Research Report

Longitudinal Stability and Change of the Dark Triad: A Call for Research in Postsecondary, Occupational, and Community Settings

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Longitudinal Stability and Change of the Dark Triad: A Call for Research in Postsecondary, Occupational, and Community Settings

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Researchers, theorists, and practitioners have expressed a renewed interest in the longitudinal dynamics of personality characteristics in adulthood, including organic life span trajectories and their amenability to volitional change. However, this research has apparently not yet expanded to include the Dark Triad (psychopathy, narcissism, Machiavellianism), despite approximately 2 decades of research that has thoroughly examined other important issues related to construct validity and interpersonal behavior. We argue that researchers in postsecondary, occupational, and community-based settings are in a unique position to study the important phenomenon of Dark Triad malleability, as they are less hindered by obstacles in clinical and forensic contexts that have generated largely inconclusive results. In this article, we discuss several examples of methods for evaluating, quantifying, and interpreting Dark Triad malleability, examples of relevant extant training programs, possibilities for developing new programs, and factors that may moderate training efficacy, including Dark Triad levels themselves. Beyond addressing a fundamental question regarding the nature of these traits, the Dark Triad's destructive tendencies suggest that efforts to reduce them would provide myriad societal benefits and could propel Dark Triad research in an important new direction.

Keywords Dark Triad; personality characteristics; psychopathy; narcissism; Machiavellianism; construct validity; interpersonal behavior; postsecondary; workforce; community; training; social benefits; longitudinal malleability

Introduction

Since its inception, the Dark Triad of personality (Paulhus & Williams, 2002)—narcissism, Machiavellianism, and psychopathy—has been the subject of hundreds of research studies. *Narcissism* as a personality construct migrated from its clinical counterpart, whose current DSM-5 diagnostic criteria include impairments in identity (e.g., exaggerated self-appraisal), self-direction, empathy, and intimacy as well as pathological levels of grandiosity and attention seeking (see Skodol et al., 2014). In turn, the personality characteristic shares these core features, manifesting in traits such as extreme entitlement and dominance. The concept of *Machiavellianism* was popularized by Christie and Geis (1970; see also Fehr et al., 1992), who adapted traits from *The Prince* and *The Discourses* by 16th-century Italian author Niccolo Machiavelli. Machiavelli maintained a highly cynical view of others and suggested that individuals must rely on amoral and deceitful tactics in order to sustain power. Christie and Geis conceptualized these traits—cynicism, amorality, and deceit—as the primary features of Machiavellianism. Finally, the predominant definition of the *psychopathy* personality construct is credited to the works of Robert Hare (2003), whose decades of research in forensic populations identified four main features of particularly dangerous criminals: *interpersonal*, which includes manipulation and superficial charm; *affective*, referencing low emotional experience and expression, notably guilt and empathy; *lifestyle*, which includes self-centeredness, recklessness, irresponsibility, and impulsivity; and *antisocial*, including rule-breaking and violent, criminal attitudes and behaviors. The Hare conceptualization of psychopathy outside of forensic populations maintains this factor structure (Williams et al., 2007).

The extensive volume of extant Dark Triad research is described in various reviews and meta-analyses (Furnham et al., 2013; Koehn et al., 2019; LeBreton et al., 2018; Muris et al., 2017; O'Boyle Jr. et al., 2012). This empirical research represents the successful migration of these overlapping but distinct constructs from forensic and clinical psychology

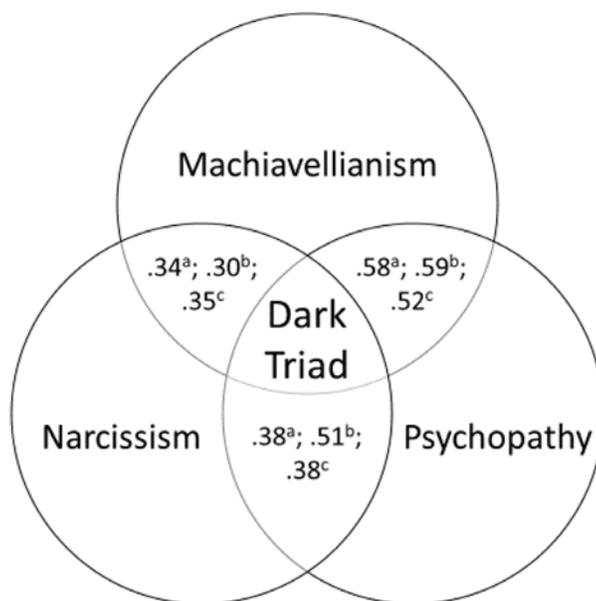*Corresponding author*: Kevin M. Williams, E-mail: kmwilliams@ets.org

Figure 1 Meta-analytic correlations among the Dark Triad. [a] = Muris et al. (2017); [b] = O'Boyle Jr. et al. (2012); and [c] = Vize et al. (2018).

into personality characteristics that may be assessed in individuals in everyday contexts. As such, a defining feature of this prior research is the utilization of postsecondary or workplace research samples. Dark Triad research originated in North America and continues extensively there, but it has since significantly expanded internationally (e.g., Egan et al., 2014; Geng et al., 2015; Koehn et al., 2019; Međedović & Petrović, 2015). These North American and international studies have described core features of the Dark Triad such as disagreeableness, antagonism, callousness, dominance, malevolence, and dishonesty; these traits are found to be consistently associated with various forms of destructive behavior such as aggression and misconduct. Meta-analyses have described the degree of empirical overlap among the three constructs, which may be interpreted as moderate to large effect sizes (i.e., Cohen, 1988; see Figure 1). However, each construct includes unique features, including distinct Big Five profiles that have also been described meta-analytically (summarized in Figure 2). For instance, although each of the constructs is associated with low agreeableness, this trend is somewhat less consistent for narcissism. Machiavellianism and psychopathy each demonstrate negative associations with conscientiousness, whereas narcissism correlations with conscientiousness are negligible or slightly positive. Narcissism also appears to be uniquely positively associated with extraversion and openness to experience. Machiavellianism appears distinct from psychopathy in that there is evidence of slightly negative correlations with extraversion and stability only for the former. Additional differences among the Dark Triad are revealed when examining associations at the lower-order facet level of the Big Five (see Furnham et al., 2013).

Examining Longitudinal Stability and Change of the Dark Triad

However, one area of research that has been overlooked involves longitudinal stability and change of the Dark Triad. This omission is significant because this issue represents a fundamental question involving the nature of personality more generally. Early conceptualizations posited that personality characteristics are highly stable over time, which was in fact often considered a prerequisite for defining a concept as a "personality" construct (e.g., Costa Jr. & McCrae, 1992). Similarly, longitudinal stability was considered a central tenet of trait theory (see review by Pervin, 1994). More recent research, however, suggests that personality constructs do undergo some longitudinal change. Importantly, this research distinguishes between variation that is observed naturally over the life course (e.g., Ardelt, 2000; Bazana & Stelmack, 2004; Caspi & Roberts, 2001; Pervin, 1994) versus change that occurs as a result of deliberate intervention (e.g., Roberts, Luo, et al., 2017).

