversion | .06 | .11 | |
| Agreeableness | 39*** | 08 | |
| Conscientiousness | 48*** | 27*** | |
| Emotional Stability | 44*** | 23** | |
| Openness | 39*** | 15* | |
| R^2 | | .32*** | |

p < .05; p < .01; p < .001

Participants were asked to respond to each question using a 5-point scale with specific anchors that differed across the items (e.g., 1 [Almost never/never] to 5 [Almost always/always]). Composite scores were created by calculating the average of the constituent items. Due to our interest in erectile dysfunction, we reverse-scored each of the IIEF-5 items so that higher scores for this measure indicated greater ED.

Results

Self-reported personality dimensions

The zero-order correlations that personality dimensions had with ED are presented in Table 1. It is important to note that we observed relatively low levels of ED (M = 2.16; SD = 0.88), likely due, in part, to our young sample.² Men's self-reported agreeableness, conscientiousness, emotional stability, and openness had medium negative correlations with ED but men's self-reported extraversion was not correlated with ED. A multiple regression analysis was conducted to determine the unique association that each self-reported personality dimension had with ED. The results of this analysis are presented in Table 1. The Variance Inflation Factor (VIF) values for this analysis were less than 1.66 which suggests that multicollinearity was not an issue (Darlington & Hayes, 2017). The results revealed that men's self-reported conscientiousness ($\beta = -0.27$, t = -3.78, p < 0.001, $CI_{0.5\%}$ [-0.41, -0.13]), emotional stability ($\beta = -0.23, t = -2.98$,

² We observed relatively low levels of ED across our three studies. The low levels of ED that we observed may be at least partially a result of the relatively young age of participants across samples. As such, our samples may not be representative of men who experience more severe symptoms of ED, and our results should be interpreted with this in mind.

Table 2 Study 1: Men's Reports of Perceptions of Female Personality Traits and ED

| | Erectile Dysfunction | |
|--------------------------------------|----------------------|--------|
| | \overline{R} | β |
| Female Partner's Extraversion | 29*** | 13* |
| Female Partner's Agreeableness | 50*** | 38*** |
| Female Partner's Conscientiousness | 32*** | .03 |
| Female Partner's Emotional Stability | 25*** | .05 |
| Female Partner's Openness | 47*** | 27* |
| R^2 | | .33*** |

^{*}p < .05; **p < .01; ***p < .001

p = 0.003, $CI_{95\%}$ [-0.38, -0.08]) and openness ($\beta = -0.15$, t = -1.97, p = 0.05, $CI_{95\%}$ [-0.29, 0.00]) had unique small negative associations with ED, whereas men's self-reported extraversion ($\beta = 0.11$, t = 1.85, p = 0.066, $CI_{95\%}$ [-0.01, 0.23]) and agreeableness ($\beta = -0.08$, t = -1.03, p = 0.306, $CI_{95\%}$ [-0.23, 0.07]) did not have significant unique associations with ED.³

Perceptions of female partner's personality dimensions

The zero-order correlations that men's perceptions of their female partner's personality dimensions had with ED are presented in Table 2. Perceptions of the female partner's extraversion and emotional stability had small negative correlations with ED, whereas perceptions of the female partner's agreeableness, conscientiousness, and openness had medium-to-large negative correlations with ED. A multiple regression analysis was conducted to determine the unique association that each perceived personality dimension had with ED. The results of this analysis are presented in Table 2 and the VIF values were less than 2.26, which suggest that multicollinearity was not an issue. The results revealed that perceptions of the female partner's extraversion $(\beta = -0.13, t = -2.01, p = 0.046, CI_{95\%} [-0.25, 0.00])$, agreeableness ($\beta = -0.38$, t = -4.68, p < 0.001, $CI_{95\%}$ [-0.53, -0.22]) and openness ($\beta = -0.27$, t = -3.94, p < 0.001, $CI_{0.5\%}$ [-0.41, -0.14]) had unique small-to-medium negative associations with ED, whereas perceptions of the female partner's conscientiousness (β =0.03, t=0.32, p=0.748, $CI_{95\%}$ [-0.14, 0.20]) and emotional stability ($\beta = 0.05, t = 0.57, p = 0.571, CI_{0.5\%}$

[-0.11, 0.21]) did not have significant unique associations with ED.

