Dissociation and Personality: A Systematic Review and Meta-Analysis

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Abstract

Despite decades of primary research investigating the nature of dissociation through its relationship with broad personality constructs, the nature of these relationships has remained unclear. Sampling errors, variations in sample size, the measures used, and methodological design have precluded the possibility of obtaining precise estimates of these relationships and, consequently, drawing accurate conclusions. To bring clarity to the dissociation-personality literature, we conducted the first (to our knowledge) systematic review and meta-analyses of relationships between dissociation (including dissociation factors) and personality domains contained within the five-factor model. We included 23 primary studies that provided between 11 and 25 independent effect sizes, depending on the analysis. We coded effect size data, extraneous information for moderator analyses, and methodological quality for the included studies. We conducted 20 meta-analyses and found 19 statistically significant dissociation-personality relationships. The five higher-level meta-analyses of dissociation total scores and personality domains contained within the five-factor model indicated the following statistically significant relationships: neuroticism-dissociation total (r = .24), extraversion-dissociation total (r = -.07), openness-dissociation total (r =.10), agreeableness-dissociation total (r = -.15), and conscientiousness-dissociation total (r = -.21). For some variables, participants' clinical status and gender, and the dissociation and personality measure used were significant moderators of the dissociation-personality relationship. Findings indicate that dissociation is relatively independent of trait-model personality.

Keywords: systematic review, meta-analysis, dissociation, personality

Dissociation and Personality: A Systematic Review and Meta-Analysis

Dissociation, as defined by Bernstein and Putnam (1986, p. 727), is "a lack of the normal integration of thoughts, feelings, and experiences into the stream of consciousness and memory." In the late 1800s, Pierre Janet became the first to document dissociation specifically as a pathological phenomenon associated with trauma (Van der Hart & Horst, 1989). This documentation influenced the conceptualization of dissociation as a strictly pathological occurrence—occurring in those with a psychological disorder, but not the general population. Dissociation has since been re-conceptualized as both a construct occurring on a continuum of severity (Putnam, 1991), and a qualitatively independent pathological phenomenon occurring taxonically (Waller et al., 1996). Non-pathological dissociative experiences, such as "zoning out while driving," are relatively common in the general population and are equally prevalent among men and women (Kate et al., 2020; Spitzer et al., 2003). In contrast, dissociative disorders (pathological dissociation) are less common and have been estimated to occur, for example, in approximately 11.4% of college populations (Kate et al., 2020).

Apart from being the core pathology of dissociative disorders, pathological forms of dissociation have been recognized as transdiagnostic phenomena present in various forms of psychopathology (Lyssenko et al., 2018). Dissociation is associated with acute or chronic stress (Şar, 2014), higher rates of non-suicidal self-injury and suicide attempts (Calati et al., 2017), and it predicts worse treatment outcomes for posttraumatic stress disorder (PTSD; Bae et al., 2016), obsessive-compulsive disorder (OCD; Spitzer et al., 2007), and panic disorder (Kamaradova et al., 2013).

Despite its long history (i.e., dating back to Janet's work in the 1800s) and the above-mentioned negative health outcomes associated with dissociation now being recognized in research (e.g., Lyssenko et al., 2018), dissociation remains one of the least understood and

under-researched constructs in the field of psychology (Loewenstein, 2018). However, Şar and Ross (2022, p. 793) noted that one way to advance the scientific understanding of dissociation is through the "exploration of personality characteristics… according to various (e.g., dimensional) models"; such an exploration is thus the purpose of this review.

Personality

Personality traits, as defined by McCrae and Costa (2003, p. 25), are "dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions." Although there are several ways to conceptualize and measure personality, in the present review—consistent with the research recommendation by Şar and Ross (2022)—we followed the "trait-model" approach. The trait model refers to the measurement of personality traits inherent in all people; in contrast to the personality disorders model, it does not intend to measure psychopathology directly. However, many researchers have studied the extension of trait-model personality to personality disorders and other forms of psychopathology, with varying degrees of success (see Morey et al., 2000 or Widiger & Costa, 2013). Furthermore, the alternative model of personality disorders added to the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; American Psychiatric Association, 2013) is conceptually related to the five-factor model (FFM; McCrae & Costa, 1987) of personality.

The trait model approach is represented primarily by the above-mentioned FFM. Within the FFM framework, personality is represented by five superordinate personality traits known as factors or domains. Each domain is conceptualized as being dimensional, meaning all domains are presumed to be present, in some amount, in all individuals. The five domains are (a) neuroticism, (b) extraversion, (c) openness to experience (referred to as openness in the present review), (d) agreeableness, and (e) conscientiousness (McCrae & Costa, 1987). In most conceptualizations of the FFM, each domain is underpinned by several lower-order facets (see Costa & McCrae, 1992).

