# The Dark Tetrad and radicalization: personality profiles in young women

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Henri Chabrol, Jonathan Bronchain*, Clara Isabel Morgades Bamba, Patrick Raynal

Centre d'Etudes et de Recherches en Psychopathologie et Psychologie de la Santé, Université de Toulouse, France

* Corresponding author: Jonathan Bronchain, Laboratoire CERPPS, Université de Toulouse-Jean Jaurès, 5 allées Antonio Machado, 31058 Toulouse, France. Phone number: +33 561 22 52 90. Fax number: +33 561 25 70 93. E-mail: jonathan.bronchain@etu.univ-tlse2.fr

**Abstract**

Women's religious radicalization and the specific factors at play in this process remain largely understudied. Psychopathic, narcissistic, Machiavellian, and sadistic traits constitute the Dark Tetrad of personality, which has been shown to be associated with several antisocial tendencies. Concretely, it has been found that the Dark Tetrad traits predict radicalized cognitions and behaviors in women. The aim of this study was (a) to extract homogeneous groups of participants using cluster analysis based on Dark tetrad traits and (b) to examine whether clusters based on Dark tetrad traits differed in both predictors (perceived discrimination and religious involvement) and consequences (radicalized cognitions and behaviors) of radicalization. Sample included 643 French college women who completed self-report questionnaires. Psychopathic, narcissistic, Machiavellian, and sadistic traits were moderately correlated. The cluster analysis resulted in four groups: a Low Traits group, a Moderate Machiavellian group, a Narcissistic group, and a group high on sadistic, psychopathic and Machiavellian traits (17% of the sample), which was characterized by the highest levels of radicalized cognitions and behaviors. This study suggests that a significant minority of non-clinical college women is characterized by the presence of high levels of Dark Tetrad traits and is at risk of religious radicalization.

*Keywords*: Dark Tetrad; radicalization; college women; personality profiles

Adolescents and young adults have been identified as especially vulnerable to radicalization propaganda (Heinke & Persson, 2016). Religious radicalization of young women has become a growing concern as the role of women in international terrorism is much greater than previously thought (Eggert, 2015; Manrique et al., 2016; Perešin, 2015; Shapiro & Maras, 2018). Women's religious radicalization and the specific factors at play in this process remain largely understudied (Brown & Saeed, 2015; Pearson, 2016). Religious radicalization is the process by which individuals adopt an extremist belief system leading to accept, justify, promote, advocate or use violent means, including terrorism, toward individuals on the basis of their religious affiliation (Rink & Sharma, 2018). Radicalization of religious behavior has been presented as a complex process influenced by a combination of multiple factors which is still imperfectly known (Rahimullah, Larmar, & Abdalla, 2013; Soliman et al., 2016). Background factors predisposing engagement in the radicalization process are composed of socio-cultural factors, such as perceived discrimination and religious involvement (Precht, 2007), and psychological factors, in particular personality traits.

In a community sample of young adults, Soliman et al. (2016) evaluated an integrative model of radicalism including psychopathological, social and cognitive factors. They used a questionnaire assessing 14 personality disorders: 10 from Axis II of the DSM-IV-TR (antisocial, histrionic, narcissistic, obsessional, borderline, paranoid, schizoid, schizotypal, dependent, and avoidant), 2 from Appendix B of the DSM-IV-TR (depressive and passive-aggressive), and two from the DSM-III-R (sadistic and self-defeating). All personality disorder traits significantly contributed to a psychopathological factor which was the main predictor of radicalism. McGregor, Hayes, and Prentice (2015) also proposed, but not yet empirically tested a multifactor model of aggressive religious radicalization including an oppositional personality traits factor in which they emphasized the role of dark personality traits. The Dark Tetrad is composed four socially aversive personality traits (narcissistic,

Machiavellian, psychopathic, and sadistic traits) correlated with each other and sharing a common core of callousness (Buckels, Jones, & Paulhus, 2013; Chabrol, van Leeuwen, Rodgers, & Séjourné, 2009; Paulhus, 2014). Based on a review of social consequences of Dark Tetrad traits, McGregor et al. postulated that Dark Tetrad traits, even in the normal range, may predispose people to aggressive religious radicalization. Each Dark Tetrad traits could contribute to the radicalization process. Radicalized beliefs and behaviors could be facilitated by narcissistic traits, mainly through feelings of being treated unjustly, intolerance to frustration, hostile reactions to perceived provocation and discrimination, depreciation and dehumanization of the victims. Radicalization could be also promoted by Machiavellian traits, through detachment from conventional morality and search for power, control, and authority. Psychopathic traits, in particular impulsivity, low empathy and callous disregard of others, and sadistic traits, through the feeling of pleasure derived from dominance and suffering of others could also contribute to radicalization. In addition, one may assume that Dark Tetrad traits could interact with each other's to reinforce the radicalization process.

