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IDENTIFYING SUBTYPES OF DYSFUNCTIONAL ANGER: A LATENT PROFILE ANALYSIS OF THE ANGER DISORDERS SCALE (ADS)

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IDENTIFYING SUBTYPES OF DYSFUNCTIONAL ANGER:
A LATENT PROFILE ANALYSIS OF THE ANGER DISORDERS SCALE (ADS)

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ABSTRACT

IDENTIFYING SUBTYPES OF DYSFUNCTIONAL ANGER:

A LATENT PROFILE ANALYSIS OF THE ANGER DISORDERS SCALE (ADS)

Katharine Romero

Although we see patients present to outpatient and inpatient settings with problematic anger as frequently as with anxiety and depression (Lachmund et al., 2005), we lack the diagnostic categories for anger that most affective disturbances have been granted by the Diagnostic and Statistical Manual of Mental Disorders (DSM-5: American Psychiatric Association, 2013). Anger is, instead, most often seen as an aspect of the pathology within a wide range of mood and personality disorders. DiGiuseppe and Tafrate (2007) proposed 13 subtypes of disturbed anger via a hierarchical cluster analysis of standardization data of the Anger Disorders Scale (ADS). While more recent attempts to verify these subtypes in adult and adolescent populations have generally supported the independence of aggressive behaviors from the affective experience of anger, they have been inconclusive about additional differences within these categories. This study aimed to clarify these subtypes using latent profile analysis of a sample of 1170 individuals meeting the criteria for dysfunctional anger. Results support an eight-profile solution with subtypes fitting into four categories: (1) Persistent Mild Anger Pathology, (2) Anger-Regulation Expression Disorder, Primarily Expressive Type (3) ARED, Combined Type, and (4) Situational Anger. Results of the models are compared and discussed in the context of existing literature and considering potential clinical implications for individuals with dysfunctional anger.

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Introduction

Although many patients present to outpatient and inpatient settings with problematic anger as frequently as do patients with anxiety and depression (Lachmund et al., 2005), we lack diagnostic categories for anger disorders that most mood disturbances have gained from inclusion in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5: American Psychiatric Association, 2013). Anger is, instead, most often seen as an aspect of the pathology within a wide range of mood and personality disorders. However, the significant role of anger and aggression in both clinical presentation and prognosis of these disorders warrants further exploration. Because anger and aggression only appear as symptoms of other disorders, the field has overlooked the rich and complicated nature of anger by both clinicians and clinical research. Although the DSM-5 has been appropriately criticized for its tendency to limit and oversimplify complex and nuanced presentations, there is unquestionable importance in establishing clinically meaningful taxonomies. This is especially true when objective measures are used to assess the information we attempt to organize. This study aims to do just that by using the Anger Disorders Scale (ADS) to identify how differences in provocations, cognitions, motives, behaviors, and physiological experiences might represent distinct anger profiles.

Anger vs. Aggression

Anger as an emotional experience and aggression as the outward behavioral expression of that emotion have mainly become conflated. Therefore, it is necessary to differentiate the two before discussing anger as a clinical disorder. Anger has been most comprehensively defined as an emotional state composed of cognitive, phenomenological,

and behavioral variables that typically arise when threatened, challenged, or goals are blocked (Kassinove & Sukhodolsky, 1995; Spielberger, 1999). On the other hand, aggression is a behavioral action enacted with the intent to harm or injure a person with the expectation that the harm will occur (DiGiuseppe & Tafrate, 2007). While aggressive behavior is often associated with anger, it is merely one component of the experience of anger and, depending on the individual, may not play a prominent role.

Proposed Anger Subtypes

Some of the first work in further categorizing anger began in 1985 when Hecker and Lunde proposed a six-category model to differentiate anger subtypes based on their experience working with chronically angry cardiac patients. They theorized that dysfunctional anger could be grouped into uncontrolled, overcontrolled, and suppressed types, and each of these could be further differentiated as either impulsive or deliberate. This created a 3 X 2 factorial model of anger subtypes. Impulsive, uncontrolled anger most closely resembles the current DSM-5 category of IED in that these types experience reactive anger that quickly translates into violent or aggressive behavior. In contrast, the deliberate uncontrolled types are also reactive but act more purposefully. Someone who falls within the deliberate uncontrolled subtype will plan aggressive acts to avoid unnecessary negative consequences or even to be more successful in their attempt to harm another. As one may suspect, the overcontrolled types also experience intense feelings of anger, but that anger does not result in aggressive behavior. Hecker and Lunde proposed that a stable, overcontrolled type can manage their anger despite extreme situational stressors. They often choose to avoid or withdraw from particularly provoking scenarios rather than outwardly express their anger.

In contrast, while also highly inhibited, the unstable, overcontrolled type cannot control their anger in times of extreme emotional stress and will act aggressively under these circumstances. Lastly, the suppressed anger type has difficulty recognizing their anger in a way that analogous to alexithymia, or the difficulty in identifying and describing one's emotions (Lesser, 1981). It is important to note that Hecker and Lunde's use of suppression in this context is not how we commonly use the word, and it should be thought of as more akin to the psychological defense of repression. The suppressed subtype is further differentiated into either normal or psychotic individuals. While the normal suppressed type does not identify as angry, despite experiencing related forms of psychological distress, their sometimes inappropriate affect is still within the bounds of reality. A psychotic suppressed presentation, on the other hand, is an individual who has trouble recognizing their emotions as a direct result of their distorted reality. To date there have been no empirical attempts to validate Hecker and Lunde's subtypes.