Dissociation and Personality

The relationship between dissociation and personality was recognized as early as the late 1800s when Pierre Janet suggested that personality may act as a vulnerability to dissociative experiences (Janet, 1907, as cited in Groth-Marnat & Jeffs, 2002). Following Janet's insight, several researchers have sought to provide empirical support for the relationship between dissociation and personality (e.g., Groth-Marnat & Jeffs, 2002; Kwapil et al., 2002; Ruiz et al., 1999). Although primary studies have provided support for the existence of a relationship between dissociation and personality, relationships between dissociation and personality domains appear to be inconsistent with respect to magnitude, statistical significance, and occasionally direction. For example, Chmielewski and Watson (2008) and Watson (2003) found (statistically non-significant) trivial/small relationships between dissociation and openness (r = .06 and r = .03), whereas Ashton et al. (2012) and Ashton and Lee (2012) found (statistically significant) small/medium relationships (r = .22 and r = .17) between dissociation and openness. However, this inconsistency between studies with respect to effect size may be due to sampling error and variations in sample size.

In addition to the appearance of inconsistent findings, there are two fundamental issues associated with the primary studies investigating the relationship between dissociation and personality. First, the ubiquity of cross-sectional designs employed by previous authors has precluded the possibility of drawing important conclusions about the nature of the dissociation-personality relationship and left fundamental questions unanswered (i.e., does personality precede and contribute to dissociation? Does personality change as a result of dissociative experiences? Does dissociation emerge with particular personality-trait configurations?). Although we were limited by the decisions of previous authors in this regard, the synthesis of cross-sectional research in the present review may contribute to

building theoretical foundations upon which future authors can design prospective studies to answer the above questions.

Second, the relationship between dissociation and personality remains unclear because previous researchers have often employed what Goldberg (1999, p. 1) described as "narrow-bandwidth" instruments, which measure "one, two, or at most three [personality] traits." For instance, some previous researchers have narrow-mindedly focused on the association between dissociation and the singular personality trait of "fantasy proneness" (e.g., Merckelbach et al., 1999). Fortunately, other researchers have used more favorable "broad-bandwidth" instruments, such as the FFM (Goldberg, 1999, p. 1), which are multi-dimensional and provide more complete structural descriptions of personality. As such, in the present review, we sought to include a range of broad-bandwidth, trait-model personality measures that could contribute to clarifying the nomothetic relationship between dissociation and personality rather than a myopic view of dissociation and narrow personality traits (e.g., fantasy proneness).

In summary, dissociation is one of the least understood and under-researched constructs in the field of psychology (Loewenstein, 2018). However, it is hypothesized to have a theoretically meaningful relationship with personality (Groth-Marnat & Jeffs, 2002), which suggests that the scientific understanding of dissociation could be informed by the exploration of personality domains associated with dissociative experiences (Şar & Ross, 2022). Although cross-sectional research has addressed the relationship between dissociation and personality, issues such as sampling error, variations in sample size, methodological design, and measures used have precluded the possibility of drawing accurate conclusions about the nature of this relationship. Thus, highlighting the need for a comprehensive review to clarify the nature of this relationship and guide future research.

The Present Review

At the time of writing, and to the authors' knowledge, no published systematic reviews or meta-analyses had investigated the relationship between dissociation and personality. Thus, we had three aims in conducting the present review. The first was to provide a comprehensive systematic review of the empirical literature describing the relationship between dissociation and broad bandwidth, trait model personality. The second aim was to conduct meta-analyses on the relationship between measures of dissociation and personality domains from broad-bandwidth, trait-model personality measures, with a peripheral aim of identifying possible moderators of such relationships. The third aim was to identify existing gaps in the current literature, with the intention of laying a theoretical foundation for future authors to conduct research in this area.

We expected to find a general pattern of association between the FFM and dissociation, consistent with the findings of Kotov et al.'s (2010) research on the relationship between psychopathology and personality. Specifically, we expected dissociation to share the largest association with neuroticism, and smaller, negative associations with extraversion and conscientiousness. We had fewer predictions regarding the nature of the relationships between FFM domains and dissociation factors (e.g., absorption), as a minority of the studies composing the dissociation-FFM literature reported analyses of such relationships. Notably, however, we expected a relatively large relationship between neuroticism and amnesia given their mutual association with negative affect. We conducted the present review in accordance with *Preferred Reporting Items for Systematic reviews and Meta-Analyses* (*PRISMA*) guidelines (Page et al., 2021) and registered our review with PROSPERO (ID: CRD42024538794). We published the full protocol, with pre-specified aims, before the review was conducted.

Method

Inclusion Criteria

We included studies in our analysis if they met the following criteria: (a) participants took a variation of an FFM personality test (e.g., the Revised NEO Personality Inventory [NEO-PI-R; Costa & McCrae, 1992]) or another trait model personality test that contains FFM domains (e.g., Eysenck Personality Questionnaire [EPQ; Eysenck & Eysenck, 1975], HEXACO Personality Inventory [HEXACO-PI; Lee & Ashton, 2004]); (b) participants also completed a measure of dissociation (e.g., the Dissociative Experiences Scale [DES; Bernstein & Putnam, 1986]); (c) the study was published in English; and (d) the study provided correlations between a measure of dissociation and trait model personality or offered relevant statistics to calculate such correlations, including responses to our data requests via email.