Discussion

Our results were similar to those of Velten et al. (2019) in that we found that men's own conscientiousness, emotional stability, and openness had unique negative associations with ED, whereas agreeableness did not have a unique association with ED. These results are consistent with the possibility that conscientiousness, emotional stability, and openness may be important for facilitating communication about sexual problems and successfully navigating these sorts of issues. However, it is important to note that self-reported extraversion was not associated with ED which differs from the results reported by Velten et al. (2019). Although selfreported extraversion was not associated with ED, men's perceptions of their female partner's extraversion did have a unique negative association with ED. That is, men who perceived their female partners to be more extraverted reported fewer problems with ED. The reason for this association is not clear but one possibility is that extraversion often impacts approachability so it is possible that men may find it easier to talk with their extraverted partners about any sexual problems they may experience. Alternatively, extraversion has been associated with physical attractiveness in both men and women (e.g., Bourdage et al., 2007; Lukaszewski & Roney, 2011; Schmitt & Buss, 2000) so it is possible that men who are partnered with more extraverted women may experience less ED because they are more attracted to these women.

Men's perception of their female partner's agreeableness was negatively associated with ED. The reason for this association is not clear but it is possible that having a disagreeable romantic partner may facilitate feelings of insecurity for men and reduce their willingness to share potentially embarrassing information with their partners which may exacerbate any issues that they experience with their sexual functioning. Conversely, having an agreeable romantic partner may foster a sense of security and increase the willingness of men to talk with their partner about any issues they may be having with their sexual functioning. This possibility is consistent with the results from previous studies showing that disagreeable individuals tend to be involved in relationships characterized by low levels of security and dependency (e.g., Lehnart & Neyer, 2006). We also observed that men's own openness and the perceived openness of their female partners were negatively correlated with ED. One possible explanation for these associations is that openness may promote a greater variety of sexual experiences and more effective navigation of any sexual problems that arise which may reduce ED. However, it is important to note that openness



³ Across all three studies, we conducted additional analyses in which we controlled for a range of covariates (e.g., age, relationship length, men's physical health). The inclusion of these covariates in our analyses did not substantially alter the results, so we have chosen to report the results of the analyses without the covariates in the interest of parsimony.

has been found to have weak and somewhat inconsistent associations with sexual attitudes and behaviors across studies (e.g., Bourdage et al., 2007; Costa et al., 1992; Schmitt & Buss, 2000).

Study 2: women's reports

The goal of Study 2 was to extend the results of Study 1 by examining the connections between personality dimensions and ED from the perspective of women. This is important because heterosexual men and women sometimes have different perspectives concerning their romantic relationships. For example, men tend to underreport the frequency of violence in their intimate relationships, whereas women's reports are comparatively more accurate (e.g., Dobash et al., 1998). It is possible that men similarly underreport their experience with ED, especially considering the potential influence that social desirability bias may have on the willingness of men to report issues with ED. Previous studies have attempted to mitigate biased self-reports of behaviors in intimate relationships by collecting data from both men and women (e.g., Shackelford et al., 2005). Following a similar rationale, we collected data from women in Study 2 to examine whether similar associations between personality dimensions and ED would emerge from their perspective.

Method

Participants and procedure

The data reported in Study 2 were collected in September, 2020 as part of a larger project concerning whether ED was associated with jealousy and partner-directed violence. Part of that larger project has been reported elsewhere (e.g., Study 2 of Vance et al., 2022a, b). IRB approval was obtained prior to data collection. The initial sample included 236 women recruited via MTurk who participated in exchange for \$2.00 USD. Participants were required to be heterosexual women between the ages of 18 and 45 years currently in a romantic relationship of at least 6 months duration. Data were excluded for a total of 84 participants: 33 were excluded for reporting a sexual orientation other than "heterosexual," 8 were excluded for not completing the survey, 26 were excluded for reporting they were currently in a romantic relationship for less than 6 months, 1 was excluded for reporting she was over 45 years of age, 1 was excluded for reporting she was under 18 years of age, and 15 were excluded for completing the survey in less than 10 min which suggested that they did not complete the survey with care (the average completion time was 27.69 min [SD = 14.77 min] after excluding participants who completed the survey in less than 10 min). The final sample consisted of 152 heterosexual women with a mean age of 30.41 years (SD = 4.77) and a racial/ethnic composition as follows: 80.3% White, 11.8% Black, 1.3% Latino, 2.0% Asian, 2.6% Native American, and 2.0% Biracial. Participants reported involvement in a romantic relationship lasting an average of 50.52 months (SD = 49.47).