Around the same time, Spielberger identified three important domains of anger expression (anger-in, anger-out, and anger-control) and was the first to label the difference between anger as a chronic and stable predisposition (trait anger) versus anger as a momentary emotional state (state anger). Spielberger also developed The State-Trait Anger Expression Inventory (STAXI; 1999) as the first tool to measure these different experiences of anger. Someone scoring high on "anger-out" frequently engages in outward expressions of anger, someone high on "anger-in" often suppresses their anger or directs anger towards themselves, and someone scoring high on "anger-control" can restrain or control their anger expression. The STAXI remains one of the primary measures of anger today, and its factor structure has been empirically validated with a range of clinical and

non-clinical populations (Deffenbacher et al., 1996; Foley et al., 2002; Dear, Watt, & Dockerill, 2003). In addition, studies using the STAXI to measure anger have verified the heterogeneous nature of anger expression in intimate partner violence perpetrators (Eckhardt, Samper, & Murphy, 2008), individuals diagnosed with social anxiety disorder (Erwin et al., 2003), and clinically normal populations (Han et al., 2015). However, the use of the STAXI to determine anger subtypes in a more varied clinical population has not been attempted.

Eckhardt and Deffenbacher (1995) theorized another dimension to evaluate anger based on their clinical experience working with angry individuals. They recognized that some individuals experience problematic anger across many situations, while others react to specific triggers. For instance, someone who has "road rage" and has bursts of extreme physiological arousal with verbally aggressive behaviors when driving but has average amounts of trait-anger and does not act aggressively in any other context. Diagnostically, this is most like how we distinguish generalized anxiety disorder from a specific phobia. They proposed four disorders: situational anger disorder with aggression, situational anger disorder without aggression, generalized anger disorder with aggression, and generalized anger disorder without aggression. There has been some support for the importance of separating anger from aggression and situational from generalized anger. However, these subtypes have not been empirically validated otherwise.

The Anger Disorders Scale

In recognition of the lack of assessment tools for anger in a clinical population, DiGiuseppe & Tafrate developed The Anger Disorders Scale (ADS; 2004). They based their items on a combination of previous research on the various dimensions of anger while

expanding the definition of aggression beyond verbal or physical aggression and including items to measure the cognitive experience of anger and the motivational aims of anger. DiGiuseppe and Tafrate (2007) performed a hierarchical cluster analysis of participants from a range of both clinical and non-clinical settings. Participants were included in the analysis if they scored at the 90th or higher percentile on ADS total score on vengeance, anger-in, or verbal expression/reactivity. They identified 13 distinct profiles falling within three main subtypes. Eight of the profiles represented clinically significant subtypes with dysfunctional anger, where five were more representative of a subclinical anger experience and expression. The three main subtypes proposed were identified as (1) High Expression/Aggression without High Anger (2) Low-Moderate Expression/Aggression with High Anger and (3) High Expression/Aggression Behavior with High Anger. Within these main subtypes, clusters differed on measures of impulsivity, type of aggression, and duration of time where anger was seen as a problem. All clusters appear in Table 1,

As a result of this research, DiGiuseppe and Tafrate proposed an Anger-Regulation-Expression Disorder (ARED) to capture individuals with problematic anger that have either or both angry affect and aggressive behaviors. Within ARED, there are three subtypes: anger-in (subjective), anger-out (expressive), and a combined type. Individuals must experience problematic angry affect or aggressive behaviors for at least six months to meet the criteria, but anger intensity, episode length, and duration could vary. The full criteria for ARED appear in the Appendix.

Several studies have attempted to validate DiGiuseppe and Tate's proposed typology in different populations. In a study of 197 patients referred to an outpatient clinic specializing in anger treatment, researchers used patient self-report and structured

diagnostic interviewing to assign patients to the identified subtypes (Ahmed et al., 2012).

Too small of a proportion of patients were assigned to the Adjustment Reaction;

Deliberate Type; Indirect, Vengeful Type; and Overcontrolled Type to examine ($n \leq 7$).

However, posthoc analyses of those participants assigned to the remaining subtypes

(Impulsive Type, Mixed Type, Impulsive-Aggressive Type, and Suppressed-Organized

Type) showed expected group differences on measures of types of aggression, anger-in,

anger control, and hostility. Researchers did not find that the impulsive subtypes differed

significantly in impulsivity from the other groups, nor did the Impulsive-Aggressive

subtype show higher scores on a state anger measure. Kagedan (2013) used hierarchical

cluster analysis using the Anger Regulation and Expression Scale (ARES: DiGiuseppe &

Tafrate, 2011) in a sample of 1210 individuals ages 10-17 and found ten distinct subtypes

of anger, five of which showed clinically indicated anger dysfunction. The clinical

subtypes were identified as: Impulsive and Aggressive, Vengeful Bullying, Poly-

Aggressive, Vengeful and Overtly Aggressive, and Aroused and Rejected yet non-

Aggressive. Although these subtypes showed some similarities with those identified by

DiGiuseppe and Tafrate, 2007), they differed substantially in several key areas. All

except one subtype (Aroused and Rejected yet Non-Aggressive) showed elevated

impulsivity scores. This could speak to developmental

differences between adults and adolescents and indicates that if a child exhibits behavioral aggression, whether covert or overt, it is likely experienced as impulsive. Perhaps most interestingly, the subtype identified as Vengeful Bullying was the only subtype showing outward forms of anger expression that did not have elevated anger-in scores. The fact that we see most individuals endorsing experiencing their anger inwardly in addition to exhibiting outward aggression, while others do not report experiencing concurrent anger suppression with their aggressive behaviors, shows that significant differences in the experience of anger begin to emerge even at early ages.