However, only one study explored the influence of Dark Tetrad traits on the religious radicalization of young women (Morgades-Bamba, Raynal, & Chabrol, 2018). This study found that narcissism contributed directly to both radicalized cognitions and behaviors, while sadism contributed directly to radicalized cognitions. Moreover, Machiavellianism contributed directly to radicalized cognitions and indirectly to radicalization through dogmatism, and psychopathy contributed indirectly to radicalization through dogmatism.

The aim of the present study was to explore the influence of Dark Tetrad traits on the religious radicalization of college women. While it has been reported a high prevalence of higher education among Western extremist individuals and groups involved in terrorist attacks in the UK and USA, university has been identified as "a significant meeting point, trigger or birthplace of radicalization" and radicalization has become a growing problem in universities

(Brown & Saeed, 2015). Among college students, women might be at high risk of radicalization, considering that they may be more exposed and more vulnerable to radical influences and because they use online social networks more than men and are more exposed to online radical propaganda (Loken & Zelenz, 2018). In addition, they may be targeted by female-focused radical propaganda (Murphy, Oliver, & Maples, 2018; Perešin, 2015).

The aims of this study were (a) to extract homogeneous groups of participants using cluster analysis based on Dark tetrad traits and (b) to examine whether clusters based on Dark tetrad traits differed in both predictors (perceived discrimination and religious involvement) and consequences (radicalized cognitions and behaviors) of radicalization among a sample of college women. We expected that the cluster characterized by higher levels of Dark Tetrad traits would be associated with higher levels of radicalized cognitions and behaviors.

**Method**

**Participants**

The data were collected through an online survey that was distributed to college women from different French universities. The link was shared on social networks in groups specifically dedicated to students. Informed consent was obtained from all participants and they were informed that their answers to the questionnaires would remain confidential. No compensation was offered to participate in the study. Participants were provided with the possibility to contact the authors via email for further information or to receive referral. The study followed the guidelines of the Helsinki declaration and ethical issues of the current research were explored at a research meeting. The study sample included 643 college women aged between 18 and 29 ($M = 20.38$; $SD = 1.96$).

**Measures**

**Dark Tetrad Personality Traits.**

Psychopathic traits were assessed using the French version of the Youth Psychopathic traits Inventory (Andershed, Hodgins, & Tengstrom, 2007; D'Acremont, Van Der Linden, Axelson, Flykt, & Vonèche, 2002). This scale, developed for adolescents, was shown to be a valid measure of psychopathic traits among young adults (Campbell, Doucette, & French, 2009). We used only the 15-item Affective subscale measuring callous-unemotional traits (e.g., "I have the ability not to feel guilt and regret about things that I think other people would feel guilty about") which is the core feature of psychopathic traits. Items are rated on a 5-point scale (from "does not apply at all" to "apply very well").

Narcissistic traits were measured using the French version (Chabrol et al., 2015) of the Narcissistic Personality Inventory which was designed to measure narcissism in nonclinical populations (Ames, Rose, & Anderson, 2006). It contains 16 pairs of items, each consisting of two conflicting proposals between which the participant must choose (e.g., "I like to be the center of the attention" vs. "I prefer to blend in with the crowd").

Machiavellian traits were assessed using the French version of the 20-item self-report Machiavellianism Inventory (Christie & Geis, 1970). An item example is: "It is safest to assume that all people have a vicious streak and it will come out when they are given a choice"). Items are rated on a 7-point scale (strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, strongly agree).

Sadistic traits were measured using the Short Sadistic Impulse Scale, developed by O'Meara, Davies, and Hammond (2011), an 11-item self-report inventory relating to hurting behaviors or attitudes (e.g., "I enjoy seeing people hurt"). The measure is scored on a 4-point scale (1 = strongly disagree, 4 = strongly agree).