Exclusion Criteria

We excluded studies if they met any of the following criteria: (a) we identified them as a systematic review, meta-analysis, or case study; (b) we found them to be non-peer-reviewed (except for dissertations); (c) participants completed only selected items from a relevant measure unless a whole personality domain and dissociation total or factor score were still represented; and (d) they did not provide correlations between a measure of dissociation and trait model personality, lacked relevant statistics for calculating those correlations, or the authors did not respond to our request for data via email.

Where multiple studies described the same sample or data, we sought further confirmation from the authors; when possible, we selected the earliest study that included the sample or data to clearly communicate data provenance. Similarly, when studies included multiple measures of trait model personality or dissociation administered to the same sample, we extracted the most widely used measures (i.e., DES and NEO) to reduce 'measure-

associated error' in our meta-analyses. This approach increases the probability that differences in effect sizes between studies reflect differences in the underlying construct being measured, rather than differences between the measures used.

Information Sources

We conducted a systematic search of several online databases, including Embase, Scopus, PsycINFO, and Medline, to identify relevant studies. We restricted our search to publications in English from 1986 to June 3, 2024, as the first measure of dissociation (i.e., the DES) was published in 1986, making earlier studies irrelevant to our investigation. With the help of an academic librarian, we developed our search strategy using the following key terms: (dissociati* OR depersonali?ation* OR dereali?ation*) AND (personalit* OR “five factor model personality” OR “neo personality inventory”). We adapted our search strategy for each database to account for differences in available subject headings. Additionally, we screened the reference lists of selected studies to find further suitable studies that our search strategy might have omitted, including studies not listed in the databases mentioned.

We sent data request emails to the authors of studies that included relevant measures but did not provide relevant correlations or sufficient data to calculate such correlations. We requested missing data (correlations) from a total of 27 authors: 12 (44%) replied, nine (33%) with sufficient data, and three (11%) without sufficient data. We excluded the study if we did not receive an appropriate response by 30/07/2024.

Study Selection

We imported search results into Covidence (Covidence, 2019) and automatically removed duplicates. We screened the remaining studies in two phases: (a) title and abstract screening, followed by (b) full-text screening. We screened the studies alphabetically by author to manually identify any remaining duplicates. In both the title and abstract phase and the full-text phase, O.R.S. screened 100% of the studies, and B.A.A.R. independently

screened 10%. We calculated Cohen's kappas to assess inter-rater reliability. We had one disagreement in the title and abstract phase (resolved by consensus), which contributed to a percentage agreement of 99% and Cohen's kappa of .88. We had no disagreements in the full-text phase, resulting in a percentage agreement of 100% and Cohen's kappa of 1.00. See Figure 1 for a PRISMA flowchart that illustrates our screening process and reasons for exclusion.

Data Collection

We collected data from each report using a data extraction form. We extracted the following data (where relevant): author; publication year; number of men and women; mean participant age; the country where the study was conducted, and country where data were collected; the measure of dissociation; the measure of trait model personality; correlations between the measure of dissociation and trait model personality at all available levels of order (i.e., super and sub-ordinate levels) (e.g., DES total with neuroticism domain, and DES amnesia factor with neuroticism anxiety facet); clinical status, which we coded categorically as either *clinical*, *non-clinical*, or *mixed*; student status (i.e., enrolled in college/university or not enrolled), which we coded dichotomously as *student* or *non-student*; and whether included measures were translated from their original format, which we coded dichotomously as *yes* or *no*. O.R.S. and B.A.A.R. independently collected data from 10% of the included studies with 100% agreement. Therefore, O.R.S. proceeded to extract the remaining data alone.

Methodological Quality Assessment

We assessed the studies' potential risk of bias using the Checklist for Analytical Cross-Sectional Studies (Moola et al., 2020). The checklist contains eight questions designed to assess methodological quality and potential risk of bias; one can answer each question with *Yes* (1), *No* (0), *Unclear* (0), or *Not Applicable* (NA). Higher scores indicate higher

methodological quality and a lower risk of bias. We summed total scores for each study (see Appendix A in the supplemental material); however, the methodologically diverse scope of studies included in the analyses necessitated that we express summed scores as percentages to allow comparability. Based on calculated percentage scores and classification parameters designed by Akhtar et al. (2022), we classified studies' potential risk of bias into the following three categories: *high* (<50%), *moderate* (50-69%), or *low* (≥ 70%). We did not determine a risk of bias "threshold" for exclusion from the analysis; rather, we used percentage scores associated with each study to conduct moderator analysis. O.R.S. and B.A.A.R. conducted quality analysis independently. There was 100% agreement and a Cohen's kappa of 1.00.

Summary Measures

Using Comprehensive Meta-Analysis Version 4 (CMA; Biostat, 2022), we calculated effect sizes using the sample size and the correlation coefficient between personality domains and dissociation measure factor/total scores; we converted the correlation coefficients into a Fisher's *z* scale, and based analyses on the transformed values. To interpret the values, and again using CMA, we transformed values into Pearson's *r* and used a 95% CI. We interpreted Pearson's *r* values according to Cohen (1992): *small* (.1), *medium* (.3), and *large* (.5) effect.