In a plea to include dysfunctional anger in psychology courses, and to synthesize the work done on the classification of anger disorders, Martin (2019) proposed at least four anger disorders based primarily Eckhardt and Deffenbecher (1995) and DiGiuseppe and Tafrate's (2007) work: adjustment disorder with angry mood, situational anger disorder (with or without aggression), general anger disorder (with or without aggression), and anger-regulation expression disorder (ARED). Although it is encouraging that the value of an anger typology is recognized, this proposal failed to outline what would differentiate someone with general anger disorder from ARED. However, Martin's proposal's strength is its simplicity and parsimony. It might be less cumbersome to identify anger subtypes based on angry mood, the scope of anger triggers, and the presence of aggression before further discerning them on other domains. In recent years, additional efforts to identify subtypes of dysfunctional anger have primarily focused on anger expression within other disorders identified by the DSM-5 and are reviewed below.

Anger in DSM-5 Diagnoses

Intermittent Explosive Disorder (IED) is the only DSM-5 diagnosis given to adults for which aggression is the primary presenting problem. The criteria for IED fails to mention anger as an emotional experience at all. The two main criteria of IED are: (a) several discrete episodes of failure to resist aggressive impulses that result in serious assaultive acts or destruction of property; and (b) the degree of aggressiveness expressed during the episodes is grossly out of proportion to any precipitating psychosocial stressors (DSM-5). An individual diagnosed with IED is understood as having intense episodes of impulsive aggression that are disproportionate to the precipitating stressor(s). Historically, many studies examining IED fail to measure their subjects' trait anger in addition to their reported aggressive behaviors. Although more recent studies support that anger is highly correlated with the impulsive aggression seen in IED (Shorey et al., 2011), research has also shown significant heterogeneity in intensity and frequency of anger (Coccaro et al., 2014), as well as duration and latency of anger (Garza et al., 2011), and type of aggressive behavior(Fanning et al., 2019).

Other than IED, anger appears as a criterion in Oppositional Defiant Disorder (ODD), Disruptive Mood Dysregulation Disorder (DMDD), Borderline Personality Disorder (BPD), and Post-traumatic Stress Disorder (PTSD). ODD is a childhood mental health disorder characterized by a combination of angry/irritable mood, argumentative/defiant behavior, and vindictiveness. The severity of ODD ranges from mild to severe based on how many settings the symptoms are present. In a latent class analysis on a sample of over 3,000 Danish children ages 7-10, researchers found that anger expression could be broken down

into four subtypes (Wesselhoeft1 et al., 2018). Three of these subtypes were labeled as "low, moderate, and high anger," with differences in the level of anger but not in the type of anger experience, as proposed by the DSM-5. The fourth subtype was labeled as "angry/irritable." This subtype consisted of participants who scored high on measures of temper outbursts, irritability, and chronic anger, but low/medium on variables measuring passive-aggressive behaviors, blaming others, getting into fights with adults, and vindictiveness and spitefulness. This fourth subtype may represent the more recent DSM-5 diagnosis of DMDD.

Symptomatically, DMDD looks similar to ODD and was introduced into the DSM- 5 to address the overdiagnosis of bipolar disorder in children and adolescents (Higueras, 2021). Although chronic anger/irritability and temper outbursts also feature in DMDD, the reason behind the anger and aggression is theorized to result from poor self-regulation and the inability to control powerful emotions as opposed to the problems with authority and often-related vengefulness seen in ODD (Mayes et al., 2016; Riley et al., 2016). The significant overlap between these disorders has been documented (Freeman et al., 2016; Mayes et al., 2015), suggesting that it might be more appropriate to consider DMDD as a subtype of ODD.

Borderline Personality Disorder (BPD) could be the psychiatric disorder clinicians most often recognize as having problematic anger (Lachmund et al., 2005). An individual meets the criteria for BPD if they exhibit five or more symptoms relating to identity disturbances, emotional instability, suicidal behaviors, and impulsivity. "Inappropriate, intense anger or problems controlling anger" is listed among these symptoms (DSM-5). Although inappropriate anger is not required to meet BPD criteria, anger is a clinically significant feature in most BPD patients

(Ellison et al., 2016). Some research looking at anger reactions in normal versus BPD patients have shown that while the level of anger does not differ between subjects, BPD patients are more likely to experience the anger for a more extended period, as well as experience higher levels of rumination after the event (Martino et al., 2018). Factor analysis of BPD diagnostic criteria and latent class analysis of BPD patients have shown four subtypes of the disorder also differing on aggressiveness and anger measures: angry/aggressive, angry/mistrustful, poor identity/low anger, and prototypical (moderate anger, low aggression). While three subtypes had at least moderate anger involvement, cognitive elements of anger and subsequent aggressive behaviors differed.

