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Comparing the Measured and Latent Dark Triad: Are Three Measures Better than One?

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Could measurement level be a factor worth considering when studying the Dark Triad (i.e., narcissism, psychopathy, and Machiavellianism)? In two studies (N = 465), we compared the relative fit of two Dark Triad models: one that treats the three measures as separate-yet-related personality traits and another that treats the measures as tapping a single, latent construct. Mid-level personality traits, such as mate-retention strategies (Study 1) were best explained by a three-measure model, whereas the higher-order trait of sociosexuality (Study 2), were best explained by a single, latent-factor model. When considering mid-level measurement in personality, the three traits may provide independent effects for interpersonal relationships, whereas at the higher-order level, the three traits may function as a single entity relating to other higher-order traits. We suggest one should consider level of measurement between the predictor and criterion variables to better predict correlations among variables such as the Dark Triad.

Keywords: Dark Triad, Structural Equation Modeling, Personality, Narcissism, Machiavellianism, Psychopath

There is little doubt that the Dark Triad traits represents three related, yet independent traits (Jonason, Li, Webster, & Schmitt, 2009; Jones & Paulhus, 2010; Lee & Ashton, 2005; McHoskey, 1995; McHoskey, Worzel, & Syzarto, 1995, Paulhus & Williams, 2002). They appear to be linked by a core of disagreeableness (Paulhus & Williams, 2002), lacking humility (Lee & Ashton, 2005), a short-term (vs. long-term) mating orientation (Jonason et al., 2009), and feeling they can predict future outcomes (Jonason, Koenig, & Tost, 2010). In contrast, the three traits are also differentially predictive of aspects of people's personality such as self-control (Jonason & Tost, 2010), risk-taking (Jonason et al., 2010a), strategic or impulsive social orientations (Jones & Paulhus, 2010), a *fast* or opportunistic life strategy (Figueredo et al., 2006; Jonason, Koenig, & Tost, 2010), mate-retention and mate-poaching (Jonason, Li, & Buss, 2010), styles of love (Jonason & Kavanagh, 2010), and aggressiveness (Jonason & Webster, 2010). In this study we employ Structural Equation Modeling (SEM) to better understand how the Dark Triad traits predict mate-retention (Study 1) and sociosexuality (Study 2).

Modern conceptualizations of personality assume personality traits can be measured at a variety of levels (Jonason & Webster, 2010; Markon, Krueger, & Watson, 2005). For instance, the traditional five-factor model

of personality (i.e., extraversion, agreeableness, conscientious, emotional stability, and openness) are mid-level traits (DeYoung, Peterson, & Higgins, 2002; DeYoung, 2006; Digman, 1997; Hirsh, DeYoung, & Peterson, 2009) that are predictive of a whole range of acts individuals may perform including mate-retention (Buss, 1998) and interpersonal manipulate (Buss, Gomes, Higgins, & Lauterbach, 1987). Higher-order personality traits tend to reflect the shared variance of a number of these mid-level factors (DeYoung et al., 2002; Hirsch et al., 2009). Lower-order traits represent aspects of mid-level conceptualizations (DeYoung, Quilty, & Peterson, 2007). We treat the Dark Triad traits as mid-level traits (i.e., 3 separate traits as traditionally assessed) and a single, composite trait (Jonason et al., 2009; Jonason & Webster, 2010) in order to understand how the shared factor and the unique variance in the three traits predict sociosexuality and mate-retention.

Using this multilevel perspective on personality, we make one primary prediction. The best fit to data should happen when both variables are at the same level of measurement (i.e., a "matching hypothesis"). Sociosexuality (Simpson & Gangestad, 1991) is a latent construct reflective of two (Webster & Bryan, 2007) or three (Jackson & Kirkpatrick, 2006; Penke & Asendorpf, 2008) mid-level aspects. Therefore, we predict the common variance of the Dark Triad composite (Jonason et al., 2009; Jonason & Webster, 2010) will provide a better fit to the data in explaining variance in sociosexuality than would the Dark Triad's three individual traits. Such a prediction is consistent with recent evidence assessing the relationship between sexual coercion and the Dark Triad where the common factor provided a better fit than the unique variance of the three traits (Sisco, Gladden, & Figueredo, 2010).

Second, because the three traits may each assess slightly different aspects of a *fast* life strategy as suggested by much research (Figueredo et al., 2006; Jonason et al., 2009; Jonason & Kavanagh, 2010; Jonason, Koenig, & Tost, 2010; Jonason & Tost, 2010; Jonason & Webster, 2010), actual tactical-level personality assessments should be predicted more by the unshared variance of the three traits than the shared variance, in this case in the form of mate-retention tactics. Tactical-level traits may be mid-level traits like the Big Five, and, therefore, we expect the correlations with other mid-level variables—the actual Dark Triad traits and not the common factor—to better predict the tactical traits of mate-retention (i.e., intrasexual and intersexual manipulation).