Given the Dark Triad's aforementioned associations with destructive behavior, efforts to reduce Dark Triad traits through interventions such as training programs would appear to serve the interests of society more generally. Establishing
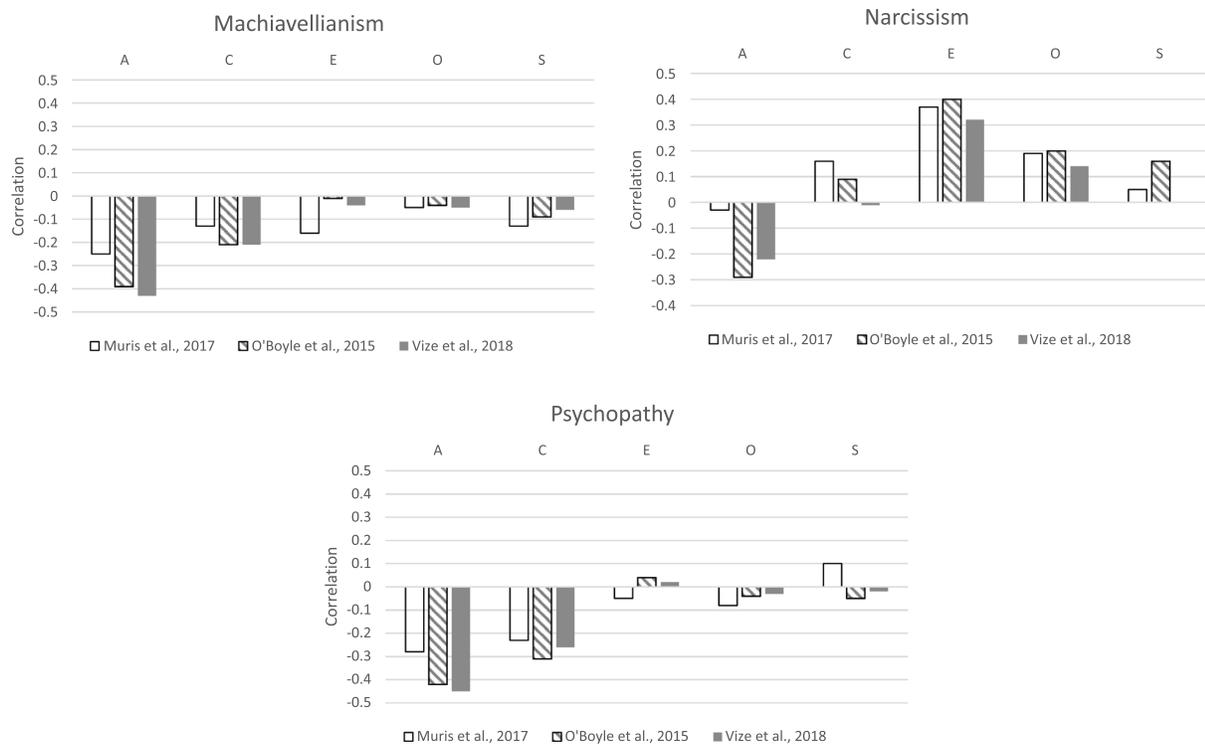
Figure 2 Meta-analytic Big Five profiles of the Dark Triad. A = agreeableness; C = conscientiousness; E = extraversion; O = openness to experience; S = emotional stability.

the Dark Triad's position on a spectrum ranging from malleable to stable would inform several practical applications. Postsecondary and workplace applications appear particularly salient, as these samples already dominate Dark Triad research and represent natural settings for various training efforts. Consistent empirical relationships between the Dark Triad and counterproductive work behavior further emphasize the importance and relevance of workplace training research (see reviews by Furnham et al., 2013; Guenole, 2014; Koehn et al., 2019; LeBreton et al., 2018; O'Boyle Jr. et al., 2012; Spain et al., 2013). For instance, in occupational settings, findings supporting these characteristics' malleability would be useful for conceptualizing and executing professional development efforts. Conversely, evidence for the Dark Triad's stability would further emphasize its relevance to selection and screening practices. In other words, Dark Triad research may be considered truly exploratory in the sense that results supporting either stability or change would be of value. However, despite the fact that these issues are amenable to empirical investigation, it appears that personality malleability research has yet to be extended to the Dark Triad specifically.

The primary goal of this article is to provide explicit, actionable, empirically based recommendations for studying the longitudinal malleability of the Dark Triad in academic, workplace, and community samples. To this end, many of our efforts involve connecting two largely disparate fields of research and practice: The Dark Triad of personality, and training programs conducted in workplace or workplace education settings. Before outlining the main sections of our article, we provide some historical context for this challenge.

Challenges in Relevant Clinical and Forensic Longitudinal Research

Historically, concerns over the malleability of the Dark Triad have been a logical focus of clinical and forensic psychologists. Because one of our goals in this article involves recommendations for Dark Triad interventions delivered in postsecondary or workplace settings, we focus on research involving changes in adult participants. Research involving youth (e.g., Salekin et al., 2008), which tends to examine etiological concerns, is also important, but it is beyond the scope of our discussion. Additionally, Dark Triad research is conducted almost exclusively with adult samples (see Furnham et al., 2013). Therefore, learnings from adulthood malleability research in clinical and forensic settings are likely to be most relevant in informing postsecondary and workplace training efforts.

Given that Machiavellianism was not conceptualized in forensic or clinical realms (Christie & Geis, 1970), there do not appear to be any meta-analyses or systematic reviews focusing on its longitudinal stability in these settings. Instead, clinical and forensic research concerns the effortful reduction of narcissistic and psychopathic symptomatology and related behaviors. Unfortunately, systematic reviews on these topics have been largely inconclusive, for varying reasons. In the context of the Dark Triad, the conceptualization of narcissism tends to align with its stereotypical grandiose subtype as opposed to the additional "vulnerable" category (e.g., Dickinson & Pincus, 2003). In turn, investigations involving narcissism's clinical malleability are scarce because these individuals rarely seek treatment voluntarily (e.g., Caligor et al., 2015). Indeed, as the term implies, grandiose self-concept and inflated self-esteem are among the most prototypical features of narcissism (e.g., Ronningstam, 2010). Consequently, according to Caligor et al., narcissistic individuals also tend to be relatively high-functioning and free of intrapersonal distress. When faced with failure or criticism, narcissistic individuals tend to deflect these negative evaluations away from the self (Kernis & Sun, 1994; Morf & Rhodewalt, 1993). Overall, these findings suggest that multiple core features of the narcissistic personality are antithetical to the initiation of self-help endeavors, thus undermining empirical clinical investigations.

Conversely, psychopathy malleability is much more widely researched, as its strong ties to violence and criminal behavior (Leistico et al., 2008) elevate the urgency of such efforts. In turn, studies tend to focus on the effects of treatment programs rather than natural longitudinal changes (D'Silva et al., 2004; Harris & Rice, 2006; Hemphill & Hart, 2002; Lösel, 1998; Wong & Olver, 2015; Wynn et al., 2012). Early reviews suggested that psychopathy is virtually untreatable (e.g., Harris & Rice, 2006; Salekin et al., 2010). However, researchers also acknowledged that the skepticism surrounding psychopathy malleability has been largely due to a lack of sufficiently rigorous research rather than conclusive evidence (Hemphill & Hart, 2002; Lösel, 1998; Salekin et al., 2010). Subsequently, a more equivocal, optimistic view of psychopathy malleability has emerged, describing psychopathy as among the more intractable personality traits, but one that is not entirely fixed (e.g., Olver, 2016; Polaschek, 2014; Wong & Olver, 2015). Nonetheless, there remain concerns that methodological issues in forensic studies may override any conclusive statements about psychopathy's degree of malleability one way or the other (e.g., D'Silva et al., 2004). In fact, the volume of available studies appears to be insufficient to support the publication of any meta-analyses on the topic.

An Opportunity for Postsecondary, Occupational, and Community-Based Researchers

Based on these findings, we argue that researchers in postsecondary, occupational, and community (i.e., "general population") settings are distinctively positioned to address the methodological challenges that have hampered forensic and clinical research examining the malleability of Dark Triad constructs. First, the migration of these constructs from clinical and forensic settings operationalizes the components of the Dark Triad as personality constructs that are measurable in all individuals, or at the very least, in all adults. That is, these constructs are both conceptualized and quantified on a continuum rather than in a taxonomy (Tran et al., 2018), eliminating the sometimes necessary but often impractical requirement for research participants with clinical levels of these traits in clinical or forensic settings. Second, researchers outside of forensic and clinical settings are likely able to address the methodological criticisms noted in previous studies. For example, D'Silva et al. (2004) argued that forensic psychopathy malleability research severely lacks a sufficient number of studies that incorporate relevant nonintervention control groups. The inclusion of such control groups may be practically or ethically unfeasible in forensic studies, though these restrictions would be less relevant in other settings. Consequently, critical and fundamental questions regarding the nature of the Dark Triad may be answered.