Measures

Personality As in Study 1, we used the TIPI to assess participants' own personality dimensions of extraversion $(\alpha=0.45)$, agreeableness $(\alpha=0.20)$, conscientiousness $(\alpha=0.10)$, emotional stability $(\alpha=0.48)$, and openness $(\alpha=0.23)$. We also used a modified version of the TIPI to assess perceptions of their male partner's personality dimensions of extraversion $(\alpha=0.41)$, agreeableness $(\alpha=0.31)$, conscientiousness $(\alpha=0.36)$, emotional stability $(\alpha=0.45)$, and openness $(\alpha=0.12)$.

Erectile dysfunction A modified version of the IIEF-5 from Study 1 was used to assess the perceived ED of the male partner over the last 6 months (α =0.87). The measure was modified such that participants were asked to consider their male partner (e.g. "When your partner had erections with sexual stimulation, how often were your partner's erections hard enough for penetration?"). As in Study 1, we reverse-scored each of the items for the IIEF-5 so that higher scores for this measure indicated greater ED.

Results

Self-reported personality

The zero-order correlations that the self-reported personality dimensions of women had with their perceptions of ED in

Table 3 Study 2: Women's Self-Reports of Personality Traits and Perceptions of Male Partner's ED

| | Perceptions of Male Partner's Erectile Dysfunction | |
|---------------------|--|--------|
| | \overline{R} | β |
| Extraversion | .22*** | .10 |
| Agreeableness | 41*** | 19* |
| Conscientiousness | 46*** | 34** |
| Emotional Stability | 20* | .04 |
| Openness | 24** | 02 |
| R^2 | | .26*** |

^{*}p < .05; **p < .01; ***p < .001



Table 4 Study 2: Women's Reports of Perceptions of Male Personality Traits and ED

| | Perceptions of Male Partner's Erectile Dys- function | |
|------------------------------------|--|--------|
| | \overline{R} | β |
| Male Partner's Extraversion | 15 | 03 |
| Male Partner's Agreeableness | 40*** | 10 |
| Male Partner's Conscientiousness | 48*** | 24*** |
| Male Partner's Emotional Stability | 44*** | 20* |
| Male Partner's Openness | 45*** | 28*** |
| R^2 | | .37*** |

p < .05; p < .01; p < .001

their male partners are presented in Table 3. Similar to Study 1, we observed relatively low levels of ED (M=2.02; SD=0.84). 1Women's self-reported extraversion had a small positive correlation with perceptions of their male partner's ED, whereas women's self-reported agreeableness, conscientiousness, emotional stability, and openness had small-to-medium negative correlations with perceptions of their male partner's ED. We also conducted a one-sample t-tests to compare the levels of ED perceived by women for their male partners in Study 2 with the self-reported levels of ED provided by men in Study 1. The results of this analysis revealed that women in Study 2 perceived slightly lower levels of ED for their male partners than were self-reported by men in Study 1 (M=-0.14, t=-2.06, t=0.041, t=0.16).

A multiple regression analysis was conducted to determine the unique association that each self-reported personality dimension had with perceptions of their male partner's ED. The results of this analysis are presented in Table 3 and the VIF values for this analysis were less than 2.07, which suggest that multicollinearity was not an issue. The results revealed that women's self-reported agreeableness $(\beta = -0.19, t = -2.06, p = 0.041, CI_{95\%} [-0.38, -0.01])$ and conscientiousness ($\beta = -0.34$, t = -3.29, p = 0.001, $CI_{95\%}$ [-0.54, -0.14]) had unique small-to-medium negative associations with perceptions of their male partner's ED, whereas women's self-reported extraversion ($\beta = 0.10$, t = 1.25, p = 0.215, $CI_{0.5\%}$ [-0.06, 0.26]) emotional stability ($\beta = 0.04$, t = 0.41, p = 0.684, $CI_{95\%}$ [-0.14, 0.22]) and openness ($\beta = -0.02$, t = -0.26, p = 0.798, $CI_{95\%}$ [-0.19, 0.14]) did not have significant unique associations with perceptions of their male partner's ED.

Partner-reported personality

The zero-order correlations that women's perceptions of their male partner's personality dimensions had with perceptions of their male partner's ED are presented in Table 4.