PTSD has also been associated with high amounts of anger and aggression. Angry mood, irritability, and aggressive outbursts are listed as potential symptoms but not requirements to meet a PTSD diagnosis. Compared to control samples, a diagnosis of PTSD has been associated with more significant difficulties with anger than any other anxiety disorder (Hawkins & Cougle, 2011). While the specific association between PTSD and anger varied, problems with anger control, anger in, and anger out significantly differentiated PTSD from other disorders. Although individuals with PTSD sometimes act in outwardly aggressive ways, just as often, someone with PTSD who feels extreme anger suppress or hide their anger from others. Research has validated an "externalizing/internalizing" typology in males and females diagnosed with PTSD (Miller et al., 2004; Miller et al., 2007; Forbes et al., 2010). Although both subtypes have higher anger than the normal population, the "externalizing" type engages in more verbal hostility and physical aggression measures than the "internalizing" type despite similarly high scores on measures of

resentment, suspicion, irritability, and indirect hostility (Miller et al., 2003; Castillo et al., 2014).

In addition to those disorders that specifically list anger or aggression as typical in their presentation, anger has consistently emerged as a transdiagnostic process across most clinical disorders. The level of anger expression presents both as a maintaining factor for impaired functioning and a significant risk factor for treatment ineffectiveness and poorer prognosis in many clinical disorders (Cassiello-Robbins & Barlow, 2016; Erwin et al., 2003).

A latent class analysis of anger experience and expression in individuals with social anxiety disorder supported four distinct subtypes of anger: high anger/high suppression, moderate anger/low control, low anger/high control, and low anger/moderate control. Individuals with moderate or high anger in this population showed similar amounts of outwardly aggressive behaviors, and those with high anger were more likely to experience suppressing their anger as well. In addition, subtypes differed on how well they could adaptively cope with their feelings of anger. Pairwise comparisons also showed higher "vindictiveness" in high or moderate anger subtypes than in individuals with lower anger (Versella et al., 2016).

The recognition of the impact of anger on clinical presentation and prognosis, combined with the recent popularity of latent class analysis, has contributed to important findings on how anger differs between subjects with the same diagnosis. However, these studies have been limited in scope, and DiGiuseppe and Tafrate's proposed subtypes remain the most comprehensive suggested anger typology.

The Present Study

The present study aimed to empirically verify DiGiuseppe & Tafrate's proposed subtypes of Anger-Regulation-Expression Disorder (ARED) as well as adjustment disorder with angry mood through a latent class analysis of the Anger Disorders Scale. Although k-means and hierarchical clustering methods have long been used to elucidate diagnostic classifications and typologies, latent class analysis has emerged as a preferable statistical method for several reasons. Latent class and profile analysis uncover hidden groupings in data based on the probability of observed data given the proposed model. So, instead of finding similarities between cases based on an arbitrary distance measure, we can look at the most similar data distribution patterns using probability. Latent class analysis also allows for examining data that does "not fit" the model, and can compare models to determine the best solution. In addition, studies have shown that latent class analysis consistently shows lower misclassification rates than other clustering methods (Magidson & Vermut, 2002; Shreiber & Pekarik, 2001).

We hypothesized that nine classes or profiles would best fit the data, as differentiated in Table 3. These profiles were derived from DiGiuseppe and Tafrate's previous work and include a profile accounting for adjustment reaction with angry mood. Profile names differ slightly based on current theory and best conceptualize subtypes within the three greater ARED types (expressive, subjective, and combined). In addition, we hypothesized that profiles would not differ significantly between all ADS subscales, but profiles falling conceptually within the three ARED types would differ on measures of Anger-In and aggressive behaviors.

Method

Participants

The sample used in this study is the standardization sample collected by DiGiuseppe and Tafrate (2007) to validate the Anger Disorders Scale (2004). This sample included 3,024 total participants from the following settings; a normative sample (n = 1649, 54.5%), general psychotherapy outpatients (n = 635, 21%), psychotherapy outpatients seeking help for anger problems (n = 219, 7.3%), people seeking court-mandated anger management (n = 65, 2.1%), inmates from the Connecticut State Department of Correction (n = 162, 5.4%), individuals recruited for a study on "angry drivers" (n = 198, 6.7%) and incarcerated sex offenders (n = 29, 1%). Because this study aimed to identify subtypes of anger disorders and not of normal anger, only participants who scored in the moderate anger pathology range on the Anger Disorder Scale's higher-order factors scales of vengeance, anger-in, or verbal expression/reactivity were included (90th percentile or higher). Participants were included if they scored in the moderate range of one of these higher-order factors so that anger could be assessed in the absence of aggression and vice versa. One thousand one hundred seventy-four participants meet these criteria. The sample included individuals from the following settings: a normative sample (n = 463, 39.4%), general psychotherapy outpatients (n = 294, 25%), psychotherapy outpatients seeking help for anger problems (n = 149, 12.7%), people seeking court-mandated anger management (n = 25, 2.1%), inmates from the Connecticut State Department of Correction (n = 108, 9.2%), "angry drivers" (n = 117, 10%) and incarcerated sex offenders (n = 18, 1.5%). Notably, 191 subjects with theoretically more anger issues (angry outpatients, angry drivers study, court-mandated anger management outpatients) were not included in our sample

based on this cut-off. This could be because often clients who are referred to treatment for anger do not view their anger as a problem. This is true not only of the court-mandated sample, but those seeking outpatient treatment, who are often referred by friends, family, or spouses. Participants were ages 18 to 73 (M = 31.48, SD = 11.59), and 51.4% of participants were female. Sixty-four percent of the sample identified as White, 15.9% as Black, 1.4% as Asian, 13.1% as Hispanic, 1.3% as Indian American or First Nations, and 1.6% as other.