Methods of Synthesis

We used CMA to conduct statistical analyses. We grouped studies for synthesis by five-factor domain and dissociation factor: neuroticism-dissociation total, neuroticism-depersonalization/derealization, neuroticism-absorption, neuroticism-amnesia, extraversion-dissociation total, extraversion-depersonalization/derealization, extraversion-absorption, extraversion-amnesia, openness-dissociation total, openness-depersonalization/derealization, openness-absorption, openness-amnesia, agreeableness-dissociation total, agreeableness-depersonalization/derealization, agreeableness-absorption, agreeableness-amnesia,

conscientiousness-dissociation total, conscientiousness-depersonalization/derealization, conscientiousness-absorption, and conscientiousness-amnesia.

We included personality constructs that were analogous to five-factor domains in the analysis with their respective analog, as long as it was supported by credible literature. For example, we included the emotionality trait contained in the HEXACO model in the neuroticism analyses due to having similar theoretical standing, that is, the trait that accounts for high emotionality (Ashton et al., 2014). We excluded Ruiz et al. (1999) from all dissociation factor meta-analyses due to uniquely labelled dissociation factors (i.e., depersonalization, derealization/absorption, segment amnesia, and in situ amnesia) that indicated a significant departure from common DES factor solutions employed by other studies included in the meta-analyses (i.e., depersonalization/derealization, absorption, and amnesia).

We weighted each study relative to the inverse of its variance (Borenstein et al., 2009); the lesser the variance, the greater the weight. We applied a random-effects model because we assumed there was heterogeneity across methodologies; we assumed there were several differences between included studies, for example, the measures and the methods researchers used to administer them, along with the type of sample used.

We calculated I^2 and Q statistics to detect heterogeneity. I^2 provides insight into the variability between studies in the meta-analysis, ostensibly indicating the degree to which we can attribute heterogeneity to error variance or true effects. We interpreted I^2 scores in accordance with the following guidelines: *low* (≤25%), *medium* (26-50%), or *high* (>50%) (Akhtar et al., 2022; Higgins & Thompson, 2002).

We entered both categorical and continuous variables into the moderator analysis based on the number of available effect sizes: we required four for categorical variables and 10 for continuous variables (Fu et al., 2011). We analyzed both types of variables using meta-

regression, and we dummy-coded the categorical variables (note the reference groups for categorical variables presented parenthetically in the following paragraph). We included eligible variables in individual linear regressions, and those identified as statistically significant moderators were subsequently entered into a multiple regression to account for co-linearity. We used a more conservative alpha level ($\alpha = .01$) in determining the statistical significance of moderators to control for type I error inflation.

According to the above-specified guidelines, the eligible variables included age (only in dissociation total meta-analyses), clinical status (*clinical*) (only in dissociation total meta-analyses), the location where researchers collected their data (*North America*), dissociation measure (*DES*), gender (analyzed as the proportion of females), personality measure (*NEO*), quality rating, and student status (*student*). Among the group of included studies, we observed that there was a preponderance of specific measures of dissociation and personality and countries where the data were collected; therefore, we dichotomized these variables (i.e., DES-other, NEO-other, and North America-other).

Publication and Reporting Bias

We used Rosenthal's (1979) Fail-Safe *N* and Orwin's (1983) Fail-Safe *N* analyses to address the "file drawer problem" (i.e., researchers are less likely to publish studies with non-significant findings). Rosenthal's Fail-Safe *N* analysis helped us determine the number of unpublished studies [with an effect size of zero] required to make a statistically significant effect size become statistically non-significant. Similarly, Orwin's (1983) Fail-Safe *N* analysis helped us to determine the number of unpublished studies [with an effect size of zero] required to make the meta-analysis effect size trivial; in line with Borenstein et al.'s (2009) suggestion that researchers can determine a specific effect size that represents the smallest value of substantive importance and an example provided by Becker (2005), we determined that a trivial value in the present review was $r = .05$. The larger the Fail-Safe *N*,

the less likely the effect size was influenced by publication bias. We calculated Rosenthal's Fail-Safe N in CMA, and we calculated the threshold which it must surpass by multiplying the number of studies by five, plus 10, as suggested by Rosenthal (1979). Furthermore, we also generated funnel plots to visually represent potential publication bias. Asymmetrical patterns on the funnel plot indicate a risk of publication bias. Finally, we used the Trim and Fill method (Duval & Tweedie, 2000) to assess the funnel plot for asymmetry and gain an estimate of the unbiased effect size.