Women's perceptions of their male partner's agreeableness, conscientiousness, emotional stability, and openness had medium negative correlations with perceptions of their male partner's ED. Women's perceptions of their male partner's extraversion was not correlated with women's perceptions of their male partner's ED. A multiple regression analysis was conducted to determine the unique association that each perceived personality dimension had with perceived ED. The results of this analysis are presented in Table 4 and the VIF values for this analysis were less than 1.58, which suggests that multicollinearity was not an issue. The results revealed that women's perceptions of their male partner's conscientiousness ($\beta = -0.24$, t = -2.92, p = 0.004, $CI_{95\%}$ [-0.40, -0.08]), openness (β = -0.28, t = -3.73, p < 0.001, $CI_{05\%}$ [-0.43, -0.13]), and emotional stability ($\beta = -0.20, t = -2.44$, p = 0.016, $CI_{95\%}$ [-0.35, -0.04]) had unique small negative associations with perceptions of their male partner's ED, whereas women's perceptions of their male partner's extraversion ($\beta = -0.03$, t = -0.48, p = 0.630, $CI_{95\%}$ [-0.17, 0.10]) and agreeableness ($\beta = -0.10$, t = -1.25, p = 0.212, $CI_{95\%}$ [-0.26, 0.06]) did not have significant unique associations with perceived ED.

Discussion

Women's reports of their own agreeableness were negatively associated with their reports of their partner's ED. One possible explanation for this association is that female agreeableness may make it easier for couples to navigate issues concerning sexual functioning, especially those surrounding ED. Women's reports of their own conscientiousness were also found to be negatively associated with their reports of their partner's ED. It is possible that this association may be explained by conscientious women being more prudent about noticing and addressing their male partner's problems with normal sexual functioning. Women's perceptions of their partner's conscientiousness, emotional stability, and openness had unique negative associations with their perceptions of their partner's ED. These results closely resemble our findings from Study 1 regarding men's self-reports of their own personality dimensions and experience with ED.

Study 3: dyadic reports

The goal of Study 3 was to extend the results of Studies 1 and 2 by collecting dyadic reports from heterosexual romantic couples regarding their personality and men's experience with ED. We decided to shift from the Big Five model of personality to the HEXACO model of personality (Ashton & Lee, 2001, 2007) in Study 3 because it provides an alternative conceptualization of basic personality that includes the following



dimensions: honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience. Two important differences between the Big Five and HEX-ACO conceptualizations of personality is that the HEXACO model includes the honesty-humility dimension (which is not included in the Big Five model) and the emotionality dimension (which is similar – but not identical – to the opposite pole of the emotional stability dimension from the Big Five model).

Method

Participants and procedure

The data reported in Study 3 were collected from June through August of 2021 as part of a larger project concerning whether ED is associated with jealousy and partner-directed behaviors. Part of that larger project has been reported elsewhere (i.e., Vance et al., 2022a, b). IRB approval was obtained prior to data collection. The initial sample included 280 community members (i.e., 140 romantic couples) recruited from Prolific who participated in exchange for \$10.00 USD. All participants were required to be involved in a committed heterosexual relationship for a minimum of 6 months. Participants completed measures of their own personality traits, their perceptions of their romantic partner's personality traits, and ED via a secure website. Participants were instructed to provide this information separately (i.e., one partner was not supposed to be aware of the specific responses provided by their partner). Data were excluded for 14 couples because at least one member of the couple failed to correctly complete two or more directed-response items that were included in the instruments to detect inattentive responding (e.g., "For this item, please select '1' as your response"). In addition, data were excluded for 13 other couples due to at least one member of the couple being a univariate outlier for at least one of the variables (i.e., more than three standard deviations above or below the mean for the sample). The final 113 couples had a mean relationship length of 4.05 years (SD = 3.60; range = 6 months-19 years; Median = 3.08 years). The mean age for men was 27.34 years (SD=7.84; range=18-60 years) and the racial/ethnic composition of the male participants was 83% White, 5% Asian, 4% Hispanic, 2% Black, and 6% other. The mean age for women was 26.23 years (SD = 7.38; range = 18-58 years) and the racial/ethnic composition of the female participants was 79% White, 7% Asian, 8% Hispanic, 2% Black, and 4% other.