Measures

The Anger Disorders Scale

The ADS generates a total anger score, a total aggression score, and three higher-order factor scores, Anger-In, Expression/Reactivity, and Vengeance. The ADS has good convergent validity with the Speilberger (1988) State-Trait Anger Expression Inventory (STAXI) and the Buss and Perry (1992) Aggression Questionnaire (AQ) (DiGiuseppe & Tafrate, 2004).

The ADS is a 74-item inventory with five dimensions: (1) Provocations, (2) Arousal (3) Cognitions, (4) Motives, and (5) Behaviors. The Provocations dimension consists of a scope of anger and hurt/social rejection subscales. Scope of anger refers to the breadth of stimuli that elicit an anger response and acknowledges the generalized vs. specific nature of anger proposed by Eckhardt and Deffenbacher (1995). Hurt/social rejection measures a separate provocation due to the critical role of social rejection in eliciting anger episodes (Leary et al., 2003; Gilbert et al., 2006). The arousal domain measures sympathetic arousal experienced during anger episodes, the average length of anger episodes, and how long the respondent reports anger being a problem for them. The cognitions dimension includes

items measuring rumination, resentment, and suspiciousness. Motivations for anger are revenge, coercion (or the tendency to use anger to control others), and tension reduction. Tension Reduction refers to the motivation to alleviate feelings of sympathetic tension often occurring with anger. Lastly, the behaviors domain includes Passive, Relational, and Indirect Aggression in addition to Verbal and Physical Aggression.

There are three higher-order factor scores generated by the ADS derived from a principal axis factor analysis of all dimensions and variables: (1) Anger In, comprised of Hurt/Social Rejection, Episode Length, Suspiciousness, Resentment, Tension Reduction, and Rumination, (2) Expression/Reactivity comprised of: Scope of Anger, Provocations, Physiological Arousal, Duration of Anger Problems, Rumination, Impulsivity, Coercion, and Verbal Expression, and (3) Vengeance, comprised of revenge and coercion, as well as most of the aggressive behaviors.

Analysis

All statistical analyses were performed with Mplus Version 8.0 (Muthén & Muthén, 1998–2017) and SPSS Version 28.0. Latent profile analysis (LPA) was used to identify anger subtypes of participants scoring in the clinically significant range on any of the higher-order factors (Anger-In, Expression/Reactivity, and Vengeance) In the present LPA, 18 subscales of the ADS, treated as continuous variables, were entered as indicators of class membership. Mplus uses Full Information Maximum Likelihood estimation to handle missing data, and all participants were included in all analyses.

The LPA procedure began with a one-class unconditional model, and the number of classes was increased until the smallest class was less than approximately 5% of the total sample. Continuing to generate models past this point would indicate a strong

possibility of overfitting the data (Nylund et al., 2007). The Akaike Information Criterion(AIC; Akaike, 1987), Bayesian Information Criterion (BIC; Schwartz, 1978), and sample-size adjusted BIC (ABIC; Sclove, 1987) were examined, and the model thatproduced the smallest values on these indices was considered to have the best fit. Entropy, a diagnostic statistic indicating how accurately a model defines classes (Wang etal., 2017) was determined to be acceptable if above .8 (Celeux & Soromenho, 1996). The Vuong-Lo-Mendell Rubin (VLMR) adjusted likelihood ratio test was also examined to determine whether a model with k classes significantly improved model fit over a model with k-1 classes (Nylund et al., 2007). Finally, and most importantly, models were examined to evaluate clinical meaningfulness. As per the ADS manual and guidelines, T scores above 55 (75th percentile) represent elevated scores and may indicate mild anger pathology worthy of interpretation, and t-scores of 70 represent the most severe pathology. We used scores above 62, considered "moderate" anger pathology by the ADS(90th percentile) to differentiate classes. Anger-In scores were interpreted as meeting inclusion criteria if they were in the 86th percentile (T-score = 61). This decision was made after considering the generated profile solutions, as lowering the threshold increased the interpretability of the profiles based on theory. It is reasonable to conclude that individuals scoring in this range are experiencing a clinically meaningful amount of anger affect.

Results

Latent Profile Analysis

Table 3 presents LPA results for different class models. The BIC and AIC suggested that the nine-profile model had the best fit. Although the BIC is considered the most reliable fit statistic in LPA, the eight-profile model was selected due to the smallest class size being over 5%. The nine-profile model's smallest class size was 4.6% (n = 54). Picking a profile solution with a class size under 5% limits the replicability of these findings in smaller samples. According to the VLMR-LRT, every subsequent model improved over the previous model. In addition, all tested models had had adequate entropy (i.e., above the cutoff of .80) and average posterior probabilities all fell above 90%.

The following section describes the 8 clusters derived via the LPA. In each cluster description, there is a comparison with the DiGiuseppe and Tafrate subtypes and a demographic breakdown of cluster membership, including what sample the cluster was likely to be drawn.