In the present studies we present some initial testing of this "matching hypothesis" by using SEM to assess relative fit of two different models to account for variance in intersexual and intrasexual manipulation and sociosexuality. In so doing we hope to better ascertain the manner in which the Dark Triad independently and conjointly predicts aspects of people's life history strategies. We assess the correlations between the

Dark Triad and mate-retention tactics and expect the unique variance provided by each trait will provide a better fit than the common factor (Study 1). Further, we assess the correlation between the Dark Triad and sociosexuality and expect the common factor to provide a better fit than the unique variances of each trait (Study 2). Essentially, we seek to address the question: "When are three traits better than one factor?"

Study 1: Intrasexual and Intersexual Manipulation

In Study 1 we reanalyze data on mate-retention (Jonason, Li, & Buss, 2010). We use SEM to test which nested model fits the data best relative to a full model. Because mate-retention is a tactical-level set of personality traits, we expect the unique factor to have better fit indexes than a common Dark Triad factor.

Method

Participants. The participants in this study were used in a prior study (Jonason, Li, & Buss, 2010). Volunteers (N = 336, 66% female) from unique IP addresses recruited via Craigslist completed an online survey that informed them of the nature of the study, asked them demographic questions, and asked them to respond to the items described below. Upon completion, participants were thanked and debriefed.

Measures. Briefly, the Dark Triad was measured using the NPI (Raskin & Terry, 1988), the Self-Report Psychopathy Scale-III (Paulhus, Neumann, & Hare, in press), and the MACH-IV (Christie & Geis, 1970). Items on the scale were aggregated into indexes (Cronbach's α = .87, .74, .57 respectively). Tactics of mate-retention were averaged into the categories (Shackelford, Goetz, & Buss, 2005) of Direct Guarding (α = .57), Intersexual Negative Inducements (α = .68), Positive Inducements (α = .75), Public Signals of Possession (α = .62), and Intrasexual Negative Inducement (α = .42). Although estimates are lower than one would hope, they are consistent with prior work (Shackelford et al., 2005). More details about these measures are provided in the original publication of the data (Jonason, Li, & Buss, 2010).

Results and Discussion

Model testing. To compare the models, techniques described by Sisco, Gladden, & Figueredo (2010) were employed. That is, the full models with both the contributions of the latent Dark Triad factor plus the unique contributions from the three Dark Triad traits as manifest indicators were run on inter- and intrasexual manipulation respectively.

Intersexual selection. The full model examined the contributions of the latent Dark Triad factor plus the unique contributions from each of the three Dark Triad traits as manifest indicators (Figure 1). Equality constraints were used for the paths from psychopathy and Machiavellianism to the Dark Triad factor, with the pathway from direct guarding to intersexual manipulation fixed to 1.0. Adding constraints to the Psychopathy and Machiavellianism paths essentially split the contribution across these paths as previous testing had found these two

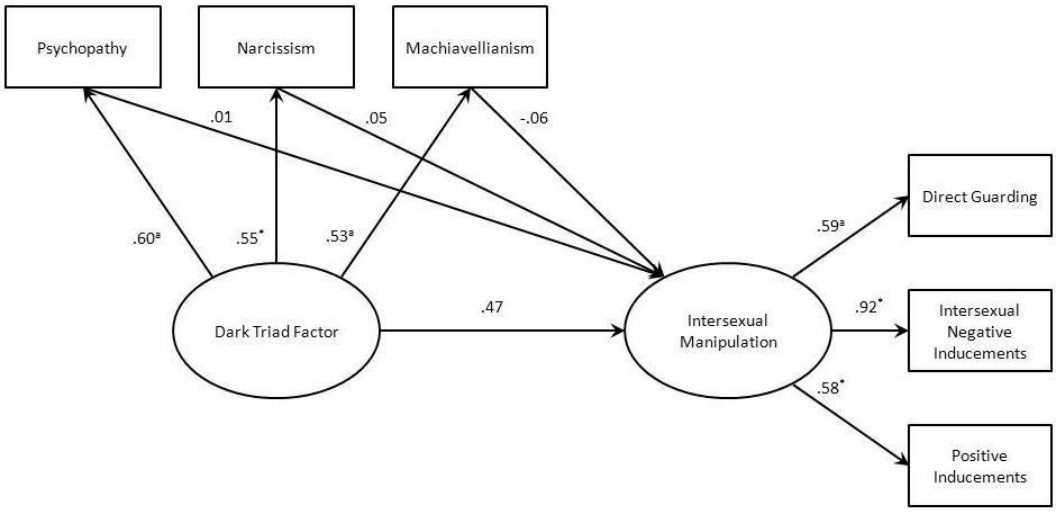

Figure 1: Common contribution from a latent Dark Triad factor plus the unique contributions from the three Dark Personality traits as manifest indicators of intersexual manipulation. [a]Not tested, $^{*}p < .01$, $p_{\text{close fit}} = .00$.