**Sociocultural Variables**

Perceived cultural discrimination was measured using the French version of the Social, Attitudinal, Familial, and Environmental acculturative stress scale (SAFE; Hovey & King,

1996; van Leeuwen, Rodgers, Bui, Pirlot, & Chabrol, 2012). The SAFE measures perceived

cultural discrimination among people confronted with negative attitudes towards their

heritage culture whether it be immigrant or host culture. The 10 items (e.g., "I feel

uncomfortable when others make jokes about my heritage culture") are rated on a 5-point

scale (1 = strongly disagree, 5 = strongly agree).

Religious involvement was measured using the Duke University Religion Index

(DUREL; Koenig and Büssing, 2010), a five-item scale which appraises the three dimensions

of religiosity: ORA (organizational religious activity: "How often do you attend church or

other religious meetings?"), NORA (non-organizational religious activity: "How often do you

spend time in private religious activities, such as prayer?") and IR (intrinsic religiosity,

assessing the degree of personal religious commitment, e.g., "My religious beliefs are what

really lie behind my whole approach to life"). Items were rated on a 5-point Likert scale.

### Radicalized Cognitions and Behaviors

The attitude regarding radicalized behaviors was measured using the questionnaire of

acceptability of radicalized religious behaviors (Amjad & Wood, 2009). It is composed of 11

items (e.g., "What do you think about damaging the belongings of people of another religion

than yours?"). Responses are rated on a 5-point Likert scale (0 = absolutely the wrong thing to

do, 1 = somewhat wrong, 2 = I am not sure, 3 = somewhat right, 4 = absolutely right).

A scale measuring everyday radicalized behaviors was adapted from the questionnaire

of acceptability of radicalized religious behaviors (Amjad & Wood, 2009). It contains 11

items, each corresponding to a minor radicalized behavior (e.g., "Cursing in prayers people of

another religious than yours and praying for God's wrath against them"). Participants were

asked to report how often in the past year they had each behavior. Responses were also rated

as follows: 0 = never, 1 = once, 2 = twice, 3 = three times, 4 = four times, 5 = at least 5 times.

The scales measuring radicalization were translated using a standard translation/back-

translation procedure. For all scales used in this study, a high score indicates an elevated level of the respective variable.

## Statistical Analyses

Cluster analysis was used to identify homogenous groupings of participants based on Dark Tetrad traits converted to z-scores. It was conducted with the *Generalized Cluster Analysis* module of STATISTICA 10 which combines the *k*-means clustering technique with *v*-fold cross-validation method in order to automatically determine the best number of clusters from the data. Once cluster group membership had been established for each participant, the groups were then compared by their mean scores on each of the psychopathological scales through a series of one-way analyses of variance with the psychopathological variables as dependent variables and cluster groupings as independent variable. Tukey post hoc tests were conducted to determine which cluster groups were statistically different on each scale. External validation of the cluster solution examined whether there were significant differences between cluster on radicalized cognitions and behaviors and on the other psychopathological variables.

## Results

Psychopathic, narcissistic, Machiavellian and sadistic traits were moderately correlated, with Pearson's r ranging from .23 to .46 (Table 1).

The cluster analysis identified a four-cluster solution as the most suitable (Figure 1). It consisted in (a) a first group that had high levels of narcissistic traits and had moderate levels of all other traits, which was termed the Narcissistic cluster ($n = 128$ [20%]);  (b) a second group that had low levels of all traits, which was named the Low Traits cluster ($n = 196$ [30%]); (c) a third group that had moderate levels of Machiavellian traits and low levels of the other three traits, which was termed the Moderate Machiavellian cluster ($n = 213$ [33%]); and (d) a fourth group that had the highest levels of sadistic, psychopathic and Machiavellian

traits, and moderate level of narcissistic traits. This fourth cluster was named the sadistic,

psychopathic and Machiavellian (SPM) cluster *(n = 106 [17%])*.

A discriminant analysis showed clear discrimination between the four clusters, Wilks'

$\lambda = .114$, *p* < .001, approximate *F*(12, 1682) = 177.9, with 94.1% of the original grouped

cases correctly classified.

Group differences between the clusters were tested using analyses of variance. Table 2

shows the results of *F*-tests and Tukey's post-hoc tests comparing the four clusters.