Table 1: Latent Profile Analysis: Model Fit and Diagnostic criteria for Class Solutions 1-10

	Model Fit Criteria			
Models	LL	AIC	CAIC	BIC
1 Class	-83655.28	167382.57	167418.57	167565.02
2 Class	-80222.74	160617.48	160703.48	161053.34
3 Class	-78408.33	157088.66	157224.66	157777.93
4 Class	-77461.86	155295.73	155481.73	156238.41
5 Class	-76994.65	154461.30	154697.30	155657.39
6 Class	-75989.57	152551.13	152837.13	154000.63
7 Class	-75324.27	151320.53	151656.53	153023.44
8 Class	-75199.33	151170.66	151556.66	153126.98
9 Class	-74752.34	**150376.69**	150812.69	**152586.41**

	Diagnostic Criteria			
Models	Smallest class count (n)	Smallest class size (%)	Entropy	VLMR-LRT p-value
1 Class	----	----	----	----
2 Class	541	**46.10**	**0.9277**	**<.001**
3 Class	255	**21.72**	**0.9286**	**<.001**
4 Class	229	**19.51**	**0.9188**	**<.001**
5 Class	121	**10.31**	**0.9235**	**<.001**
6 Class	130	**11.07**	**0.9337**	**<.001**
7 Class	84	**7.16**	**0.9464**	**<.001**
8 Class	73	**6.22**	**0.9387**	0.0097
9 Class	54	4.60	**0.951**	**<.001**

Note: N = 1774. Bold text indicates model met fit criteria. LL = log-likelihood; AIC = Akaike information criterion; BIC = Bayesian information criterion; CAIC = consistent Akaike information criterion; VLMR-LRT–- Vuong-Lo-Mendell-Rubin adjusted likelihood ratio test

.

Figure 1: Profile 1, Anger-Regulation Expression Disorder,
Combined Type: Passive Aggressive (n = 220)
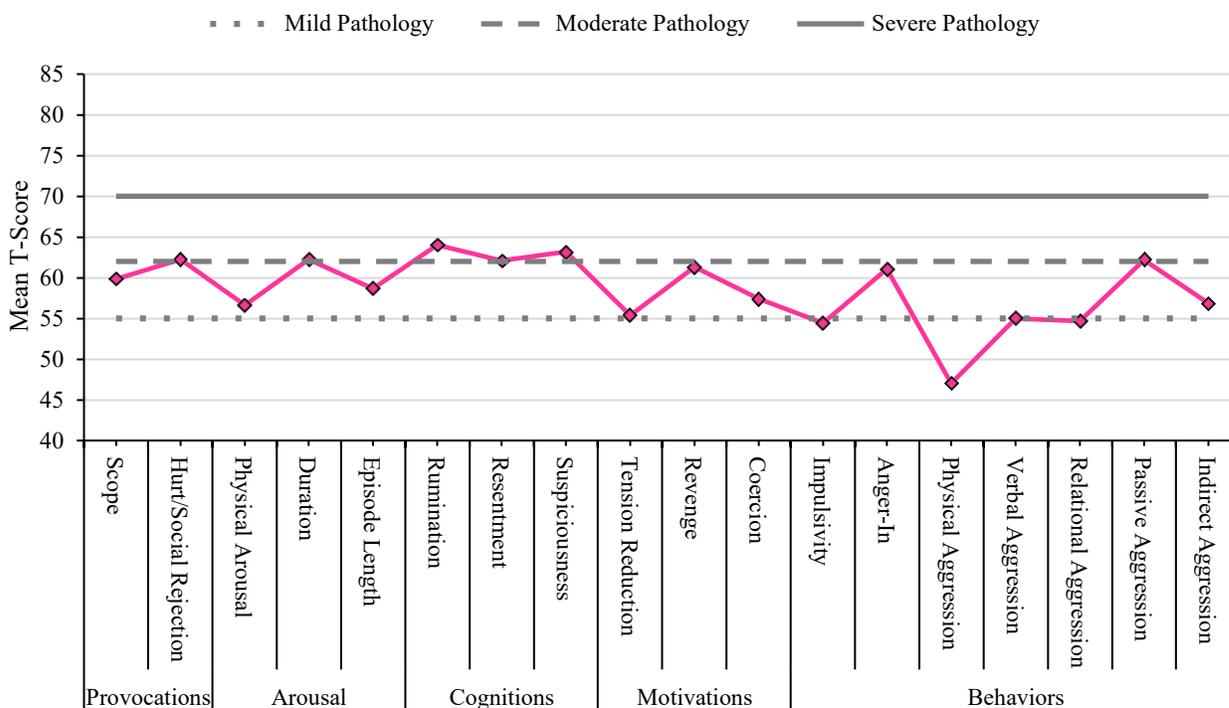
Profile 1: ARED, Combined Type: Passive Aggressive. Cluster 1 produced a profile with the highest T-scores in the Cognitions domain, showing consistent moderate anger pathology on Rumination (T = 64), Suspiciousness (T = 63), and Resentment (T = 62). Although individuals in this group did not score within the clinical range for most aggressive behaviors, they did show elevated Passive Aggression (T = 62). The motivation behind their anger appeared to be Revenge (T = 61). Although individuals in this cluster have anger provoked by various triggers (Scope, T = 60), they might be especially sensitive to Hurt/Social Rejection (T = 62). This group also showed patterns of suppressing or turning their anger inward (T = 61). This group was 59% female, and they were most likely to have been recruited from the general outpatient sample (36.7%), followed by the normal, standardization sample (32%). This cluster did not correspond perfectly to any of the

proposed clusters informed by DiGiuseppe and Tafrate (2004). However, it could be viewed as a less angry version of ARED, Combined Type w/ Indirect-Vengeful aggression. Both profiles show elevations on Revenge, Rumination, and Anger-In, but DiGiuseppe and Tafrate's cluster has higher than average trait anger, and acts in indirect and passive-aggressive ways. The highest percentage of both the general outpatient sample (27.6%) and correctional inmate sample (26.9%) were assigned to this profile.