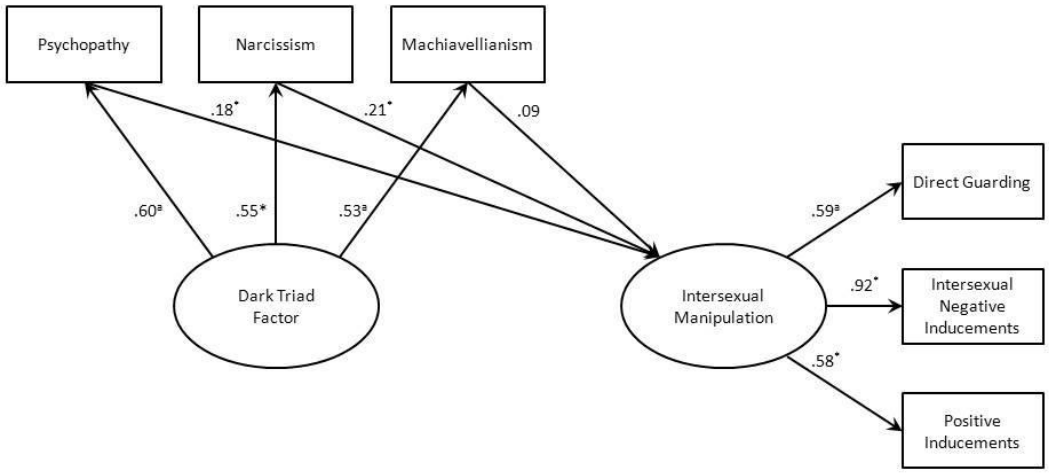

Figure 2: Unique contributions only from the three Dark Personality traits as manifest indicators of intersexual manipulation.
[a]Not tested, $^{*}p < .01$, $p_{\text{close fit}} = .00$.

paths to be the highest and lowest respectively. The second model estimated the unique contribution from the Dark Triad latent trait (Figure 2). The third model evaluated the contribution from the Dark Triad factor only (Figure 3).

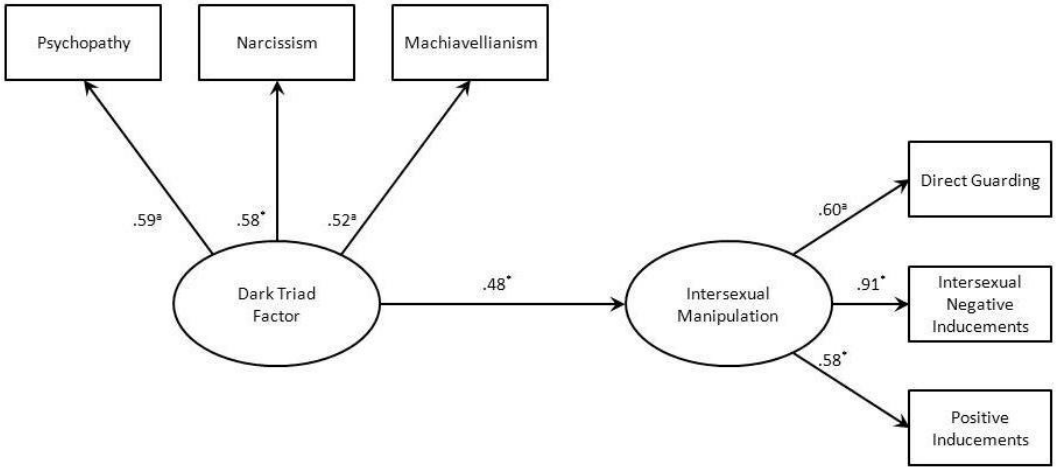

Figure 3: Common contribution only from the Dark Triad Factor of intersexual manipulation. [a]Not tested,[*]$p < .01$, $p_{\text{close fit}} = .00$.

The results from the nested model comparisons for intersexual manipulation (Table 1) indicate the three-factor Dark Triad model fit the data slightly better than the single factor model.

Table 1
Nested model comparisons for common and unique contributions of the Dark Triad factor and Dark Personality traits on intersexual manipulation

Model	χ^2	*df*	*NFI*	*CFI*	*RMSEA* (90% CI)	$\Delta\chi^2$
1. Observed & latent predictors	50.36*	6	.88	.89	.14 (.10, .17)	
2. Observed predictors only	50.36*	7	.88	.89	.14 (.10, .17)	
Difference between Model 2 and Model 1						0
3. Latent predictors only	51.56*	9	.88	.89	.12 (.09, .15)	
Difference between Model 3 and Model 1						1.20

* $p < .01$
Note: NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation

Intrasexual selection. The same procedure was used to evaluate the contributions of the full model and unique contributions of the Dark Triad measures (Figures 4-6). Equality constraints were also used for public signs of possession and intrasexual negative inducements.