Measures

Personality We used the HEXACO-60 (Ashton & Lee, 2009) to measure the following self-reported personality traits: *honesty-humility* (10 items; e.g., "I wouldn't use flattery to get a



| | r |
|---------------------------|------|
| ED | .58* |
| Men's Honesty-Humility | .51* |
| Men's Emotionality | .63* |
| Men's Extraversion | .76* |
| Men's Agreeableness | .56* |
| Men's Conscientiousness | .66* |
| Men's Openness | .75* |
| Women's Honesty-Humility | .70* |
| Women's Emotionality | .55* |
| Women's Extraversion | .69* |
| Women's Agreeableness | .62* |
| Women's Conscientiousness | .62* |
| Women's Openness | .71* |

p < .001

raise or promotion at work, even if I thought it would succeed" $[\alpha_{Men} = 0.76, \alpha_{Women} = 0.75])$ emotionality (10 items; e.g., "I would feel afraid if I had to travel in bad weather conditions" $[\alpha_{Men}=0.76, \alpha_{Women}=0.75]$) extraversion (10 items; e.g., "I feel reasonably satisfied with myself overall" [$\alpha_{Men} = 0.83$, α_{Women} = 0.85]) agreeableness (10 items; e.g., "I rarely hold a grudge, even against people who have badly wronged me" $[\alpha_{Men} = 0.75, \alpha_{Women} = 0.71])$ conscientiousness (10 items; e.g., "I plan ahead and organize things, to avoid scrambling at the last minute" [α_{Men} =0.80, α_{Women} =0.77]) and openness (10 items; e.g., "I'm interested in learning about the history and politics of other countries" [$\alpha_{Men} = 0.79$, $\alpha_{Women} = 0.71$]). Participants were asked to provide their level of agreement with each statement using a response scale that ranged from 1 (strongly disagree) to 5 (strongly agree). A modified version of the TIPI was also used to assess the participant's perception of their partner's personality traits: honesty-humility ($\alpha_{Men} = 0.76$, α_{Women} = 0.72) emotionality (α_{Men} = 0.76, α_{Women} = 0.73) extraversion (α_{Men} =0.77, α_{Women} =0.82) agreeableness (α_{Men} =0.79, α_{Women} = 0.84) conscientiousness (α_{Men} = 0.80, α_{Women} = 0.83) and openness ($\alpha_{Men} = 0.75$, $\alpha_{Women} = 0.79$).

Erectile dysfunction As in Study 1, we used the IIEF-5 to assess male self-reported erectile function over the past six months (α =0.86). As in Study 2, we used a modified version of the IIEF-5 to capture women's perceptions of their male partner's ED (α =0.93).

Results

As in Studies 1 and 2, mean levels of ED were relatively low for both men (M = 1.41; SD = 0.45) and women (M = 1.38; SD = 0.54). We observed high levels of



Table 6 Study 3: Reports of Men and Women for Personality Traits and ED

| | Men's Self-Report of Erectile Dysfunction | | Women's Perceptions of Male Partner's Erectile Dysfunction | |
|--|--|-----|--|-----|
| | r | β | r | β |
| Honesty-Humility | , | | | , |
| Men's Self-Report | 03 | 04 | 07 | 06 |
| Men's Partner-Report of Female Partner | 03 | .02 | 07 | 11 |
| Women's Self-Report | 05 | 08 | .01 | .07 |
| Women's Partner-Report of Male Partner | .00 | .06 | .01 | .06 |
| Emotionality | | | | |
| Men's Self-Report | .14 | .12 | .15 | .10 |
| Men's Partner-Report of Female Partner | 18 | 04 | 25** | 14 |
| Women's Self-Report | 25** | 22* | 25** | 16 |
| Women's Partner-Report of Male Partner | .12 | 01 | .16 | .03 |
| Extraversion | | | | |
| Men's Self-Report | 16 | 15 | .01 | .20 |
| Men's Partner-Report of Female Partner | 02 | 05 | 06 | 22 |
| Women's Self-Report | .03 | .10 | .07 | .22 |
| Women's Partner-Report of Male Partner | 13 | 03 | 08 | 25 |
| Agreeableness | | | | |
| Men's Self-Report | 12 | 09 | 13 | 13 |
| Men's Partner-Report of Female Partner | 10 | 15 | 15 | 21 |
| Women's Self-Report | 04 | .04 | 05 | .07 |
| Women's Partner-Report of Male Partner | 10 | 07 | 07 | 03 |
| Conscientiousness | | | | |
| Men's Self-Report | 25** | 29* | 07 | 02 |
| Men's Partner-Report of Female Partner | 19* | 11 | 11 | .04 |
| Women's Self-Report | 19* | 11 | 23* | 25* |
| Women's Partner-Report of Male Partner | 12 | .06 | 09 | 06 |
| Openness | | | | |
| Men's Self-Report | 16 | 15 | 11 | .07 |
| Men's Partner-Report of Female Partner | 15 | 11 | 21* | 23 |
| Women's Self-Report | 11 | 01 | 15 | .07 |
| Women's Partner-Report of Male Partner | 11 | .04 | 16 | 17 |