Figure 2: Profile 2, Persistent Mild Anger Pathology with Rumination (n = 195)
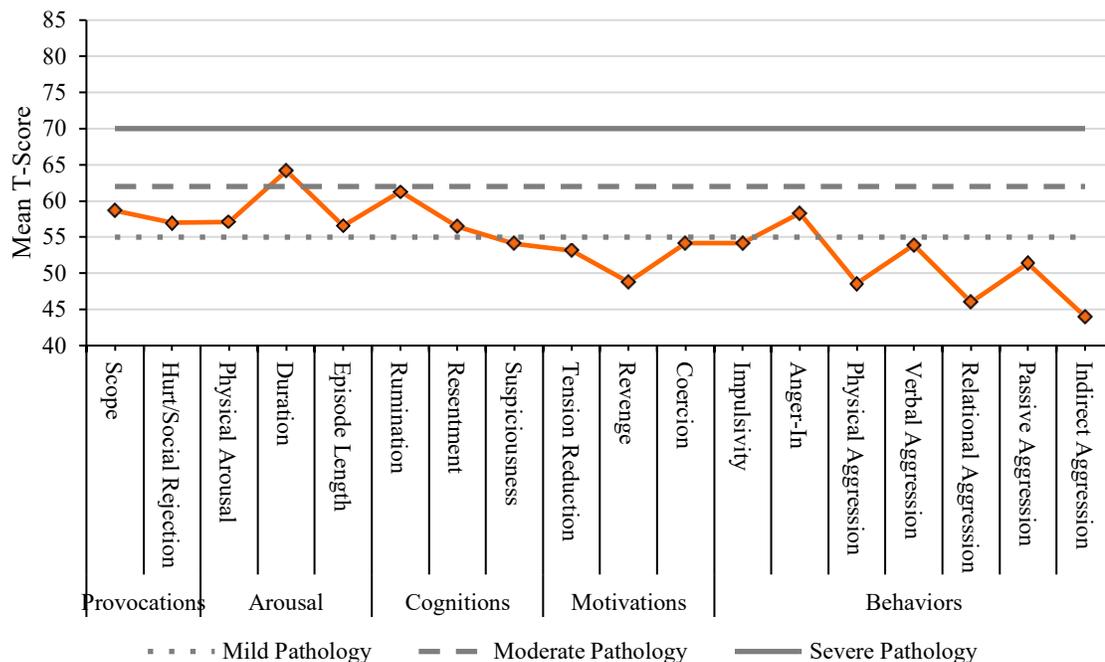
Profile 2: Chronic Mild Anger Pathology (w/ Rumination). Profile 2 produced a profile with only elevated T-Scores on Duration (T = 64) and slightly elevated scores on Rumination (T = 61). All other scores fell within the average to mild anger pathology range, including only mild anger pathology on measures of Anger-In (T = 58). This group was 57.9% female, and they were most likely to have been recruited from the normal

standardization sample (40.7%), followed by the general outpatient sample (35.3%). This profile did not correspond to any of the clinical clusters proposed by DiGiuseppe and Tafrate (2007) and can be more aptly identified as a subclinical profile exhibiting enduring mild anger pathology. Although individuals in this group do not exhibit behaviors or experience anger affect as acutely as someone with observably dysfunctional anger, they view this mild anger as having been problematic for an extended time. Elevations on the higher-order factor of Anger-In due to Rumination and Duration scores appear to be the reason why these individuals met criteria for inclusion. Following Profile 1, the highest percentage of the general outpatient sample fell in Profile 2 (23.1%).