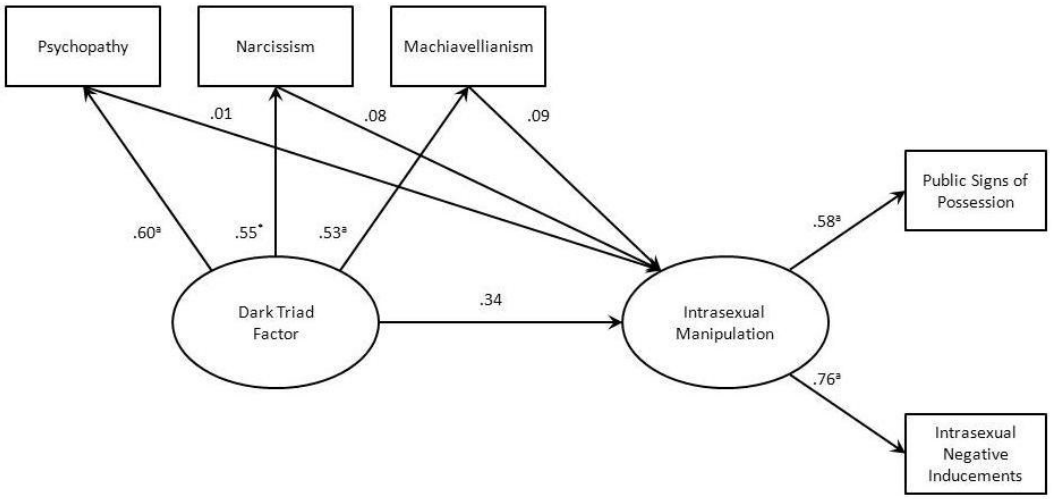

Figure 4: Common contribution from a latent Dark Triad factor plus the unique contributions from the three Dark Personality traits as manifest indicators of intrasexual manipulation. [a]Not tested, $^{*}p < .01$, $p_{\text{close fit}} = .001$.

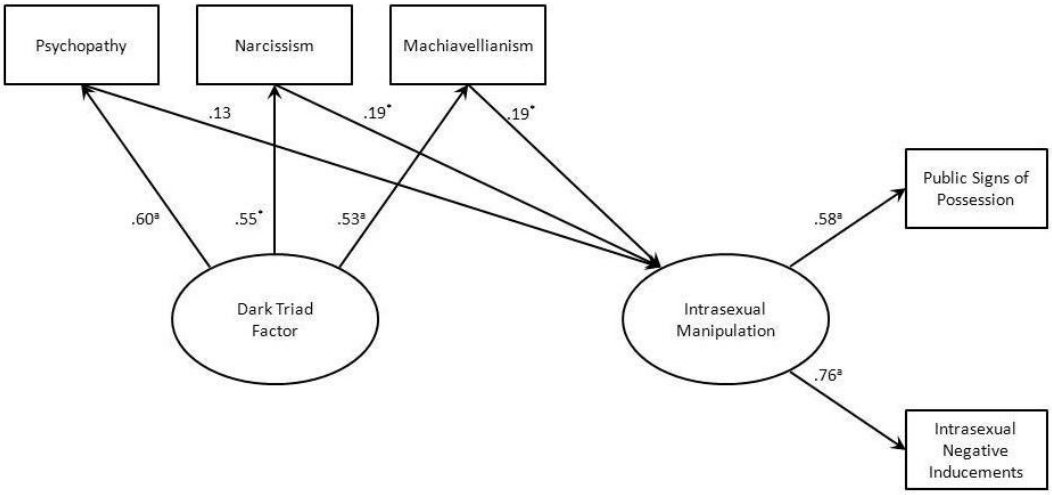

Figure 5*:* Unique contributions only from the three Dark Personality traits as manifest indicators of intrasexual manipulation. [a]Not tested, $^{*}p < .01$, $p_{\text{close fit}} = .00$.