Some researchers have begun investigating the longitudinal dynamics of constructs within or closely related to the Dark Triad. Grosz et al. (2019) observed no longitudinal changes in *narcissistic admiration* (i.e., the assertive or extraverted component of narcissism) and decreases in Machiavellianism over time, with more nuanced trajectories based on specific life events. Conversely, Geng et al. (2017) observed increases in Machiavellianism over the span of 1 year. However, this study employed an adolescent sample, thus providing only limited relevance to postsecondary and workplace settings. Both of these studies are also limited as true Dark Triad research because measures of psychopathy were not included. Nonetheless, they provide interesting foundations for follow-up investigation.

The remainder of this article is organized into five sections, each relevant to our overarching goal of providing recommendations for studying Dark Triad malleability. Specifically, we (a) review how Dark Triad malleability may be quantified, (b) outline potential strategies for investigating naturally occurring trajectories in Dark Triad traits, (c) review extant training programs relevant to Dark Triad malleability, (d) propose recommendations for developing new Dark Triad training

programs, and finally, (e) describe various factors — including the Dark Triad components themselves — that could moderate the efficacy of relevant programs.

Evaluating Dark Triad Malleability

Statistical Methods

Determining the Dark Triad's malleability requires an assessment of longitudinal changes in levels of the constructs. In postsecondary, occupational, and community studies examining other personality constructs, rank-order stability and mean-level differences are the most common statistical approaches (see Martin-Raugh et al., 2020). Rank-order consistency is typically evaluated using test–retest correlations, though an adequate duration between measurements (e.g., 2 months; see Gnambs, 2014) is necessary to distinguish true developmental changes from measurement error, given that personality change is typically considered a gradual process. Alternatively, mean-level differences are employed to compare mean pre-post intervention changes in personality scores either within the same group or between an intervention and control group, or to compare post-intervention scores between an intervention and control group (e.g., Vanhove et al., 2016). Again, the timing of post-training personality measurement is critical, as assessments made immediately after the training program may be too early to detect changes, particularly for short programs, whereas assessments that are significantly delayed are susceptible to dissipation of training effects, according to Vanhove et al. Rank-order consistency and mean-level change may be considered complementary in that, despite each providing a wealth of useful information, they are also somewhat limited. Rank-order stability, for example, is not informative as to whether the sample's personality scores demonstrate uniform increases or decreases between assessments. Dramatic changes in either direction would not preclude high test–retest correlations if these changes are relatively consistent among the sample. Mean-level changes, on the other hand, may suggest longitudinal changes for the entire group when only a subset of the sample demonstrates changes, or may suggest no changes when increases in one subgroup cancel out decreases in another subgroup.

Fortunately, several authors have endorsed alternative strategies for analyzing longitudinal personality change, including hierarchical linear modeling (HLM), structural equation modeling (SEM), item response theory (IRT), latent growth curve models, discontinuous designs, or profile analysis (Biesanz et al., 2003; Helson et al., 2002; McArdle, 2009). Analyses that incorporate tests of measurement invariance (see Golembiewski et al., 1976; Meredith, 1993) would be particularly valuable in identifying legitimate longitudinal change. Evaluating data across more than two time points is also necessary to model nonlinear changes (e.g., Helson et al., 2002), which have been observed for other personality constructs (e.g., Roberts et al., 2006). These analytical strategies may also be used to evaluate various forms of change (Caspi & Roberts, 2001). In addition, these alternative statistical methods may be used to address differences in personality instruments, age ranges, times and frequency of testing, and sampling and measurement strategies across samples. Cycles and dynamic models may be incorporated into these approaches to observe weekly or seasonal patterns in personality change, or in responses to certain events, particularly when used in concert with data collection strategies involving daily diaries, experience sampling, and online behavioral sampling (Biesanz et al., 2003).

The rapid proliferation of new statistical and methodological strategies suggests that the aforementioned options do not represent an exhaustive list. However, it should be acknowledged that many of these methods place additional logistical burden on data collection efforts. For example, researchers may wish to oversample in order to address participant attrition that is typically inherent in longitudinal research. Furthermore, regardless of the method used, approaches that emphasize effect sizes over statistical significance are likely preferred, as these methods would provide a common metric for comparing findings across studies, facilitate meta-analytic combination, and address the criticisms of significance testing (see Kline, 2013). Integrating effect size interpretation guidelines that are either theoretical (Cohen, 1988) or empirical (Bosco et al., 2015; Gignac & Szodorai, 2016; Paterson et al., 2015) is another critical component in evaluating training efficacy.

A discussion of statistical methods for evaluating longitudinal change would be incomplete without explicit mention of approaches that have been deemed inappropriate for this research. Because the goal of this research is to evaluate intrapersonal variation over time, within-subject longitudinal designs are ideal, if not imperative. Alternative approaches employing cross-sectional data, such as cohort studies comparing between-group personality differences from samples assessed at separate time points (e.g., Twenge et al., 2008) or correlations between personality scores and age (e.g., Barlett &

Barlett, 2015), have been criticized for their inability to directly reflect intra-individual longitudinal dynamics (e.g., Alle-mand et al., 2007; Arnett et al., 2013; Donnellan et al., 2009; Trzesniewski et al., 2008).

Beyond general personality research, another contentious statistical approach that has appeared specifically in some Dark Triad research involves attempts to isolate unique aspects of the individual constructs. These efforts involve multiple regression analyses or structural equation modeling to report partialed effects for each construct. Again, this strategy has been criticized by various authors, not only in the general sense but in the specific Dark Triad context (Sleep et al., 2017; Vize et al., 2018). Partialing complicates the substantive interpretation of residual variables that remain after overlapping variance is removed. Using a two-predictor multiple regression example, if the shared components (e.g., low empathy, poor ethics) between psychopathy and Machiavellianism are removed from the latter, it can no longer be interpreted as Machiavellianism. This argument also applies when the subfactors of a single construct are partialed, such as the four factors of psychopathy as delineated in Hare's (2003) conceptualization (Lynam et al., 2006). For these reasons, we advocate against the use of partialing the individual Dark Triad constructs or their subfactors in longitudinal research. If partialing must be used, recommendations such as those outlined by Vize et al. (2018) should be followed.

Direct Versus Indirect Outcomes

A separate but related issue involves the outcome measures used to evaluate longitudinal change. Perhaps the most intu-itive strategy is to assess direct changes in Dark Triad scores. Like most personality constructs, the Dark Triad constructs tend to be assessed by self-report measures (see reviews by Furnham et al., 2013; Sellbom et al., 2018). Myriad Dark Triad measures have been developed, which differ in significant respects. For instance, assessments vary based on their length, which influences not only the measure's reliability but also often the bandwidth of content coverage, as reflected by the number and nature of factor scores included. Similarly, instruments that ostensibly measure the same construct may differ in their conceptual underpinnings, developmental approach, and validity evidence (Sellbom et al., 2018). For example, the Self-Report Psychopathy Scale-4 (SRP-4; Paulhus et al., 2017) uses 64 items to assess psychopathy based on the Hare (2003) four-facet model. Conversely, the Levenson Self-Report Psychopathy scale (LSRP, Levenson et al., 1995) and Psychopathic Personality Inventory-Revised (Lilienfeld & Widows, 2005) include 26 and 154 items across two and eight subscales, respectively. In each case, the relationship between these latter two self-report measures and Hare's (2003) model of psy-chopathy is debated (Sellbom et al., 2018). Other measures assess the Dark Triad by proxy rather than directly, such as through Big Five profiles (i.e., Elemental Psychopathy Assessment, Lynam et al., 2011; see also Sellbom et al., 2018). The degree to which these qualities influence their respective assessments' sensitivity to detect longitudinal changes remains an open empirical question.