All clusters differed significantly from each other on all Dark Tetrad traits (*p* <.0001)

with the exception of the Low traits and Moderate Machiavellian clusters which did not differ

significantly in levels of narcissism, and of the Narcissistic and Moderate Machiavellian

clusters which did not differ significantly in levels of Machiavellianism.

The SPM cluster had the highest levels of perceived discrimination, while the

Moderate Machiavellian and Narcissistic clusters had intermediate levels and the Low traits

cluster had low levels of all traits. Clusters did not significantly differ on religious

involvement. The SPM cluster had the highest levels of radicalized cognitions, and also the

highest levels of radicalized behaviors with the Narcissistic cluster which both significantly

differed from the two other clusters. Although the SPM cluster and the Narcissistic cluster did

not differ statistically on this variable, Cohen's *d* was 0.20, indicating a small effect size.

**Discussion**

The aim of this study was to identify a personality typology of young women based on

Dark Tetrad traits in a non-clinical sample of college students. Cluster analysis yielded four

groups: a Narcissistic group, a Moderate Machiavellian traits group, a Low Traits group, and

a group characterized by high levels of sadistic, psychopathic, and Machiavellian traits called

the SPM cluster. This result almost replicates those of the classification study conducted in a

sample of high school students by Chabrol et al. (2015), although the questionnaires assessing

Dark Tetrad traits and the classification method were different. This previous study found the same clusters with the exception that it extracted a Dark Tetrad cluster which was high on all four dark traits.

In the present study, the Narcissistic cluster and the Moderate Machiavellian cluster represented almost 50% of the sample. The size of the Narcissistic cluster may reflect the "Narcissistic epidemic" (Twenge & Campbell, 2009): narcissistic personality traits have increased among American college students over the generations reflecting cultural changes that may be worldwide (Twenge & Foster, 2010). The Moderate Machiavellian cluster may reflect a similar trend[1], as both narcissistic and Machiavellian traits have become socially desirable in societies over-emphasizing competitiveness, individualism and success (Chabrol et al., 2009) leading to the normalization of Narcissism and Machiavellianism that was emphasized by Schwartz (2017).

In the present study, the SPM cluster constituted 17% of the total sample. Although "Dark Tetrad" traits were moderately related in the total sample, cluster analysis revealed that these traits could co-occur in a significant proportion of young women. These results emphasize the interest of the person-centered approach and classification studies of the Dark Tetrad traits. The SPM cluster had the highest levels of radicalized cognitions and also the highest levels of radicalized behaviors with the Narcissistic cluster. Although the SPM cluster and the Narcissistic cluster did not differ statistically on radicalized behavior, effect size indicated a small difference.

The SPM cluster had the highest levels of perceived cultural discrimination which is the main psychosocial factor for radicalization. High perceived discrimination may partly

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[1] Compared to the results of Chabrol et al. (2009), female Machiavellianism Inventory mean scores have significantly increased in the present study (from $66.49 \pm 9.35$ to $71.38 \pm 12.60$, $p < .00001$).

reflect narcissistic hypersensitivity to situation perceived as insulting and narcissistic entitlement or the tendency to believe deserving a special treatment, which have both been linked to inter-group hostility, radicalization and terrorism (Du Bois, 2017; Golec de Zavala, Peker, Guerra, & Baran, 2016). Moreover, perceived discrimination may exacerbate Dark Tetrad traits: Psychopathic, Machiavellian, and sadistic traits may be self-perceived as legitimate responses to perceived discrimination, while Narcissism may result from a defensive overvaluation of one's own heritage culture. The SPM cluster had the highest levels of radicalization that contrasted with a level of religious involvement not significantly different from the other clusters. This result suggests that the intensity of religious involvement is not a risk factor for radicalization in the absence of Dark Tetrad traits.