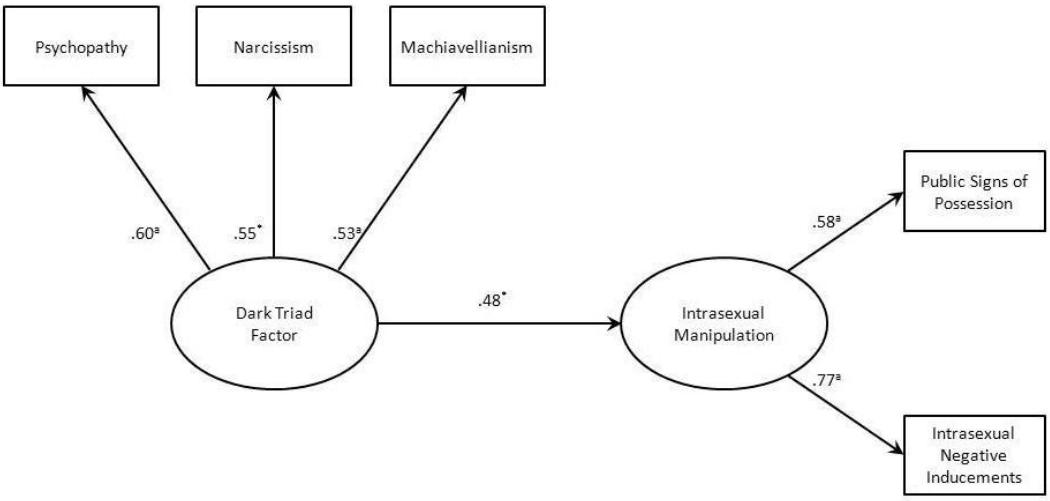

Figure 6: Common contribution only from the Dark Triad Factor of intrasexual manipulation. [a]Not tested,[*]$p < .01$, $p_{\text{close fit}} = .00$.

As with intersexual manipulation, the results for intrasexual manipulation also indicated a slightly better fit using the three-factor Dark Triad model. The results from this nested comparison are presented in Table 2.

Table 2
Nested model comparisons for common and unique contributions of the Dark Triad factor and Dark Personality traits on intrasexual manipulation

Model	χ^2	*df*	*NFI*	*CFI*	*RMSEA* (90% CI)	$\Delta\chi^2$
4. Observed & latent predictors	56.70*	4	.76	.77	.20 (.15, .25)	
5. Observed predictors only	56.70*	3	.76	.77	.20 (.15, .25)	
Difference between Model 5 and Model 4						0
6. Latent predictors only	57.39*	6	.76	.77	.20 (.12, .20)	
Difference between Model 6 and Model 4						0.69

* $p < .01$
Note: NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation

In sum, the results indicate that the three Dark Triad measures make independent contributions to explaining variance in inter- and intrasexual manipulation that are not captured solely by a latent measure composed of the three Dark Triad measures. It seems to us that the lack of matching at the level of measurement may account for this effect. However, our lack of significant differences may be because intersexual and intrasexual manipulation, at the level we measured it is a mid-level trait. Greater conceptual distance may be needed to better test our predictions in the future. We report the correlation matrices in Appendix A and B.

Study 2: Sociosexuality

Next, we replicate prior work on the Dark Triad and sociosexuality (Jonason et al., 2009). Again, we compared relative fit using SEM. Because sociosexuality is itself a higher-order personality trait composed of lower order traits, we expect a common Dark Triad factor will fit the data better than a model that treats the Dark Triad as unique traits.

Method

Participants. Volunteers (N = 131, 69% female) were recruited by email and through an Australian University's Psychology Department to complete an online survey that informed them of the nature of the study, asked them demographic questions, and asked them to respond to the items described below. Again, only those who participated from different IP addresses were included. Upon completion, participants were thanked and debriefed.

Measures. The Dark Triad was measured using the NPI-16 (Ames, Rose, & Anderson, 2006), the Levenson Self-Report Psychopathy Scale (Levenson, Kiehl, & Fitzpatrick, 1995), and the MACH-IV (Christie & Geis, 1970). Items on these scales were aggregated into corresponding indexes (Cronbach's α = .65, .87, .77 respectively).

Sociosexual orientation (SOI; Simpson & Gangestad, 1991) was assessed, measuring both sociosexual attitudes and behaviors (Webster & Bryan, 2007). Items were standardized before computing scores of SOI behaviors (α = .41) and SOI attitudes (α = .74) separately. Unfortunately, we found low levels of internal consistency; however, this was to be expected given so few items (Kline, 2000).

Results and Discussion

Model testing. We repeated the model testing we did in Study 1 (see Figures 7 to 9). Equality constraints were added to narcissism and Machiavellianism, and sociosexual attitudes and behaviors, with the path

from Machiavellianism to sociosexual orientation set to 1.0 for the combine and unique contributions models.