It may also be beneficial to expand this research by moving beyond self-report measures. Although these measures tend to demonstrate impressive psychometric properties and have provided invaluable contributions to Dark Triad research (see review by Sellbom et al., 2018), more general criticisms of this approach persist. One of the more common critiques involves their potential susceptibility to response distortion, as described under various terms such as impression man-agement, social desirability, faking, and coaching, among others (Sellbom et al.). In the context of longitudinal research, these concerns may manifest in fabricated or exaggerated post-training changes, especially when participants perceive an incentive to demonstrate such changes. These concerns become more salient in researching Dark Triad individuals,[i] given their manipulative tendencies. Therefore, other presumably more fake-resistant measurement approaches such as forced-choice items, situational judgment tests (SJTs), performance-based measures, or other-report assessments may appease these concerns and complement traditional self-report research. Some of these methods align with those used in forensic or clinical settings, which are less reliant on self-report instruments. For instance, the most commonly used mea-sure of psychopathy in forensic settings, the Psychopathy Checklist-Revised (PCL-R; Hare, 2003), requires a combination of expert ratings and collateral file information, necessitated by the typically high-stakes implications of the assessment. Although this method is effective for addressing faking concerns, these measures are considered too impractical for aca-demic or vocational settings and were in fact a primary motivation for the development of self-report assessments (Sellbom et al., 2018). Alternatively, the Business-Scan 360 (B-Scan 360), an other-report psychopathy measure for organizational settings, has generated promising empirical results (e.g., Mathieu et al., 2014).

These differences also highlight the fact that some instruments include measures of all three Dark Triad constructs, whereas others assess one of the three constructs individually (see review by Furnham et al., 2013). This distinction is related to another fundamental issue involving Dark Triad measurement — namely, whether the three constructs should

be combined into a single score (Muris et al., 2017; Vize et al., 2018). Since the inception of the Dark Triad, Paulhus and Williams (2002; see also Furnham et al., 2013) argued that it should be conceptualized and measured as three separate constructs, disputing claims that they are indistinguishable. Indeed, even assessments that concurrently include scores for each of the three constructs do not include a combined "Dark Triad" score in their official scoring instructions (e.g., Jones & Paulhus, 2014), and other authors have explicitly cautioned against combining the constructs (Glenn & Sellbom, 2015). Moreover, myriad studies outline both conceptual and empirical differences among the components of the Dark Triad (e.g., Cohen, 2016; Furnham et al., 2013; Jones & Paulhus, 2011; Koehn et al., 2019; O'Boyle Jr. et al., 2012; see also Figure 2). The argument for combining the Dark Triad constructs is similar to one in personality research more generally, which has suggested that fundamental personality characteristics (e.g., the Big Five) may be combined into a single general factor of personality, largely supported by factor analytic results (e.g., Musek, 2007). However, these claims have been effectively countered on both methodological and theoretical grounds (e.g., Ashton et al., 2009; Comensoli & MacCann, 2013; Revelle & Wilt, 2013). In the context of longitudinal change research, combining the Dark Triad constructs into a single score would undermine the detection of nuanced results that may further differentiate the individual constructs, as well as the selective effectiveness of various training programs. Overall, the arguments for maintaining the Dark Triad as three separate constructs appear to outweigh any possibly added value from combining them (e.g., parsimonious reporting). Therefore, we recommend against combining the Dark Triad constructs into a single entity.

Indirect outcomes may also be used to examine the effectiveness of Dark Triad training. This approach is common in forensic and clinical settings: In the context of psychopathy malleability, many interventions' primary objective is to reduce criminality, violence, substance abuse, social skills deficits, or other issues (e.g., Lösel, 1998). Interventions are considered successful if they effectively address these issues, regardless of whether psychopathy scores are altered. Dark Triad research conducted in postsecondary, occupational, or community settings may also investigate these or similar outcomes, where they may be less severe and frequent but significantly destructive nonetheless. That is, stakeholders in various settings may be less interested in detecting direct Dark Triad changes than in reducing outcomes such as academic misconduct or counterproductive work behavior. Other indirect outcomes include changes observed in psychological constructs related to the Dark Triad (e.g., low empathy, poor ethics, low conscientiousness). These outcomes align with various models for evaluating program efficacy in occupational settings (e.g., Alliger et al., 1997; Beer, 1990; Brinkerhoff & Dressler, 2015; Cascio & Boudreau, 2008; Holton III & Naquin, 2008; Kirkpatrick, 1996). Studies that examine both direct and indirect outcomes may be uniquely beneficial, as they permit examinations of whether changes in Dark Triad scores mediate reductions in more indirect outcomes.

Organic Longitudinal Dark Triad Trajectories

As previously mentioned, longitudinal Dark Triad research may be conducted in the context of naturally occurring trajectories or deliberate training efforts. Longitudinal studies conducted in the absence of training programs are valuable for examining organic changes in Dark Triad traits. These data would provide evidence for whether individuals naturally become more or less narcissistic over time, and information about the rate at which these changes occur, for instance. In personality research more generally, life span theorists and researchers have noted that basic traits (i.e., Big Five) become more stable as we age, but are still malleable even into old age (Caspi & Roberts, 2001; Roberts et al., 2006). The mechanisms of change tend to be categorized as environmental, genetic, or some interaction between the two (Caspi & Roberts, 2001). Behavioral genetic research involving basic personality characteristics tends to favor environmental factors over genes (see Roberts et al., 2006). Specific environmental factors proposed to effect change include significant life events such as starting a family or obtaining a job, also referred to as biosocial transitions or emerging adulthood facets (Ardelt, 2000; Caspi & Roberts, 2001; Edmonds et al., 2008). Among the mechanisms through which person and environment factors may transact, Caspi and Roberts (2001) categorized three potential processes: *reactive*, *evocative*, or *proactive*. Reactive transactions describe individual differences in people's reactions to the same environment. Evocative transactions explain the manner in which an individual's personality produces varying responses from others. Proactive transactions illustrate how individuals create or select environments of their own. Each of these types of transactions could be tested as a mechanism for longitudinal Dark Triad change. For example, one of the consequences of proactive transactions is their tendency to reinforce existing personality tendencies. Relative to other personality constructs, the Dark Triad may be more longitudinally stable because these individuals are more adept at selecting reinforcing environments or have a more restricted set of environmental options.

Thus far, the nature of organic longitudinal Dark Triad change has been largely speculative. Preliminary evidence for the effects of life events on Machiavellianism and components of narcissism has been reported in aforementioned studies (Grosz et al., 2019; see also Geng et al., 2017). Based on behavioral genetics research (Vernon et al., 2008) demonstrating that only Machiavellianism contains a shared environmental component, Jones and Paulhus (2011) suggested that Machiavellianism may be more amenable to effortful change than narcissism or psychopathy. This argument provides further support for examining the Dark Triad as three separate constructs rather than a single entity. More generally, Big Five factors negatively associated with the Dark Triad — namely, agreeableness and conscientiousness — increase with age (Roberts et al., 2006), raising the possibility that the Dark Triad may decrease with age. This finding would be particularly relevant to longitudinal research that employs Big Five proxy instruments of the Dark Triad (see Sellbom et al., 2018). Overall, these studies inform hypotheses that are testable with longitudinal data.