The higher levels of radicalized cognitions and behavior displayed by the SPM cluster and the Narcissistic cluster suggest that the concurrent presence of Dark Tetrad traits might identify a group of college women at high risk of radicalization. All Dark Tetrad traits could contribute to radicalization. In a recent study in this population, it was shown that narcissism is the factor that contributes directly to both radicalized cognitions and behaviors, while sadism contributes directly to radicalized cognitions, Machiavellianism contributes directly to radicalized cognitions and indirectly to radicalization through dogmatism, and psychopathy contributes indirectly to radicalization through dogmatism (Morgades-Bamba et al., 2018). It is interesting to see now that, in an independent way, narcissism would be the most important dark factor for radicalization. If a young woman has a high level of narcissism and moderate levels of other dark traits, she would have almost the same risk for radicalized behavior than a woman who only has a high level of the other three dark traits but a moderate level of narcissism.  This may reflect the association, and the probable reciprocal reinforcement between narcissistic traits, the high prevalence of addictive use of social media by college women, and high exposure to female-focused radical propaganda which may be targeted for

prevention (Andreassen, Pallesen, & Griffiths, 2017; Murphy et al., 2018). Narcissistic traits -

such as entitlement and heightened susceptibility to perceived injustice and discrimination

which is a powerful driver for hostility and narcissistic rage, idealization of one's own

religion, depreciation of other religions and dehumanization of the perceived enemy - promote

the development of radicalized beliefs and behaviors which contribute to inflate the image of

oneself and the fame to others. Psychopathic traits may facilitate cognitive radicalization

through cognitive rigidity which has been attributed to psychopathy (Gawda, 2015) and

normative beliefs about aggression, which are a feature of the self-serving cognitions

associated to psychopathic traits (van Leeuwen, Rodgers, Gibbs, & Chabrol, 2014).

Machiavellianism has been significantly related to dogmatism (Steininger & Eisenberg, 1976)

which is a risk factor for the involvement in violent terrorism (Borum, 2014). Cognitive

radicalization prepares for radicalized behaviors. Amjad and Wood (2009) found that

normative beliefs about aggression against Jews were very strong predictors of whether

participants agreed to join an extremist group. Psychopathic traits facilitate the transition to

radicalized behavior through impulsivity and aggressiveness. Sadistic traits, which are

characterized by appetitive motivation to cruelty and pleasure to inflicting suffering, may also

contribute to the acting-out of radicalized cognitions as Schmeelk, Sylvers, and Lilienfeld

(2008) found that sadistic traits in an undergraduate sample were strongly positively

associated with trait measures of overt aggression. Moreover, prevention or deradicalization

efforts may be impeded by Dark tetrad features such as dogmatism and cognitive rigidity,

overconfidence in one's beliefs, devalorization of others, and callous disregard for others.

This study should be considered as exploratory and descriptive and has several

limitations. First, the results are data-driven and may be not generalizable outside French

college women samples. Second, an important limitation to the study is that ethnic origin and

religion were not measured for French law forbids to do it. However, this allowed studying

radicalization as a trans-religious phenomenon as evidenced by recent tragic events such as the Rohingya Muslims genocide or the Christchurch terrorist attack (e.g., Besley & Peters, 2019; Weber & Stanford, 2017). Third, although internet data collection methods using online completion of self-report questionnaires from self-selected samples are consistent with findings from traditional methods (Gosling, Vazire, Srivastava, & John, 2004), the possibility that participant self-selection may have biased the results cannot be excluded.

However, this study suggests that an identifiable minority of non-clinical young women presenting high levels of Dark Tetrad traits is at risk of radicalization. Given the major involvement of women in the functioning of extremist networks, it would be important to implement female-centric approaches that could be used to affect the influence of extremist organizations among youth (Manrique et al., 2016). In this context, personality sciences should provide the necessary information both in preventive and deradicalization interventions for college women, taking into account the dark personality traits often associated with the religious radicalization process. Dark Tetrad traits can thus be considered as obstacles and sources of resistance to both prevention and deradicalization efforts that must be adapted to the emotional, motivational and cognitive characteristics associated with these traits.