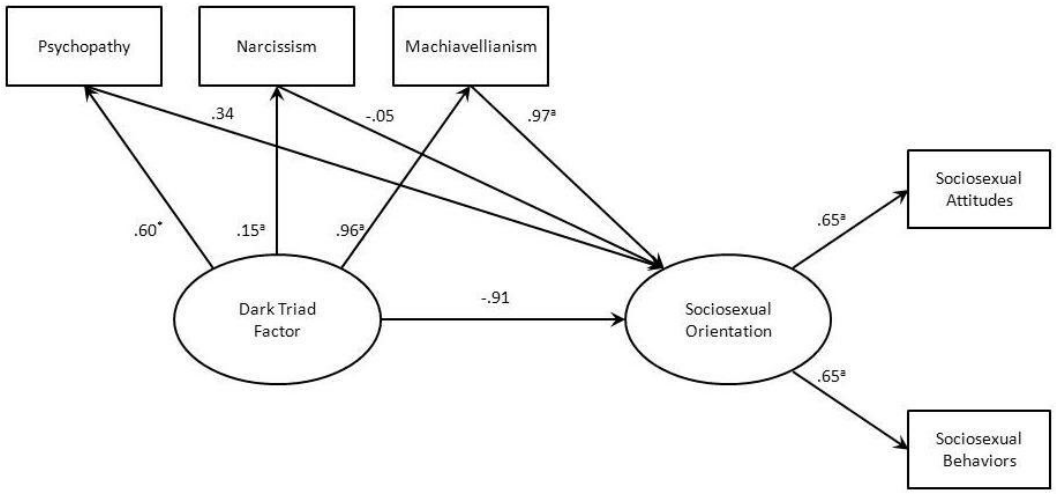

Figure 7: Common contribution from a latent Dark Triad factor plus the unique contributions from the three Dark Personality traits as manifest indicators of sociosexual orientation. [a]Not tested. $^{*}p < .01$, $p_{\text{close fit}} = .00$.

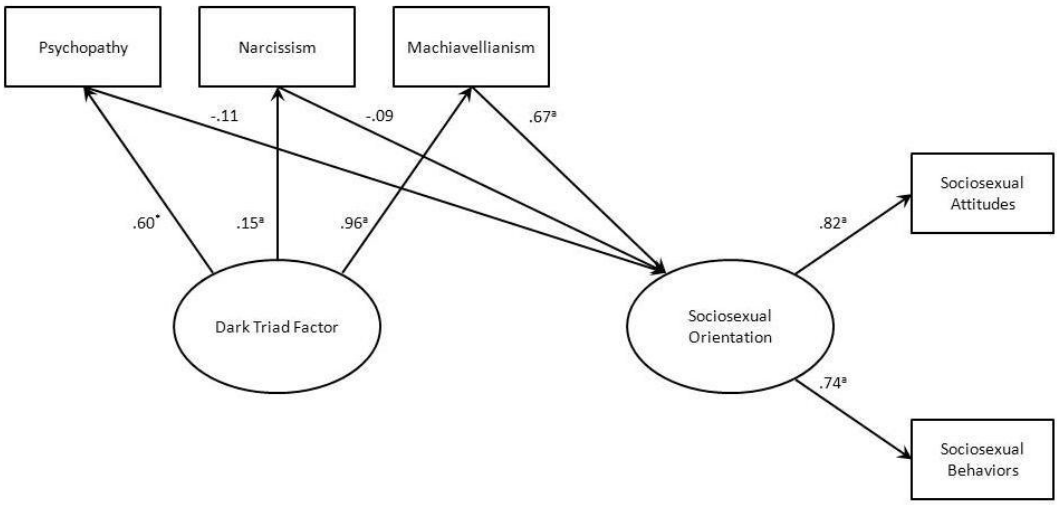

Figure 8: Unique contributions only from the three Dark Personality traits as manifest indicators of sociosexual orientation. [a]Not tested, $^{*}p < .01$, $p_{\text{close fit}} = .00$.

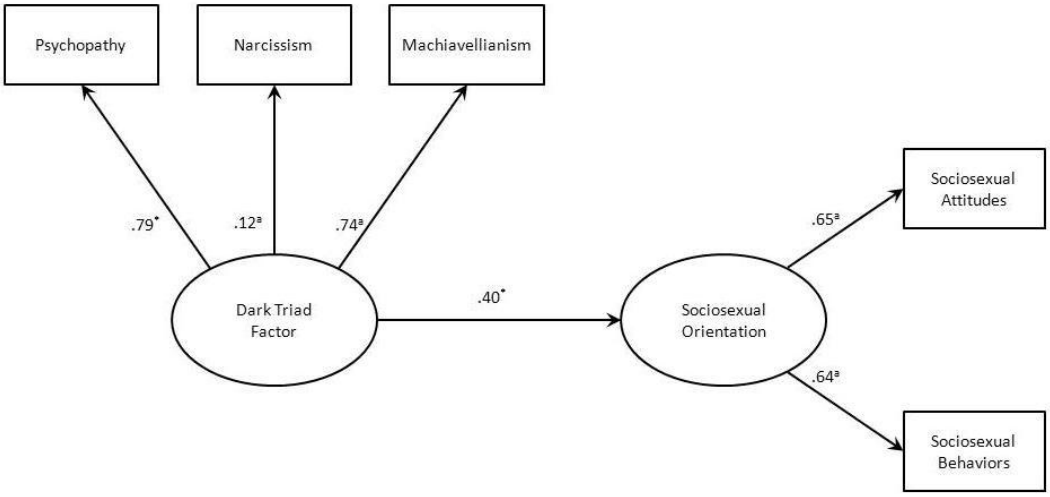

Figure 9: Common contribution only from the Dark Triad Factor of sociosexual orientation. [a]Not tested. *$p < .01$, $p_{close\ fit} = .001$.