Although data relating to naturally occurring change are informative, we argue that results from these types of studies should not be conflated with amenability to deliberate change. Instead, it is possible that highly organically stable constructs may be conducive to effortful change, just as naturally fluid constructs may be resistant to deliberate change. For example, natural changes may represent an opposing process that training must compete with, particularly if desired changes are in the opposite direction of natural changes. Furthermore, proposed mechanisms of natural change (e.g., genetics, significant or traumatic life experiences) may not translate into training programs. These arguments suggest that studies of effortful change should employ an experimental design, facilitating the isolation of training effects from organic factors by including a control group not exposed to training. Researchers may assess significant life events experienced by participants to partition these effects. It is also possible that behavioral genetic studies differentiating genetic and environmental influences on natural longitudinal change may be useful in formulating hypotheses for effortful change research (e.g., Jones & Paulhus, 2011). In turn, these strategies should facilitate research that supports causal inference for deliberate training programs.

Extant Dark Triad-Relevant Training Programs

There are several examples of existing postsecondary, occupational, and community-based training programs that may be relevant to Dark Triad malleability, making them ideal foci for longitudinal Dark Triad research. These programs may be further subdivided into those that target core Dark Triad features versus those intended to address corollary constructs or behaviors.

Training Programs Directly Targeting the Dark Triad and Core Features

The overlapping nature of the Dark Triad suggests core features that are common to each construct. Identifying these features has been a somewhat complicated endeavor (see review by Furnham et al., 2013), but one that is informed by empirical data. One consistent research finding links the Dark Triad to low empathy, also referred to as callousness (e.g., Furnham et al., 2013; Jones & Paulhus, 2011). These results suggest empathy training would be a relevant program for addressing the Dark Triad. The goal of empathy training is "to teach individuals the meaning of empathy, to recognize emotions in others, to take the perspective of others, and to show empathy in various social situations" (Teding van Berkhout & Malouff, 2016, p. 33). Empathy training is commonly used in professions and related postsecondary programs where empathy is valued, such as health care (Levett-Jones et al., 2019; Teding van Berkhout & Malouff 2016; Weisz & Zaki, 2017). Empathy training is also employed to reduce or prevent aggressive behavior, illustrating relevance to stakeholders in postsecondary and occupational settings (e.g., workplace bullying) and to the study of the Dark Triad more generally (Baughman et al., 2012). Meta-analyses have supported the effectiveness of empathy training (Teding van Berkhout & Malouff, 2016), though its ability to reduce Dark Triad levels has yet to be determined. Furthermore, these programs are diverse with respect to their specific training methods and the type of empathy they target (e.g., cognitive, affective, or behavioral; Teding van Berkhout & Malouff, 2016; Weisz & Zaki, 2017). These factors may influence the degree to which they impact the Dark Triad and suggest myriad opportunities for research.

A lack of ethics has also been suggested as a core Dark Triad trait, based on negative correlations with ethics assessments and consistent associations with unethical behavior (e.g., Campbell et al., 2009; Furnham et al., 2013; Muris et al., 2017). Ethical behavior, often studied or conceptualized alongside similar concepts such as morals or integrity (e.g., Auger & Gee, 2016), is highly prioritized in academia and the workplace, with formal postsecondary ethics courses integrated into

fields such as business (Waples et al., 2009), medicine (Antes et al., 2009; Eckles et al., 2005), law (Rhode, 2009), engineering (Haws, 2001), psychology (Antes et al., 2009), journalism (Swenson-Lepper et al., 2015), and research science (Mumford et al., 2015), among others. Interestingly, many of these professions align with Dark Triad individuals' vocational interests (Babiak & Hare, 2006; Kowalski et al., 2017). In other areas such as teacher education, professional ethics are deemed important, but formal programs appear to be lacking (Warnick & Silverman, 2011; cf., Hutchings et al., 2018). Ethics courses typically utilize experiential learning, in which participants engage with fictional ethical dilemmas that are realistic to their profession and often based on factual situations, and learn appropriate strategies for navigating these challenges. Although meta-analyses generally support the effectiveness of these programs in improving ethical decision-making or moral reasoning, these effects are often relatively moderate, leading authors to call for further research (Antes et al., 2009; Eckles et al., 2005; Mumford et al., 2015; Waples et al., 2009). In the context of the Dark Triad, the behavior genetics research of Campbell et al. (2009) noted that higher moral reasoning is solely attributable to environmental factors, suggesting greater potential amenability to volitional change. These findings support ethics training's relevance to the Dark Triad, but this idea has apparently yet to undergo empirical study.

Training Programs Targeting Dark Triad Correlates

Another set of training programs that may be relevant to the Dark Triad are those targeting associated behaviors or other constructs that are not necessarily considered core Dark Triad features. For instance, prejudicial racial and ethnic attitudes have been empirically associated with the Dark Triad (Anderson & Cheers, 2018; Forscher & Kteily, 2019; Hodson et al., 2009). Although these negative attitudes are typically not considered a fundamental Dark Triad characteristic, other research suggests this association may be at least partially explained by the Dark Triad's common Big Five feature of low agreeableness (Bergh & Akrami, 2016). Historically, programs designed to address these issues have been referred to as sensitivity training, highlighting their overlap with aforementioned empathy training programs. More recently, diversity training programs have become increasingly popular in academic, workplace, and other settings in which demographic diversity is rising (Bezrukova et al., 2016; Kalinoski et al., 2013). Similarly, these programs reflect a recent surge of interest in the value and trainability of cross-cultural competence against the backdrop of increased industrial globalization (Littrell & Salas, 2005). Diversity training has been described as "a distinct set of instructional programs *aimed* at facilitating positive intergroup interactions, reducing prejudice and discrimination, and enhancing the skills, knowledge, and motivation of participants to interact with diverse others" (Bezrukova et al., 2016; p. 1228, emphasis in original). This definition explicates the connection between the goals of diversity training and the relevant problematic attitudes associated with the Dark Triad. Similar to ethics training programs, diversity training often employs an experiential approach, informed by concepts such as Allport's (1954) contact hypothesis (see Bezrukova et al., 2016). Meta-analytic support for the effectiveness of diversity training includes positive changes for a variety of outcomes, including affect, cognition, and skills (Bezrukova et al., 2016; Kalinoski et al., 2013). Ultimately, the goal of this training is to address harassment motivated by racial, ethnic, or cultural differences. Diversity training's potential impact on the Dark Triad poses an interesting research question. Some authors have noted that the impact of diversity training is more pronounced for proximal outcomes such as attitudes than in distal outcomes such as changes in hiring trends (Kalinoski et al., 2013). It is possible that changes in Dark Triad scores may represent another example of a proximal outcome.

Similarly, various studies have associated the Dark Triad with harassment based on sex or gender (e.g., Brewer et al., 2019; Jones & Olderbak, 2014; Zeigler-Hill et al., 2016). This type of behavior is of significant concern in post-secondary and workplace settings and, similar to racial harassment, is typically housed within conceptualizations of counterproductive work behavior (Gruys & Sackett, 2003). Consequently, training programs aimed at reducing these behaviors are common in these settings, with meta-analytic support for their effectiveness (Anderson & Whiston, 2005; Antecol & Cobb-Clark, 2003; Brecklin & Forde, 2001). Generally, these programs focus on addressing psychological processes related to these behaviors, such as victim blaming, low empathy, misogynistic attitudes, and lack of awareness regarding inappropriate behavior (e.g., Anderson & Whiston, 2005). Among Dark Triad individuals, it is unclear whether the resulting harassment behavior represents a manifestation of these processes, their core unethical nature, or some other factor. In turn, the degree to which these programs influence longitudinal changes in Dark Triad scores would be of research interest.

Other specific problematic workplace performance areas related to the Dark Triad reflect these individuals' general interpersonal aversiveness. For example, there is concern that Dark Triad individuals are less effective leaders in

occupational settings, despite their ambition toward such positions (e.g., Landay et al., 2019; McCleskey, 2013). Yet, it is unclear how leadership training (Lacarenza et al., 2017) might influence or even exacerbate Dark Triad tendencies. Unfortunately, these programs are often described as targeting poorly defined constructs such as *leadership effectiveness* without explicitly mentioning training goals involving leader empathy or ethics.