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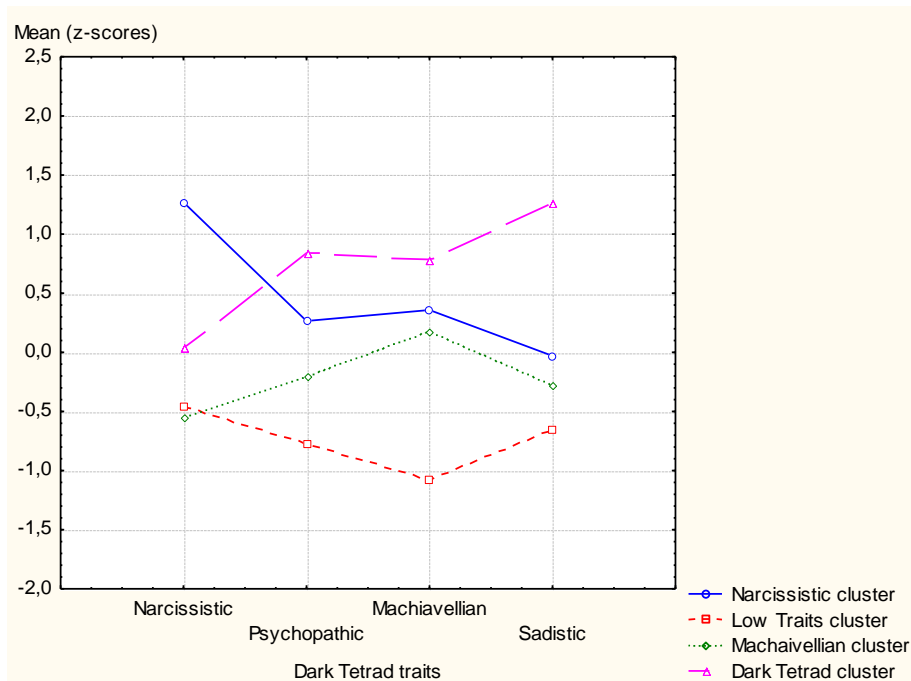hypothesis. *Frontiers in Psychology, 6* :1325. doi:10.3389/fpsyg.2015.01325

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**Table 1.** Correlations between the Dark Tetrad traits

| Variable | 1 | 2 | 3 |
|---|---|---|---|
| 1. Psychopathic traits | | | |
| 2. Machiavellian traits | .45* | | |
| 3. Narcissistic traits | .26* | .32* | |
| 4. Sadistic traits | .35* | .46* | .23* |

**Fig. 1.** Four-cluster solution based on Dark Tetrad traits scores indicated on the x-axis.

| | Sample | Range | α | | Cluster M (SD) | | |
|---|---|---|---|---|---|---|---|

**Table 2.** Typology of women college students based on Dark Tetrad traits. Cluster comparison using ANOVA and Tukey's post-hoc tests.

| Variables | N = 643 M (SD) | | | | N (n = 128) | LT (n = 196) | M (n = 213) | DT (n = 106) | F | Significant comparisons |
|---|---|---|---|---|---|---|---|---|---|---|
| Psychopathy | 25.94 (6.14) | 15-60 | .76 | | 28.42 (5.57) | 21.53 (4.11) | 25.38 (4.52) | 32.22 (6.01) | 122.72* | DT > N > M > LT |
| Narcissism | 3.63 (2.58) | 0-16 | .63 | | 7.21 (1.72) | 2.56 (1.91) | 2.31 (1.39) | 3.91 (2.21) | 238.44* | N > DT > LT, M |
| Machiavellianism | 71.38 (12.60) | 20-140 | .73 | | 77.05 (11.28) | 57.96 (6.83) | 74.69 (6.95) | 82.74 (10.23) | 253.69* | DT > N, M > LT |
| Sadism | 16.12 (4.13) | 11-44 | .70 | | 16.39 (2.87) | 13.50 (2.43) | 15.26 (2.41) | 22.37 (4.22) | 227.31* | DT > N > M > LT |
| Cultural discrimination | 17.82 (6.61) | 10-50 | .80 | | 18.87 (7.03) | 16.65 (6.39) | 17.15 (6.09) | 20.04 (6.84) | 8.09* | DT > M, LT N > LT |
| Religious involvement | 8.66 (5.19) | 5-25 | .91 | | 7.93 (4.32) | 9.65 (6.34) | 8.52 (4.71) | 7.99 (4.41) | 3.92 | LT, M, DT, N |
| Radicalized cognitions | 3.31 (5.75) | 0-44 | .81 | | 12.25 (3.16) | 10.92 (2.23) | 11.75 (3.01) | 14.29 (5.74) | 22.46* | DT >N, M N > LT |
| Radicalized behaviors | 12.02 (3.62) | 0-55 | .83 | | 4.45 (6.01) | 1.78 (4.08) | 2.77 (4.98) | 5.86 (8.05) | 14.70* | DT, N > M, LT |

N: Narcissistic cluster; LT: Low Traits cluster; M: Machiavellian cluster; DT: Dark Tetrad cluster.

* $p < .001$.