Results

Study Selection and Characteristics

We identified a total of 11,130 records through a systematic search of four online databases. We included a total of 23 studies; each meta-analysis contained between nine and 23 studies, with the number of independent effect sizes ranging from 11 to 25. See Figure 1 for a PRISMA flowchart that illustrates our screening process and the reasons for exclusion. The total number of participants in each analysis ranged from 5,284 to 10,034. The included studies were published between the years of 1993 and 2023 and were conducted in the following countries: USA (k = 10), Canada (k = 2), Denmark (k = 2), England (k = 2), Spain (k = 2), Australia (k = 1), Belgium (k = 1), Hong Kong (k = 1), the Philippines (k = 1), and Serbia (k = 1). In all cases except one, the country where the study was conducted matched the country where the data were collected. The exception was Ashton et al.'s (2012) second sample, which consisted of Dutch participants in a Canadian study. For comprehensive descriptions of the studies included in each meta-analysis, see Table 2. In acknowledgment of PRISMA item 16b, we excluded one study that initially appeared to meet inclusion criteria: a dissertation by Schalet (2011). In this study, the mean number of items per participant was less than two for the measures of interest, which means correlations of interest were derived from irregular amalgam data and, therefore, inappropriate to include.

Synthesis of Results

We conducted 20 meta-analyses of correlations between measures of FFM domains and dissociation total scores/factors. Each meta-analysis included between 11 and 25 independent effect sizes, with sample sizes ranging from 5,284 to 10,034 participants. Table 1 provides the results for each meta-analysis, Table 2 provides a description of the included studies, and forest plots for each meta-analysis, including individual effect sizes of each study, are available in Appendix B of the supplemental material

We conducted 130 linear regressions of eligible variables to investigate potential moderator effects of dissociation-personality relationships; this approach indicated 11 statistically significant moderators (see Appendix C in the supplemental material). Using multiple linear regression, we then entered statistically significant moderators of the same relationships into shared models to account for co-linearity; the following six moderators remained statistically significant: (extraversion-dissociation total) clinical status, $k = 18$; coefficient = -.33; SE = .10; $p < .01$; (openness-dissociation total) gender, $k = 15$; coefficient = -.02; SE = .01; $p < .01$; (neuroticism-depersonalization/derealization) personality measure, $k = 12$; coefficient = .10; SE = .04; $p < .01$; (openness-depersonalization/derealization) dissociation measure, $k = 11$; coefficient = -.15; SE = .03; $p < .01$; (neuroticism-absorption) personality measure, $k = 12$; coefficient = .12; SE = .04; $p < .01$; (extraversion-amnesia) dissociation measure, $k = 12$; coefficient = .10; SE = .03; $p < .01$.

Methodological Quality Assessment

We completed quality assessment for 23 studies. We rated two studies (9%) as having a high potential risk of bias, nine studies (39%) as having a moderate risk of bias, and 12 studies (52%) as having a low risk of bias (see Appendix A in the supplemental material). The quality ratings for the included studies ranged from 43% to 100%. The mean quality rating was 71%, indicating a low mean risk of bias. We did not use quality ratings to weight effect

sizes; rather, our understanding of the impact of methodological quality on findings was informed through post-hoc moderator analysis.

Publication and Reporting Bias

In all analyses, except extraversion-absorption, extraversion-amnesia, and openness-amnesia, we found that Rosenthal's Fail-Safe N exceeded the minimum; that is, the number of "missing studies" with an effect size of zero required to make the overall effect statistically non-significant exceeded the minimum suggested by Rosenthal (1979). Similarly, regarding Orwin's Fail-Safe N, we observed that all analyses—except openness-amnesia and those related to extraversion—appeared to have relatively high values indicating the unlikelihood of publication bias. In the case of extraversion and openness-amnesia, we determined that the number of studies with an effect size of zero required to make the present effect size trivial ranged from zero to 12.

We visually inspected the funnel plots to assess publication bias and concluded that each analysis' funnel plot appeared reasonably symmetrical, indicating no clear signs of publication bias. For further confirmation, we applied Duval and Tweedie's Trim and Fill method, which, in some cases, identified "missing studies" to the left or right of the mean and provided marginally adjusted *r* values (see Table 1).

Discussion

Summary of Evidence

The purpose of the present review was to clarify the relationship between dissociation and broad personality domains by systematically collating and integrating published research findings. The relationships between dissociation total scores/factors and personality domains contained in the FFM were generally small and small/medium, and in the substantial majority of analyses, these relationships did not appear to be primarily an artifact of the biased inclusion of statistically significant results. Additionally, the low mean, and mode, risk of bias

for included studies suggested that included effect sizes were not derived primarily from methodologically poor studies.

The finding that the relationships between dissociation total scores/factors and personality domains contained in the FFM were generally small or small/medium may suggest that dissociation is relatively independent of trait-model personality. The size of these relationships is somewhat in contrast to the findings of a comprehensive meta-analysis conducted by Kotov et al. (2010) wherein FFM domains shared primarily medium and large relationships with various psychological constructs, including depressive, anxiety, and substance use disorders. However, consistent with both Kotov et al.'s findings and a meta-analysis by Malouff et al. (2005), dissociation appears to share the same general pattern of association with FFM domains as various psychological disorders, that is, a positive association with neuroticism and negative associations with conscientiousness and extraversion.