Recently, Roberts, Hill, et al. (2017) proposed another interesting training approach that may be relevant to the Dark Triad, although the authors did not explicitly discuss it in this context (cf. Hill & Roberts, 2018). Specifically, the sociogenomic trait intervention model (STIM) is a program for enhancing the Big Five trait of conscientiousness. STIM is described as a program based on "an integration of [behavioral activation theory], motivational theories, and the sociogenomic model of personality traits" (Roberts, Hill, et al., 2017, p. 200). Importantly, STIM is proposed as a method for improving conscientiousness in individuals outside of clinical or forensic settings. Interest in increasing conscientiousness is derived from its well-established association with a diverse array of positive life outcomes, including academic performance, job performance, interpersonal relationships, and even mental and physical health (see Roberts, Hill, et al., 2017). Coincidentally, the Dark Triad tends to be associated with negative outcomes in these areas (see reviews by Furnham et al., 2013 and LeBreton et al., 2018). In turn, conceptually orienting (low) conscientiousness as a core Dark Triad feature is plausible, though empirical support is somewhat mixed. For example, although Furnham et al. (2013) provided several examples of conscientiousness' relevance to the Dark Triad, meta-analyses tend to reveal negative associations with only Machiavellianism and psychopathy, with no overall link to narcissism (Muris et al., 2017; O'Boyle et al., 2015; Vize et al., 2018; see also Figure 2). However, Furnham et al. also noted that facet-level measures of conscientiousness provide more divergent and nuanced associations with each of the Dark Triad constructs. These patterns suggest that the efficacy of STIM in reducing Dark Triad levels may be complex, representing another valuable research endeavor. Furthermore, unlike the other relevant training programs mentioned here, STIM's status as a very recent program means that it has yet to be tested rigorously in practice, presenting another argument for empirical application.

Developing New Dark Triad-Relevant Training Programs

Beyond existing Dark Triad–relevant training programs, there remains potential for developing new programs "from the ground up" that are explicitly aimed at addressing these traits. Relevant sources that may inform these programs include mechanisms from clinical or forensic research, tenets from personality change theory, and mediators of Dark Triad behavior.

Lessons from Clinical and Forensic Research?

Given the Dark Triad's connection to clinical and forensic settings, it is possible that components of programs that have been used or proposed in these settings could be adapted for other settings. For example, Wong and Hare (2005) proposed an intervention program specifically designed for psychopathic individuals. However, these authors explicitly stated that direct changes in psychopathy levels are not the goal of these interventions, and in fact argued that "it is unrealistic to try to effect fundamental changes in the psychopath's personality structure" (p. 10). Instead, strategies involve "modifying antisocial attitudes, developing alternative behavioral strategies, and reducing or managing the risk of antisocial and violent behavior" (p. 10). Given that these correlates have been observed in psychopathy (and the Dark Triad) outside of clinical and forensic settings, these strategies would appear to be relevant to academic and occupational applications as well. However, we reiterate that such interventions would require significant modifications. For instance, many of Wong and Hare's (2005) recommendations assume delivery by a clinical professional or constant monitoring in a secure facility, which would obviously be inappropriate for workplace and academic settings.

If the goal of a new training program is to influence direct changes in Dark Triad levels, another consideration involves the specific Dark Triad characteristics being targeted. For example, recall that Hare's (2003) conceptualization of psychopathy outlines four facets: interpersonal, affective, lifestyle, and antisocial. An ambitious program might aim to influence all four of these components, though it may be more practical to target a subset of these facets. Indeed, a unique tactic might be required for each facet, and these facets may differ in their degree of malleability. For example, there is evidence from forensic research that the interpersonal and affective components of psychopathy appear to be less conducive to change than its antisocial or "criminal" components (Ogloff & Wood, 2010; Olver, 2016; Wynn et al., 2012).

Insights from Theories of Personality Change

Similarly, new training programs could be developed based on established theories of general personality change. Caspi and Roberts (2001) classified personality change mechanisms into four general categories. First, "responding to contingencies" describes personality change as a result of reinforcement or punishment. Although these authors use parenting styles to describe explicit contingencies, which are therefore less relevant to adulthood change or related training strategies, implicit contingencies are represented by expectations associated with various societal roles, including within the workplace (e.g., managers versus subordinates). Second, "watching ourselves" strategies emphasize introspection and reflection on one's own problematic thoughts, attitudes, and behaviors, in order to motivate positive change. Third, "watching others" involves observational learning of role models, which may be combined with implicit or explicit rewards. Finally, "listening to others" posits that individuals may alter self-perceptions when they receive feedback that is incongruent with these perceptions. It is possible that relevant training options falling within any of these categories already exist. For example, person perception training may be described as an example of "watching others" and has been meta-analytically demonstrated to improve individuals' interpersonal assessments (Blanch-Hartigan et al., 2012). Although there is a theoretical argument for poor person perception skills among the Dark Triad elements, research suggests this deficit is largely isolated to Machiavellianism (Rauthmann, 2012). Alternatively, developing new Dark Triad training programs based on these principles represents an interesting research direction.

Informed by a thorough literature review, a recent theory of change for noncognitive construct training programs (Williams et al., 2022) provides further guidance for developing relevant programs. Based on the results of several meta-analyses, this review noted that constructs such as social skills, teamwork, emotion, and attitudes are most effectively changed through academic or workplace programs that integrate practice, experiential learning, and feedback. However, this review also noted that there does not appear to be any relevant Dark Triad research, reiterating the need for future study.

Other change mechanisms specific to the Dark Triad have been proposed by Hill and Roberts (2018) for potentially addressing narcissism. First, the authors proposed that the "invest-and-accrue" model of personality change may be useful for increasing positive traits associated with narcissism, such as assertiveness and leadership. Here, changes are encouraged by highlighting the benefits of these traits in various personal areas (e.g., life satisfaction; occupational success). However, it would also appear beneficial to consider whether it is possible to develop pathologically high levels of these traits and to also promote the benefits of high levels of traits that are typically uncharacteristic of narcissism (e.g., perspective taking, empathy, ethics). Second, Hill and Roberts suggested that the sociogenomic trait perspective of personality change may explain longitudinal changes in narcissism. In this model, common developmental processes associated with family, workplace, and community responsibilities accumulate to foster increases in basic personality traits such as agreeableness and conscientiousness. Because these traits tend to be lower in narcissistic individuals, encouraging these individuals to engage in these behaviors may promote narcissism changes, but may also be challenging. The relevance of either of these perspectives to longitudinal changes in Machiavellianism and psychopathy seem apparent, though more research is needed for each of the Dark Triad constructs.

Training Programs Targeting Mediators of Dark Triad Behavior

Although mediation research is typically used to explain behavioral or other personality outcomes using cross-sectional data, empirical support for many of the aforementioned mechanisms of change may be generated through mediation analyses (MacKinnon et al., 2007). Importantly, this strategy is compatible with longitudinal data, including studies that support causal inferences (Cole & Maxwell, 2003). It is also possible that the psychological processes that mediate Dark Triad behavior are more amenable to change than the Dark Triad constructs themselves.