In contrast to the results in Study 1, the latent Dark Triad was superior to the measured Dark Triad model in accounting for variance in sociosexuality (see Table 3). This suggests the three Dark Triad measures are best correlated with sociosexuality through a latent factor rather than in an independent fashion. These results are consistent with our contention that higher-order personality traits correlate more strongly with the latent factor than lower-order factors. We report a correlation matrix in Appendix C.

Table 3
Nested model comparisons for common and unique contributions of the Dark Triad factor and Dark Personality traits on sociosexual orientation

Model	χ^2	*df*	*NFI*	*CFI*	*RMSEA* (90% CI)	$\Delta\chi^2$
7. Observed & latent predictors	29.49*	4	.78	.79	.21 (.14, .29)	
8. Observed predictors only	58.10*	5	.53	.53	.29 (.22, .35)	
Difference between Model 8 and Model 7						28.61
9. Latent predictors only	28.69*	6	.77	.80	.17 (.11, .24)	
Difference between Model 9 and Model 7						-0.81

*$p < .01$
Note: NFI = normed fit index; CFI = comparative fit index; RMSEA = root-mean-square error of approximation

General Discussion

In order to provide some insight as to how measurement level affects correlations between the Dark Triad traits and other traits, we proposed and found that superior models are provided when the factors match on their measurement level. Tentatively, our moderated Structural Equation Models may also conform to our predictions. That is, when assessing one higher-order trait (i.e., sociosexuality), the common factor of the Dark Triad fit the data better, but when assessing mid-level traits (i.e., mate retention), the individual traits were superior (albeit slightly). We would argue this has implications for measurement in the social sciences but also in the debate among Dark Triad researchers as two the best way to measure the Dark Triad.

Personality traits tend to reflect latent dispositions or behavioral regularities. When they represent latent dispositions, they tend to tap into people's deeper dispositional approaches to life. Both Sociosexuality and the Dark Triad represent higher-order personality traits that are reflective of midlevel dispositions. For instance, the Dark Triad creates a short-term psychology (e.g., Jonason et al., 2010a) at the latent, higher-order level that is partially reflected in midlevel traits like psychopathy. Lower-order traits that reflect behavioral regularities like tactical styles for mate-retention likely correlate with higher-order traits as a byproduct of tapping into related psychologies (and error in measurement). However, our results suggest researchers should be weary of correlating variables at differing levels of measurement. Although this consideration may not be particularly relevant to exploratory and psychometric studies, researchers doing theoretical studies should take caution in over-interpreting correlations among variables that do not match in their levels of measurement.

Effectively, there are two main schools of thought about the Dark Triad. Both schools treat the three as separate-yet-related traits but disagree on the utility of a single-latent factor. Work highlighting the divergent interpersonal outcomes suggests each trait is not related to the same aspects of the Big Five, aggression, and strategic-mindedness (Jones & Paulhus, 2010; Paulhus & Williams, 2002). The divergent nature of the Dark Triad is not contested by the other group; the other group simply takes a hierarchical approach to the Dark Triad, suggesting they may conjointly predict variability in human behavior and it is this latent disposition that is more likely to have been selected by evolutionary forces rather than selection tailoring the three traits independently (Jonason et al., 2009; Jonason & Webster, 2010). Prior work confirms this latter contention with sexual coercion (Sisco, Gladden, & Figueredo, 2010) and the present study further tests and confirms this assertion. We add,

however, that the reason this discrepancy occurs has to do with the level of measurement in the variables under consideration.

There were at least four noteworthy limitations. First, the sample size in Study 2 was on the small side; ideally one wants a sample of at least 200 for SEM because samples of that size tend to show less sampling error (Bollen & Long, 1993). In Study 1, because we reanalyzed data that was already published it would be in error to collect more data and add this to the old dataset. In the case of Study 2, data was collected as part of the fourth author's Master's thesis and is archival data at this point.

The second limitation—one that may be related to the first—is that narcissism, as measured by the 16-item NPI-16, was not related to sociosexuality, whereas the 40-item NPI has been shown to be related to sociosexuality (Jonason et al., 2009; Jonason & Webster, 2010). This lack of correlation may be because the NPI-16 taps the authority dimension of narcissism, which may not be related to mating orientations (Joshua Foster, 2010, personal communication). Indeed, the measures of narcissism and psychopathy used in Study 2 have rarely been used in Dark Triad research, and this may limit our ability to generalize across our studies. However, this may be a strength of this paper because we attempted to expand the research on the Dark Triad to include more measures of its three traits. Nevertheless, we were able to replicate associations between an alternative measure of psychopathy along with the traditional measure of Machiavellianism and its correlation with sociosexuality. The correlation between narcissism and sociosexuality was weak, although it was in the expected direction.