We should also note that the size of the relationships between dissociation total scores/factors and personality domains contained in the FFM appears to be smaller than that of other relationships between dissociation and psychological constructs, such as trauma (r = .32) (Dalenberg et al., 2012), shame (r = .42) (Rudy et al., 2022), voice hearing (r = .52) (Pilton et al., 2015), and alexithymia (r = .34) (Schimmenti, 2016). However, considering that the FFM profile of dissociation did somewhat corroborate that of other psychological constructs discussed in other reviews (e.g., Kotov et al., 2010; Malouff et al., 2005), the nature of these relationships warrants further discussion.

Bivariate Effects

The small/medium relationship between neuroticism and dissociation (r = .24) is consistent with both the earliest (e.g., Janet, 1907, as cited in Kwapil et al., 2002) and most recent (e.g., Dorahy et al., 2022) conceptualizations of dissociation as a construct linked with

negative emotional experiences. However, in contrast to our prediction, the factors underlying the neuroticism-dissociation relationship indicate that absorption (r = .20) shares a larger relationship with dissociation than both depersonalization/derealization (r = .18) and amnesia (r = .14; all three are trim-and-fill adjusted values), which may suggest that absorption-based dissociative experiences are not comparatively benign.

The negative trivial/small relationship between extraversion and dissociation (r = -.07) is somewhat consistent with the conceptualization of dissociation as an internally oriented coping style and inner-world experience (Groth-Marnat & Jeffs, 2002; Şar, 2017). However, considering the theoretical overlap between introversion and dissociative experiences such as absorption, the magnitude of both the overall extraversion-dissociation and extraversion-absorption (r = -.04) relationships is surprisingly small.

There is a limited interpretive framework for clearly explaining the negative small/medium relationship between conscientiousness and dissociation (r = -.21). It is theoretically consistent, however, that a personality construct fundamentally associated with conventionality—conscientiousness (Costa & McCrae, 1992)—would be negatively associated with dissociation, given that dissociation is closely linked to the unusual and unconventional behaviors and thinking styles captured by disorganized schizotypy (Chmielewski & Watson, 2008).

Moderators of the Relationship Between Dissociation and Personality

In total, there were 11 statistically significant (p <.01) moderators of the 20 meta-analyzed dissociation-personality relationships. However, after entering moderators of the same relationship into a shared model to account for co-linearity, only six moderators remained statistically significant. Specifically, we found that studies: with clinical samples were associated with smaller effect sizes for the extraversion-dissociation relationship; with primarily female samples were associated with smaller effect sizes for openness-dissociation

relationship; which used a version of the NEO were associated with larger effect sizes for the neuroticism-depersonalization/derealization and neuroticism-absorption relationships; which used a variation of the DES were associated with smaller effect sizes for the openness-depersonalization/derealization relationship and larger effect sizes for the extraversion-amnesia relationship.

Clinical status may be a significant moderator of the extraversion-dissociation relationship due to non-clinical populations (typically) having comparatively restricted ranges of scores in the variables of interest (i.e., dissociation and personality) and thus producing smaller resultant correlations. The personality measure used was a moderator of exclusively neuroticism relationships, which indicates that there are aspects specifically of the NEO neuroticism domain (when compared to BFI measures) that are associated with dissociation; this difference may be the facets uniquely subsumed by the NEO neuroticism domain, such as self-consciousness, for example. Similarly, the status of the dissociation measure as a moderator suggests that there are characteristics specific to the DES (when compared to the CES) that are associated with dissociation-personality relationships; specifically, the DES includes three less items than the revised CES.

Limitations and Future Directions

The present review has inherent limitations due to the nature of included studies. A large majority of the studies composing the literature on the relationship between dissociation and personality were cross-sectional, which, in the present review, precluded the possibility of drawing conclusions about the nature of the dissociation-personality relationship beyond the level of association (i.e., we cannot infer causality). Therefore, future research employing longitudinal designs may contribute to understanding whether personality is a predictor for dissociative experiences or vice-versa. Additionally, the present review did not include measures of personality pathology. Therefore, one should not make inferences about the

nature of the relationship between personality pathology, such as personality disorders, and dissociation. Similarly, although the present review did include clinical samples, there were no clinical samples composed predominantly of individuals with dissociative disorders; thus, the present review should not be generalized to such populations. Importantly, although we included DES factors in some meta-analyses to distinguish which specific facets of dissociation are associated with personality domains, these factors are not standardized subscales. Therefore, the DES factors included in the present review are not necessarily homogeneous with respect to their underlying items, and as a result, meta-analyses based on DES factors are likely associated with greater variability than those based on the DES total score. Importantly, it should also be noted that, due to the scope of the review, we conducted 130 meta-regressions to complete moderator analysis, thereby increasing the risk of spurious findings. Accordingly, we used a conservative alpha level ($\alpha = .01$) in determining the statistical significance of moderators to control for type I error inflation, but the reader may want to use more caution in interpreting the results. One final limitation, which may also be viewed as a finding, was that included studies were predominantly conducted in North America and used variations of the DES and NEO. The predominance of these specific categorical variable types required dichotomization to perform meta-regression, which likely introduced residual confounding (Royston et al., 2006). In other words, the dichotomization of these variables required an erroneous assumption that residual categories' effects, with respect to the dissociation-personality relationships, were homogeneous.