Fortunately, many studies have proposed or empirically identified constructs that mediate Dark Triad behavior. In some instances, these constructs correspond with those characterized as core Dark Triad features. For example, Cohen (2016) outlined accountability and perceptions of organizational politics as distinct possible mediators of counterproductive work behavior (CWB) for each of the Dark Triad constructs. Giammarco and Vernon (2014) observed that, to varying degrees, empathic concern and perspective taking mediate forgivingness for Machiavellianism and psychopathy. In academic settings, unrestrained achievement—a propensity to succeed at any cost—and moral inhibition mediate the relationship between psychopathy and scholastic cheating (Williams et al., 2010). Notably, this study observed that a fear of punishment

did not mediate psychopathic individuals' cheating, suggesting training programs that operate by activating fear, guilt, or other negative emotions to dissuade destructive behavior (e.g., Sheeran et al., 2014) may be ineffective with Dark Triad individuals. Even the relationship between the Dark Triad and life expectancy has been elucidated through mediators, namely risk taking and general life strategy, for both narcissism and psychopathy (Jonason et al., 2015). However, programs that aim to change behavior by heightening risk appraisals (Sheeran et al., 2014) may be counterproductive, due to Dark Triad individuals' enjoyment of high-risk activities. Of note, because these examples observed mediation effects that were inconsistent across the three Dark Triad constructs, these results reinforce the notion that these constructs are distinct and that appropriate training program strategies may subsequently vary for each construct. As a result, training programs that target mediating processes may positively influence not only Dark Triad constructs but also their associated destructive behaviors.

More generally, volitional longitudinal personality change (i.e., Big Five) may be mediated by engaging in daily behaviors that are representative of the desired personality characteristic (Hudson & Fraley, 2015). In the context of naturally occurring longitudinal change, the successful navigation of emerging adulthood events has been observed to mediate the relationship between age and the Dark Triad in cross-sectional data (Barlett & Barlett, 2015). These findings support more general theories involving longitudinal personality change involving practice and experiential learning. The efficacy of these mechanisms in the context of Dark Triad change would be a valuable research topic, given the lack of study in this area.

Moderator Issues

Both research and theory involving training efficacy tend to provide summaries on an omnibus level. However, a common finding among training program meta-analyses is that these programs are not equally effective between or within samples (e.g., Teding van Berkhout & Malouf 2016). In other words, various moderators of change exist, and these factors warrant further empirical study (Antes et al., 2009; Waples et al., 2009). The systems approach to workplace training (see Bell et al., 2017) provides a useful framework for discussing moderators. This framework describes four groups of potential training moderators—participant, program, instructor, and organizational characteristics—that may influence program effectiveness individually or synergistically. Within this framework, relevant moderators of Dark Triad longitudinal change may be informed by previous personality change research or Dark Triad-relevant research in clinical and forensic settings. Moreover, these moderators may influence changes in direct or indirect outcomes.

Participant Characteristics

Participant characteristics as potential moderators of direct or indirect Dark Triad change would appear to hold the most research evidence. Support for the Dark Triad as a moderator of deliberate training attempts may be gleaned from various sources. Dark Triad features such as interpersonal manipulation, self-centeredness, irresponsibility, and low motivation may undermine training efforts (e.g., Hemphill & Hart, 2002; Hudson & Fraley, 2015; Wong & Hare, 2005). Empirical support for this argument has been observed in meta-analyses and reviews linking intervention attrition to psychopathy (Olver et al., 2011) and narcissism (McMurran et al., 2010). Moreover, psychopathic individuals are more likely to disrupt group training efforts, jeopardizing their efficacy for other participants (Polaschek & Skeem, 2018). In postsecondary settings, the negative moderating impact of narcissism has been demonstrated in longitudinal research examining teamwork training in a management education context (Giambatista & Hoover, 2018). Similarly, Roberts, Hill, et al. (2017) argued that individuals with extremely low conscientiousness levels, which often includes Machiavellian and psychopathic individuals (see Figure 2), would experience less success with the STIM program. This phenomenon is similar to the *Matthew effect* (Merton, 1968), more colloquially expressed as "the rich get richer." Ironically, and unfortunately, this trend suggests poorer training efficacy for individuals who would stand to benefit most from Dark Triad reduction efforts. At the extreme, the Dark Triad may influence counterproductive training results. For example, diversity training programs can occasionally reinforce prejudicial attitudes in some participants (see Bezrukova et al., 2016); future research may investigate whether it is Dark Triad individuals who are more prone to these reactions.

These findings highlight the possibility that the Dark Triad may influence the efficacy of deliberate training programs, but the components may also be relevant as moderators of natural longitudinal changes. Recalling a previously mentioned

example, in the context of natural personality change, research has observed consistent patterns of longitudinal change in Big Five traits over time, presumably influenced by some combination of genetic and environmental factors (Roberts et al., 2006). The cross-cultural consistency of these trends has led some researchers to interpret them as reflecting a common developmental process toward "psychological maturity" (Costa Jr. & McCrae, 2006). However, it is unclear if individuals with Dark Triad traits would also demonstrate these longitudinal trends. For instance, conscientiousness tends to increase over the life span (Roberts et al., 2006), but these increases may be less pronounced or even nonexistent in Dark Triad individuals. Moreover, if personality change is spurred by experiencing certain significant life events, it is possible that Dark Triad individuals do not respond to these events in the same way or experience them in lower frequencies. Regardless, the degree to which Dark Triad individuals experience a distinct longitudinal trajectory of personality development remains an open research question.

Beyond the Dark Triad constructs themselves, additional participant characteristics may influence the efficacy of training programs targeting the Dark Triad and related outcomes. Specifically, demographic factors such as age, gender, or race/ethnicity may be investigated. For example, although natural change theories and research tend to favor greater malleability of varying personality and other noncognitive constructs in younger individuals, some meta-analyses of effortful change do not report age effects (Bangert-Drowns, 1988) or observe greater efficacy in older participants (Schlaefli et al., 1985). Cross-sectional relationships between the Dark Triad and demographics, such as higher levels in younger individuals (e.g., Barlett & Barlett, 2015) and in males (see Furnham et al., 2013), further emphasize the potential importance of demographics as a moderator of relevant training programs.

Program Characteristics

The second set of moderator variables is program characteristics, which include program content as well as implementation factors such as the schedule or "dosage" (i.e., frequency, duration) with which training is delivered. Various workplace training meta-analyses have demonstrated that programs are more effective when they are delivered over a longer duration or with greater frequency (e.g., Kissane et al., 2012). Training delivery options, such as one-on-one, classroom, or self-directed computer-based approaches represent another program characteristic. The influence of various program characteristics on Dark Triad-relevant training programs remains an open question. For example, given that Dark Triad traits appear relevant to participant attrition, these trainees may be more likely to remain in a program if it is structured (e.g., classroom) rather than self-directed (e.g., online). Furthermore, Dark Triad characteristics such as proneness to boredom suggest that individuals with these characteristics may be less likely to maintain attendance in longer programs.

Instructor Characteristics

A third category of potential training moderator variables includes instructor characteristics such as demographics, experience, relationship to participants, and theoretical orientation. Though relatively understudied in postsecondary and workplace contexts, trainer characteristics have also been meta-analytically linked to training effectiveness (e.g., Anderson & Whiston, 2005). It is unclear how instructor characteristics might influence Dark Triad training programs. In particular, identifying a type of instructor that they respect and obey may be difficult, given the Dark Triad's general tendencies toward rebelliousness and interpersonal aversiveness (e.g., Malesza & Ostaszewski, 2016).

Organizational Characteristics

Finally, organizational characteristics include the training environment or specific occupations in which training may be more or less effective. Again, meta-analyses have demonstrated the influence of these factors (e.g., Vanhove et al., 2016), but more research is needed. Primarily, these studies have examined whether certain training programs may be more effective in certain industries, often concluding a lack of moderating effects (e.g., Delise et al., 2010; Vanhove et al., 2016). Conversely, training appears to be more effective when conducted in a supportive organizational environment (Bell et al., 2017). Identifying the factors that maximize Dark Triad training efforts is a critical step to optimizing practical applications. Given that, Dark Triad individuals are particularly attracted to certain industries (Kowalski et al., 2017), it would be useful to determine whether relevant training is more or less impactful in these settings.