p < .05; p < .01; p < .001

agreement between men's self-reports and women's partner-reports for the same constructs (e.g., large positive correlation between men's self-reported ED and women's reports of their partner's experience with ED). These correlations are presented in Table 5. Men's self-reported ED was not significantly different from the reports provided by their female partners (t = -0.69, p = 0.494, d = 0.07).

The zero-order correlations that self-reported and partner-reported personality dimensions had with ED are presented in Table 6. Men's self-reported conscientiousness had a medium negative correlation with men's self-reported ED. Men's perceptions of their female partner's conscientiousness had a small negative correlation with men's self-reported ED. Men's perceptions of their female partner's emotionality and openness had medium negative correlations with women's perceptions

of their male partner's ED. Women's self-reported emotionality and conscientiousness had small-to-medium negative correlations with men's self-reported ED and women's perceptions of their male partner's ED.

We examined the associations that self-reported personality traits and partner-reported personality traits had with ED using the Actor-Partner Interdependence Model (APIM; Kenny et al., 2006) which is often used to analyze dyadic data. The APIM accounts for romantic partners influencing each other by allowing outcomes experienced by one individual to be associated with factors concerning both the individual (an actor effect) and their partner (a partner effect). For example, a man's self-reported level of conscientiousness may be negatively associated with his self-reported erectile dysfunction (actor effect) as well as his female partner's



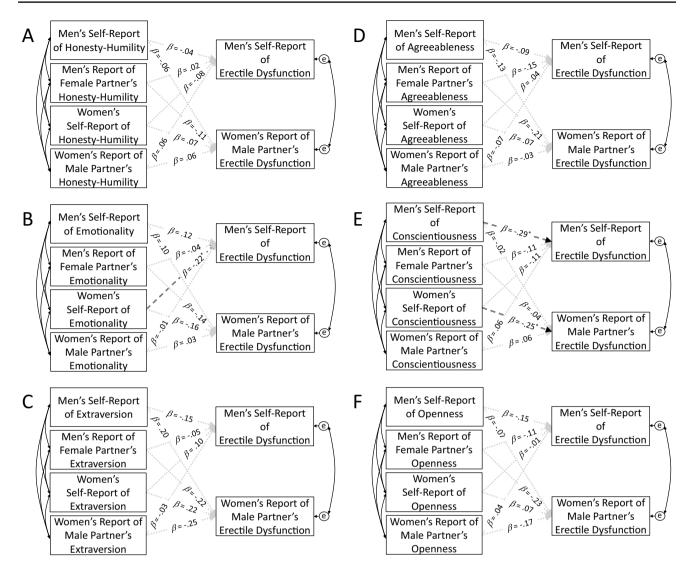


Fig. 1 The results of the actor-partner interdependence model (APIM) analyses for honesty-humility (**A**), emotionality (**B**), extraversion (**C**), agreeableness (**D**), conscientiousness (**E**), and openness (**F**). *Note:* The significant positive associations are indicated by solid black arrows, the significant negative associations are indicated by

dashed black arrows, and the nonsignificant associations are indicated by dotted grey lines. The "e" terms represent the errors for erectile dysfunction. The correlations among the predictors and outcomes are indicated by curved bidirectional arrows. $^*p < .05$

perception of his erectile dysfunction (partner effect). We conducted separate APIM analyses for each personality trait such that each analysis included four predictor variables (i.e., men's self-report of the personality trait, men's perception of their female partner's personality trait, women's self-report of the personality trait, and women's perception of their male partner's personality trait) and two outcome variables (i.e., men's self-report of erectile dysfunction and women's perception of their male partner's erectile dysfunction). The results of these analyses are presented in Fig. 1.

Actor effects for men Men's self-report of conscientiousness was negatively associated with their self-reported erectile

dysfunction (β =-0.29, t=-2.39, p=0.017). No other actor effects emerged for men.