Third, past research suggests men and women reliably differ on the Dark Triad traits (Jonason et al., 2009; Jonason & Webster, 2010). Given the small sample sizes any SEM tests moderated by the sex of the participant would likely suffer intolerable levels of standard error and therefore, any analyses done would not be trustworthy. Future research should ascertain if considering sex-specific models provide even better fit indices. We would predict that the better fits would be found in men at the higher-order level but no sex differences at lower-order levels.

Fourth, some of our outcome variables had low levels of internal consistency. In the case of sociosexual behaviors and intrasexual negative inducement, the Cronbach's alphas fell below both the traditional, restrictive cutoffs of .70 (Nunnally, 1978) and the more liberal standards of .50 (Schmitt, 1996). The remaining estimates returned acceptable-to-moderate rates of internal consistency (> .50; < .80). Not only should we expect such low alphas as a result of each scale being composed of so few items—because of the positive relationship between number of items and alpha (Carmines & Zeller, 1979)—but also because Cronbach's alpha assumes unidimensionality where it might not exist (Zinbarg, Revelle, Yovel, & Li, 2005). Alpha might be overly restrictive and provide

potentially biased estimates of internal consistency (Zinbarg, Yovel, Revelle, & McDonald, 2006). Nevertheless, further work is required to verify our hypothesis with more detailed, lengthy, and reliable personality measures. Despite these limitations, our findings were consistent with our predictions.

Although these studies only provide one test of our prediction, we believe that our results may generalize to other tests of higher- and lower-order personality traits. To date, most work on the Dark Triad has examined its relationships with lower-order constructs. For instance, correlating the Dark Triad with mate-poaching, mate-retention (Jonason et al., 2010b), and self-control (Jonason & Tost, 2010) has examined the relationship between the Dark Triad and behavioral regularities. We encourage future work examining the correlation between the Dark Triad and higher-order personality traits, by either using multiple indicators of latent dispositions such as work in Life History Theory (Figueredo et al., 2006), or by examining meta-traits such as Plasticity or Stability (DeYoung, 2006; DeYoung et al., 2002).

We investigated whether the three measured Dark Triad traits were better than one latent Dark Triad factor in predicting sociosexuality and mate-retention tactics. Like so many phenomena in psychology, the short answer is: "It depends." In this case, the answer depends on the level of the outcome variable. According to our findings, if the outcome variable is a mid- or lower-order trait, then three factors are better than one. If the outcome variable is higher-order, then one factor is better than three. In closing, we have offered a "level-matching model" for how to conceive of the structural relations among personality traits related to the Dark Triad.

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Appendix A
Correlations between the Dark Triad Traits, the Latent Dark Triad, and Intersexual Mate-retention

	1	2	3	4	5	6	7	8
1. Machiavellianism	–							
2. Psychopathy	.31**	–						
3. Narcissism	.08	.48**	–					
4. Dark Triad composite	.63**	.82**	.72**	–				
5. Intersexual mate-retention composite	.18**	.27**	.26**	.33**	–			
6. Direct guarding	.15**	.19**	.12*	.21**	.76**	–		
7. Intersexual negative inducements	.13*	.29**	.28**	.32**	.88**	.55**	–	
8. Positive inducements	.17**	.17**	.21**	.25**	.78**	.34**	.53**	–
M	2.57	2.11	17.34	0.01	2.09	1.69	2.10	2.49
SD	0.38	0.38	7.52	0.72	0.46	0.50	0.64	0.57

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

Appendix B
Correlations between the Dark Triad Traits, the Latent Dark Triad, and Intrasexual Mate-retention

	1	2	3	4	5	6	7
1. Machiavellianism	–						
2. Psychopathy	.31**	–					
3. Narcissism	.08	.48**	–				
4. Dark Triad composite	.63**	.82**	.72**	–			
5. Public signals of possession	.19**	.08	.06	.14*	–		
6. Intrasexual negative inducements	.16**	.27**	.25**	.31**	.43**	–	
7. Intrasexual mate-retention composite	.21**	.17**	.17**	.25**	.89**	.80**	–
M	2.57	2.11	17.34	0.01	2.39	1.58	1.99
SD	0.38	0.38	7.52	0.72	0.67	0.52	0.51

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

Appendix C
Correlations between the Dark Triad Traits, the Latent Dark Triad, and Sociosexuality

	1	2	3	4	5	6	7
1. Narcissism	–						
2. Machiavellianism	.31**	–					
3. Psychopathy	.38**	.57**	–				
4. Dark Triad composite	.72**	.80**	.83**	–			
5. Sociosexuality Index	.07	.27**	.24**	.25**	–		
6. Sociosexual Behaviors	.01	.01	.18*	.09	.67**	–	
7. Sociosexual Attitudes	.01	.33**	.24**	.29**	.93**	.42**	–
M	4.20	2.75	2.20	0.00	0.00	0.00	0.00
SD	2.76	0.43	0.47	0.78	0.59	0.68	0.70

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