Discussion

Despite a vast field of knowledge illuminating various features of the Dark Triad, we remain virtually uninformed about these characteristics' malleability, either organically or in response to deliberate training efforts. This important, fundamental aspect of the Dark Triad is unknown, but not unknowable. Researchers outside of clinical and forensic areas appear to be uniquely equipped to pursue such research, as they may be able to overcome many restraints that have hindered clinical and forensic study. At the same time, clinical and forensic findings may inform postsecondary and workplace efforts going forward, including potential collaborations with these researchers.

The relative malleability of the Dark Triad traits is an empirical question, with arguments favoring either side of the stable-versus-modifiable continuum. Confirming the Dark Triad as a cluster of intractable personality characteristics would corroborate early conceptualizations of these traits and of personality constructs more generally. It should be acknowledged that although some training programs may be relevant to each of the individual Dark Triad constructs, these constructs may not be equally malleable, and researchers may identify programs whose effectiveness varies across these constructs. Practically, these results would solidify each Dark Triad component's relevance to screening and selection applications. Furthermore, the Dark Triad components' stability would not preclude the components from representing critical moderators of organic longitudinal personality change or of volitional training programs targeting other, indirect outcomes. Although the concept that training may actually increase psychopathic tendencies has been discredited in forensic settings (D'Silva et al., 2004; Wong & Olver, 2015), future research may examine the possibility that Dark Triad individuals respond negatively to training efforts targeting other indirect outcomes. However, postsecondary and workplace training participants would likely possess lower Dark Triad levels than those observed in clinical or forensic settings. In turn, the pessimism surrounding Dark Triad malleability in clinical and forensic settings may be tempered in other settings.

Conversely, evidence for the Dark Triad's malleability introduces an entirely different set of research avenues and practical applications. These results would align more closely with contemporary stances on the nature of personality, including behavioral genetics findings (e.g., Roberts et al., 2006; Vernon et al., 2008). Identifying effective methods for reducing Dark Triad levels would produce tangible benefits in postsecondary and workplace settings, including decreases in victimization, monetary losses, and institutions' reputational damage. It is also possible that each Dark Triad construct is more or less malleable relative to the others, or relative to other personality traits (e.g., Big Five). Ideally, this research would clarify not only the optimal training strategies in terms of program content, but also the conditions under which training is most effective.

Additional questions concern the conditions under which training programs are most effective for Dark Triad individuals. Dark Triad characteristics such as irresponsibility and low motivation that presumably inhibit training efficacy suggest that these individuals may simply require training on a more intense delivery schedule or "dosage" (i.e., more frequently and within a condensed time frame, or over an extended duration) in order to achieve beneficial outcomes. Similarly, although clinical and forensic research suggests that Dark Triad individuals would be disruptive to other trainees' progress in group programs, it is unclear whether there would be any detrimental effects involving singling out Dark Triad individuals for training. Moreover, ethical issues in requesting — or even requiring — Dark Triad individuals to participate in training programs must be considered, especially in nonresearch settings.

Future Directions

Throughout the preceding review, we have made several recommendations regarding basic methodological considerations for future studies. Perhaps most notably, the collecting of longitudinal data is imperative for this research to elucidate intra-individual change. A wide range of advanced statistical methods for analyzing these data is available, facilitating a level of sophistication beyond simple pre – post mean differences or rank-order correlations. The inclusion of nontraining control groups (i.e., randomized controlled trial) in studies of deliberate training programs is ideal for delineating organic from effortful changes and to support causal inferences. Combining the Dark Triad constructs into a single score is not recommended, as they represent overlapping but nonidentical constructs and may generate distinct longitudinal trajectories. Moreover, although some training strategies may be effective for all the Dark Triad components, other programs may uniquely impact a subset of these constructs. Similarly, partialing any of the Dark Triad constructs or their subfactors is not advised, as this process complicates the interpretation of results. Additionally, assessments that are presumably less

susceptible to coaching or manipulation, such as forced-choice and performance-based methods, may be preferred for evaluating training efforts. This suggestion acknowledges that, although Dark Triad individuals possess a greater propensity toward deceit, they tend to be less successful at actually producing biased responses on self-assessments (see review by Sellbom et al., 2018). Nonetheless, the Dark Triad constructs demonstrate distinctive associations with impression management measures (e.g., Kowalski et al., 2018), and this phenomenon has yet to be tested in a training context.

Recently, a fourth construct—sadism—has been added to the Dark Triad as another personality construct that may be assessed in everyday settings, introducing the term *Dark Tetrad* (Paulhus et al., 2018; see also Book et al., 2016; Međedović & Petrović, 2015; Paulhus, 2014). This expansion is based on an assumption that although sadism belongs within a taxonomy of destructive traits alongside the other Dark Triad constructs, it contains unique features. Theoretical and empirical supports for this perspective have been presented, including positioning sadism's unique and most characteristic feature as an enjoyment of cruelty (e.g., Paulhus, 2014). This expansion also suggests that the mechanisms behind sadistic behavior differ from those of the other Dark Triad constructs. Subsequently, it is plausible that strategies for reducing sadism and related behavior are unique. Research into the Dark Tetrad and sadism as an everyday personality construct remains in its early stages, suggesting an abundance of future research opportunities.

In addition to valuable research investigating organic longitudinal change, we have outlined a nonexhaustive list of relevant postsecondary and workplace training options to investigate the Dark Triad's amenability to effortful change. The efficacy of training programs targeting core Dark Triad features versus those focusing on Dark Triad correlates remains an open question. For instance, several effective programs exist in areas such as empathy training, ethics training, diversity training, and harassment reduction. Newer strategies such as the proposed STIM approach to increasing conscientiousness may also be examined. Aside from these programs' efficacy in altering Dark Triad levels directly, the potential moderating impact of the Dark Triad should also be examined. It is plausible that the Dark Triad may hinder training efforts, suggesting that personalized administration techniques such as one-on-one delivery, increased session frequency, or prolonged program duration may be required. To facilitate the development, administration, and evaluation of these efforts, the considerations presented in this article may be elaborated and formalized in a theory of change or theory of action (Weiss, 1997; Williams et al., 2022).

Concluding Comments

Attitudes regarding the malleability of personality have evolved dramatically since the early days of psychodynamic theory, when it was commonly believed that one's personality was fixed as early as 2 years of age (see Caspi & Roberts, 2001). Contemporary studies note that personality change is observed well into adulthood. However, these studies typically involve natural changes in response to either genetics or the environment as opposed to deliberate training efforts. Moreover, the specific personality characteristics known as the Dark Triad are essentially absent from this conversation. These gaps represent a fruitful opportunity for personality researchers, particularly those conducting research in industrial/organizational or postsecondary settings. This research may utilize any of a number of existing "off-the-shelf" training programs that are relevant to the Dark Triad. Conversely, new postsecondary and workplace programs may be developed, which may incorporate learnings from forensic and clinical psychology. Skepticism surrounding the malleability of the Dark Triad is justifiable, so empirical evidence of longitudinal change is not guaranteed. Ultimately, the body of research may support the intractability of Dark Triad traits, but we would argue that this result would be highly valuable nonetheless. For instance, acknowledging the notion that a one-size-fits-all approach to postsecondary and workplace training is untenable, the Dark Triad may reflect some of the many factors that moderate education efforts targeting related or unrelated academic and occupational skills and behaviors. However, strategies that are effective in reducing Dark Triad levels could provide substantial societal benefits by decreasing associated destructive behaviors and could thus facilitate the development of a more ethical, empathic, and productive workforce.

Note

1 Throughout this article, we use the term *Dark Triad individuals* as a shorthand to refer to anyone who would score relatively high on a continuum for any one (or more) of the three distinct Dark Triad constructs. This shorthand does not suggest that the Dark Triad should be combined into a single construct, or that any of the three constructs should be conceptualized in a binary present/absent capacity (e.g., using a "clinical" cutoff).

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