Implications

The principal theoretical implication of the present review is advancing the scientific understanding of dissociation by establishing the nature of its relationship with personality domains contained within the FFM. Specifically, the positive neuroticism-dissociation relationship and the negative extraversion and conscientiousness-dissociation relationships

provide further theoretical support that dissociation is an internalizing construct associated with negative affect. However, to reiterate the broader point, the magnitude of the relationships between dissociation and personality domains contained within the FFM was generally small or small/medium, and thus, dissociation appears to be relatively independent from included measures of trait-model personality. Interestingly, although dissociation shares the same pattern of association with the FFM as various psychological disorders, primarily those classified as depressive, anxiety, and substance use disorders (Kotov et al., 2010), it has notably smaller relationships, which suggests that dissociation is a comparatively less discriminatory phenomenon with regard to personality. Additionally, the small negative relationship between dissociation and agreeableness (of which 'compliance' is a facet) contradicts claims that dissociation is associated with suggestibility.

Conclusion

The present review advanced the scientific understanding of dissociation by establishing the nature of its relationship to the personality domains encompassed by the FFM. Specifically, we established that dissociation is relatively independent of included measures of trait-model personality and, therefore, can be understood as a construct experienced by individuals across a range of personality expressions. Considering that the present review was limited by the nature of cross-sectional data, future research using longitudinal designs could be effective in establishing whether personality is a meaningful predictor of dissociation.

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We have no competing interests to declare.

Data Availability Statement

Data associated with the present review are available upon reasonable request of the corresponding author.

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Table 1

Meta-Analysis Results

Personality Domain	*k*	*r*	95% CI		I^2	Rosenthal's fail-safe *N* [a]	Rosenthal's minimum fail-safe *N* [b]	Orwin's fail-safe *N* [c]	*r* adjusted [d]
			LL	UL					
Neuroticism-total	25	.24*	.20	.28	74	3517	135	99	.24*
Neuroticism-depersonalization/derealization	12	.18*	.14	.22	61	535	70	34	.18*
Neuroticism-absorption	12	.22*	.17	.27	72	800	70	44	.20*
Neuroticism-amnesia	12	.16*	.12	.20	59	424	70	29	.14*
Extraversion-total	19	-.07*	-.11	-.04	54	167	105	8	-.07*
Extraversion-depersonalization/derealization	12	-.10*	-.15	-.05	70	140	70	12	-.10*
Extraversion-absorption	12	-.04*	-.06	-.01	0	9	70	0	-.04*
Extraversion-amnesia	12	-.06*	-.10	-.02	50	51	70	3	-.06*
Openness-total	15	.10*	.06	.15	66	223	85	21	.10*
Openness-depersonalization/derealization	11	.14*	.09	.19	73	278	65	20	.14*

Openness-absorption	11	.15*	.11	.19	49	319	65	23	.15*
Openness-amnesia	11	.01	-.03	.05	51	0	65	0	.01
Agreeableness-total	15	-.15*	-.18	-.11	52	447	85	32	-.15*
Agreeableness-depersonalization/derealization	11	-.12*	-.17	-.07	68	209	65	17	-.12*
Agreeableness-absorption	11	-.12*	-.16	-.09	37	202	65	17	-.12*
Agreeableness-amnesia	11	-.15*	-.19	-.11	53	314	65	23	-.15*
Conscientiousness-total	15	-.21*	-.24	-.17	52	971	85	48	-.21*
Conscientiousness-depersonalization/derealization	11	-.16*	-.20	-.13	41	374	65	26	-.16*
Conscientiousness-absorption	11	-.19*	-.23	-.14	65	523	65	32	-.19*
Conscientiousness-amnesia	11	-.19*	-.22	-.15	39	514	65	31	-.19*

Note. k = number of independent effect sizes. r = Pearson's correlation coefficient. CI = confidence interval; LL = lower limit; UL = upper limit. I^2 = percentage indication of heterogeneity of observed effects attributable to variance in true effects (how studies were administered), rather than variance in sampling error (insufficient number of participants).

[a] Rosenthal's fail-safe N represents the number of studies with an effect size of zero required to make the present effect size statistically non-significant.[b] If Rosenthal's fail-safe N exceeds Rosenthal's minimum fail safe N ((k x 5) +10), then the result is thought to be unaffected by publication bias.[c] Similarly,

Orwin's failsafe N represents the number of studies with an effect size of zero required to make the present effect size negligible (r = .05).[d] r adjusted represents corrected coefficient values where asymmetry was detected in publication bias funnel plots.