Partner effects for men No partner effects emerged for men.

Actor effects for women Women's self-report of conscientiousness was negatively associated with their perceptions of their male partner's erectile dysfunction (β =-0.25, t=-2.15, p=0.031). No other actor effects emerged for women.

Partner effects for women Women's self-report of emotionality was negatively associated with men's self-reported erectile dysfunction (β =-0.22, t=-2.02, p=0.044). No other partner effects emerged for women.



Discussion

Men's self-reported conscientiousness was negatively associated with their self-reported experience with ED. Similarly, women's self-reported conscientiousness was negatively associated with their perceptions of their partner's experience with ED. Men who report lower levels of conscientiousness may be less attentive to their sexual health, whereas women who report lower levels of conscientious may be less likely to notice their partner's experience with ED or encourage their partner to seek treatment. These results partially resemble our findings from Studies 1 and 2, but there are also important differences, which will be discussed in the following section. Women's selfreported emotionality was negatively associated with their partner's self-reported ED. This pattern is not consistent with the results of Study 2 which found a negative correlation between women's self-reported emotional stability and their perceptions of their partner's ED because "emotional stability" from the Big 5 model is often negatively correlated with "emotionality" from the HEXACO model (e.g., Lee et al., 2005).

General discussion

The purpose of the present research was to examine whether the personality dimensions of men and their female partners were associated with ED. The results of Studies 1 and 2 revealed that men's conscientiousness, emotional stability, and openness were negatively associated with ED according to the reports of both men and women. Although the results of Studies 1 and 2 largely converged with those of Velten et al. (2019), we observed relatively less agreement in the results of Study 3. The results of Study 3 utilized an improved sample and a different conceptualization of basic personality traits, but revealed that only conscientiousness and emotionality were associated with ED, and that conscientiousness, alone, was associated with ED from the perspectives of both men and women. This pattern of results shows that there is general agreement between men and women with regard to the male personality dimensions that are associated with men experiencing ED. It is possible that these personality dimensions may allow men to more successfully address any difficulties with sexual functioning that may emerge during the course of their relationships (e.g., Velten et al., 2019). For example, emotionally stable men may experience less intense emotional distress or feelings of insecurity as a result of experiencing ED which may make it easier for them to communicate effectively with their partners about these issues. However, it is important to note the limited explanatory power of the present research, given our reliance on cross-sectional data. Thus, alternative directions of causality should also be considered. One possibility is that men's experience with ED could lead to lower levels of emotional stability and conscientiousness. For example, men's experience with ED may cause emotional distress, especially if a reduction in sexual function leads to relationship issues, and this may, in turn, decrease men's emotional stability. Additionally, men may become mentally preoccupied by their experience with ED, and the associated complications to their romantic relationships, which might have negative consequences for their conscientiousness. It is also possible that other factors that we did not assess (e.g., socioeconomic status) may play a role in the development of both ED and personality traits.

In Studies 1 and 2, there was relatively little agreement between men and women regarding the associations that women's personality dimensions had with their partner's experience with ED. However, one point of convergence was that women's agreeableness was negatively associated with the partner's experience with ED according to the reports of both men and women. This suggests that female agreeableness may play a more important role in men experiencing ED than has been previously recognized. One possible explanation for this association is that female agreeableness may help men feel more comfortable and less self-conscious about addressing any issues with sexual functioning that they experience. It is also possible that women with higher levels of agreeableness may be more willing to work through any problems with sexual functioning experienced by their partner and may be more supportive as their partner explores various treatment methods. However, it is important to note that women's agreeableness was not associated with ED in Study 3.

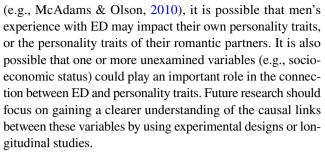
Although some of our results resembled those reported by Velten et al. (2019), there were also a number of notable differences. One important difference is that men's extraversion was not associated with ED in the present research. A possible explanation for this discrepancy is that male extraversion may have, at best, only a weak and inconsistent association with ED but future research should attempt to clarify the nature and magnitude of the association between male extraversion and ED. Although openness and agreeableness were associated with ED in Studies 1 and 2, we failed to replicate these associations in Study 3. It is possible that the analyses, methodology, and samples used in the present research may be partially responsible for the discrepancies between our results and those of Velten et al. First, although we used the same statistical analysis used by Velten et al. in Study 3, we analyzed the associations between ED and personality traits in Studies 1 and 2 using multiple regression. This seems like an unlikely source for the discrepancy in results because the



results of Studies 1 and 2 were more closely aligned with the results of Velten et al. than Study 3, which used the same statistical test as Velten et al. Second, we used different measures of personality than Velten et al., and where Velten et al. measured ED using the 15-item version of the IIEF, we used the 5-item version of the IIEF. The TIPI and HEXACO have been shown to have good convergent validity with other measures of personality (Gosling et al., 2003; Ørnfjord, 2018), and the 5-item of the IIEF has been shown to be a reliable and valid alternative to the 15-item version of the IIEF (Rosen et al., 1999). Nevertheless, it is possible that our use of alternative measures may be partially responsible for the discrepancies between our results and those of Velten et al. Finally, it is possible that there were important differences in the characteristics of the samples collected for the present studies, and the sample collected by Velten et al. For example, Velten et al. collected data from a German sample of relatively older men and women $(M_{age} = 51.28 \text{ years})$ who reported a relatively longer average relationship length (M = 23.98 years). The fact that our samples were younger and in relatively newer romantic relationships than the sample examined by Velten et al. may also be at least partially responsible for the discrepancies in our results. Further, the differences in age between our sample, and that of Velten et al. may be indicative of different types of ED. Specifically, ED in older samples likely represents more typical causes of ED (e.g., due to medication or age-related illnesses) whereas ED in younger samples is likely the result of more atypical causes (e.g., psychological or relational).

The present studies contained a number of methodological limitations that should be noted and addressed in future studies. The first limitation is that we used ultra-brief measures of personality dimensions which demonstrated poor internal consistency in Studies 1 and 2. Although previous research has provided evidence for the convergent validity of the TIPI with other measures of the five-factor model of personality (e.g., Ehrhart et al., 2009), this is important because ultra-brief measures of personality dimensions have been criticized for various weaknesses including poor psychometric properties as well as issues concerning inadequate content coverage (e.g., Chapman & Elliot, 2019; Myszkowski et al., 2019). Given these concerns, future researchers should attempt to replicate these results using more traditional measures of basic personality dimensions that have stronger psychometric properties and better content coverage.

The second limitation is that we relied on correlational data across all three studies. As a result, we are unable to make definitive claims about the direction of causality regarding the associations observed in the present research. Although personality traits tend to be relatively stable across the lifespan



The third limitation is that we relied on moderate sample sizes for each of our studies, and Studies 1 and 2 relied on data collected via MTurk, which some researchers have criticized for producing low-quality data (e.g., Chmielewski & Kucker, 2020; Hauser et al., 2018; Kennedy et al., 2020). Study 3 relied on data collected via Prolific, which purportedly mitigates some of the concerns associated with MTurk. However, there are still potential issues involved with this kind of online dyadic data collection. For example, it is possible that one member of a romantic couple could have completed both their own survey, and the survey intended for their romantic partner. It would be beneficial for future research concerning the connections between personality dimensions and ED to utilize larger and more diverse samples (e.g., greater diversity in the ages and cultural backgrounds of participants) and enact strategies for verifying that the information was submitted by both members of the couple.

The fourth limitation is that we observed relatively low levels of ED across all three studies. For example, the average levels of ED were 2.16 in Study 1 and 2.02 in Study 2. Despite allowing a broader age range for male participants in Study 3, the average levels of ED were 1.50 according to men's self-reports, and 1.47 according to women's partner-reports, which may partially be a result of the relatively younger sample of men and women collected in Study 3. This suggests that the levels of ED experienced by men in the present studies may not accurately represent men who experience more severe symptoms of ED. Future research should attempt to replicate the results of the present studies using clinical samples of men who are seeking medical treatment for their ED symptoms.

Conclusion

The present studies examined the associations that personality dimensions had with men's experiences with ED. Some of our results were similar to those of Velten et al. (2019), in that men's conscientiousness, emotional stability, and openness were negatively associated with ED according to the reports of both men and women in Studies 1 and 2. However, the results of Study 3 largely failed to replicate these patterns. Taken together, these results suggest that the connections between basic personality dimensions and ED



are likely to be, at best, relatively weak and inconsistent across studies.

Data availability The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the [blinded] IRB.

Informed consent Informed consent was obtained from each participant prior to their participation.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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