*p <.05

Table 2

Characteristics of Studies Included in Meta-Analyses

Study	*n*	% Female	Country	Age (*M*)	Personality Measure	Dissociation Measure	Clinical Status	Student Status	Quality Rating (%)	Inclusion In Meta-Analyses [a]
Ashton & Lee, 2012	378	56.1	Canada	20.0	HEXACO-PI-R (100 item)	CES	Non-clinical	Student	80	NEOAC-total & factors
Ashton et al., 2012 (sample 1)	378	55.0	Canada	20.4	NEO-PI-3-FH	CES	Non-clinical	Student	80	NEOAC-total & factors
Ashton et al., 2012 (sample 2)	476	50.0	Netherlands	51.5	HEXACO-PI-R (200 item)	CES	Non-clinical	Non-Student	80	NEOAC-total & factors
Bicego et al., 2023	181	57.5	Belgium	53.1	BFI	DES	Non-clinical	Non-Student	88	NEOAC-total & factors
Chmielewski & Watson, 2008	556	81.5	USA	-	BFI	DES (5-point Likert)	Non-clinical	Student	60	NEOAC-total & factors
de Silva & Ward, 1993	97	69.1	England	27.0	EPQ	DES	Non-clinical	Student	71	NE-total
Goldberg, 1999	696	58.1	USA	51.7	NEO-PI-R	CES	Non-clinical	Non-Student	60	NEOAC-total & factors
Groth-Marnat & Jeffs, 2002	86	61.6	Australia	41.7	NEO-PI-R	DES	Clinical	Non-Student	75	NEOAC-total
Holeva & Tarrier, 2001	434	-	England	-	EPQ	PDEQ	Clinical	Non-Student	100	N-total
Holtgraves & Stockdale, 1997	195	63.1	USA	-	NEO-PI-R	DES-II	Non-clinical	Student	60	N-total
Kwapil et al., 2002	858	73.9	USA	-	NEO-PI-R	DES	Non-clinical	Student	57	NEOAC-total & factors
Lilly & Allen, 2015	808	73.5	USA	39.8	BFI	PDEQ	Non-clinical	Non-Student	100	N-total

Miyamoto, 1997	258	62.4	USA	24.3	EPQ-R	DES	Non-clinical	Student	86	NE-total
Ponce de León et al., 2018	561	5.0	Denmark	26.1	NEO-PI-R	DES	Non-clinical	Non-Student	88	N-total
Reyes et al., 2017	105	60.0	Philippines	21.1	NEO-FFI	DES-II	Non-clinical	Non-Student	50	NEOAC-total
Ruiz et al., 1999	719	60.8	USA	18.9	NEO-FFI	DES	Non-clinical	Student	43	NEOAC-total
Spindler & Elklit, 2003	107	81.3	Denmark	28.3	EPQ	DES	Non-clinical	Student	43	NE-total & factors
Tomić et al., 2017	61	82.0	Serbia	46.7	NEO-PI-R	DES-II	Clinical	Non-Student	100	NEOAC-total
Torrecilla & Barrantes-Vidal, 2021	129	84.5	Spain	27.9	BFI	DES-II	Non-clinical	Student	83	N-total
Valero-Aguayo et al., 2012	582	66.0	Spain	30.0	EPQ-R	DES	Mixed	Mixed	71	NE-total
Watson, 2001 (sample 1)	485	59.2	USA	-	BFI	DES	Non-clinical	Student	60	NEOAC-total & factors
Watson, 2001 (sample 2)	469	64.4	USA	-	BFI	DES	Non-clinical	Student	60	NEOAC-total & factors
Watson, 2003	465	78.5	USA	-	BFI	DES	Non-clinical	Student	60	NEOAC-total & factors
Watson et al., 2008	342	63.7	USA	-	NEO-PI-R	DES	Non-clinical	Student	60	NEOAC-total & factors
Yu, 2010	608	68.9	Hong Kong	19.2	EPQR-S	DES	Non-clinical	Student	57	N-total

Note. The use of a dash denotes that relevant data were not reported or otherwise not obtained. HEXACO-PI-R = Honesty-Humility Emotionality Extraversion Agreeableness Conscientiousness Openness to Experience, Personality Inventory- Revised; CES = Curious Experiences Survey; NEO-PI-3-FH = Neuroticism Extraversion Openness to experience, Personality Inventory, version three, First half; BFI = Big Five Inventory; DES = Dissociative Experiences Scale; EPQ = Eysenck Personality Questionnaire; NEO-PI-R = Neuroticism Extraversion Openness to experience, Personality Inventory-

Revised; PDEQ = Peritraumatic Dissociative Experiences Questionnaire; DES-II = Dissociative Experiences Scale, second version; EPQ-R = Eysenck Personality Questionnaire- Revised; NEO-FFI = Neuroticism Extraversion Openness to experience, Five Factor Inventory; EPQR-S = Eysenck Personality Questionnaire- Revised, Short scale.

[a] The 'Inclusion In Meta-analyses' column indicates which meta-analyses a study was included in. Each FFM domain is represented by a single letter (i.e., N = Neuroticism, E = Extraversion, O = Openness, A = Agreeableness, C = Conscientiousness), and dissociation is denoted by 'total' (i.e., total dissociation score) and/or 'factors' (i.e., depersonalization/derealization, absorption, amnesia). For example, 'NEOAC–total & factors' indicates inclusion in all 20 meta-analyses, whereas 'N–total' indicates inclusion only in the neuroticism–dissociation total meta-analysis.

Figure 1

PRISMA Flow Diagram Illustrating the Selection of Included Studies