Figure 3: Profile 3, Situational Anger, Subjective Type (n = 186)
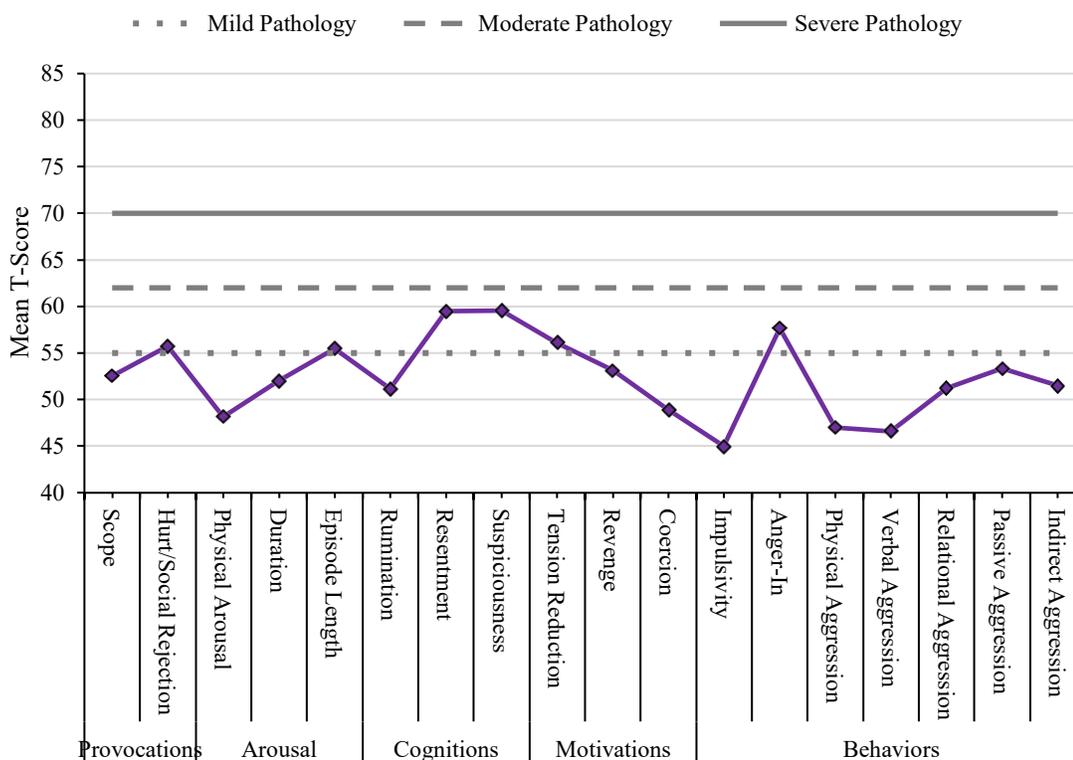
Profile 3: Situational Anger, Subjective Type. Profile 3 produced a profile with slightly elevated T-Scores on Suspiciousness (T = 60), Resentment (T = 59), and Anger-In

(T = 58), but these scores did not meet the criteria for dysfunctional anger. Individuals who fell within this profile appear to have been included because their higher-order Anger-In scores just met the criteria (T = 61.97). Low-average scores on the Scope of Provocations (T = 53) and Duration (T = 52) indicate that these individuals may have either noticed a recent increase in angry affect, or do not generally view their anger as a problem. Rather, their anger emerges in specific situations that increase anger-related cognitions and anger suppression. This group was 62.25% fem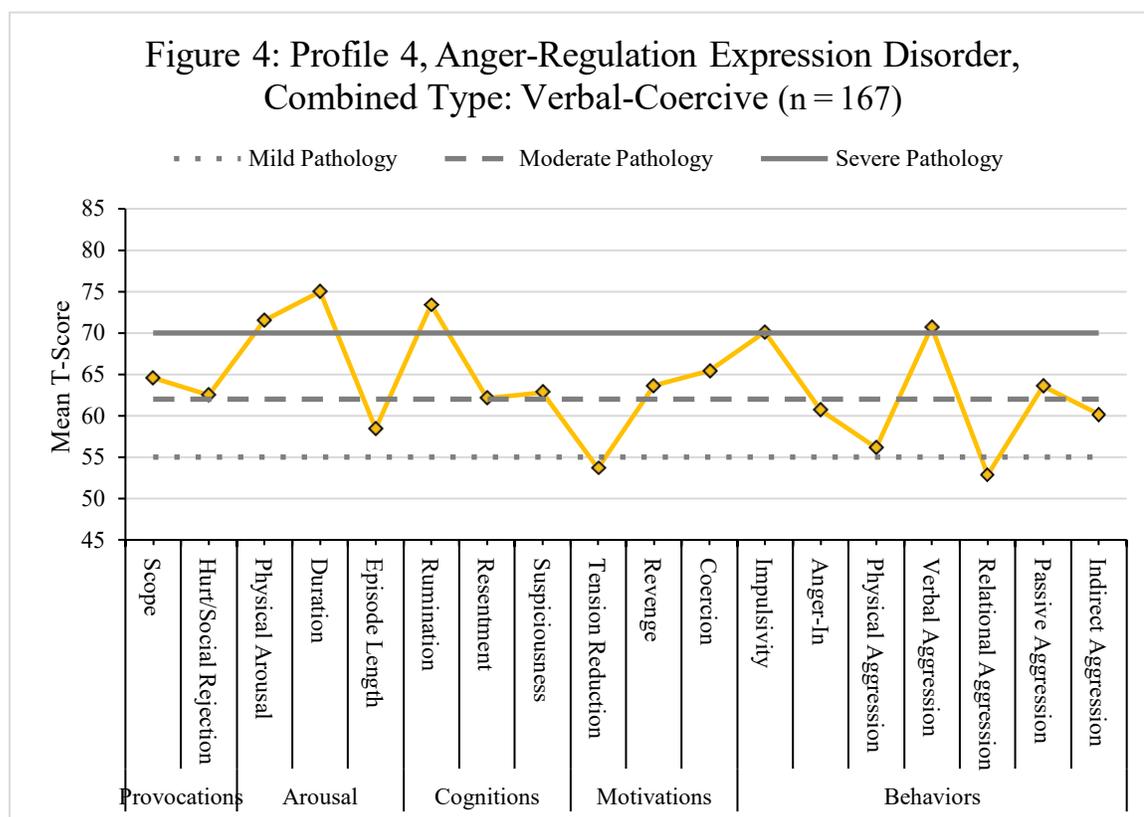ale, and they were most likely to have been recruited from the normal, standardization sample (48.7%), followed by the general outpatient sample (31.9%). This profile did not correspond to any of the clinical or subclinical profiles proposed by DiGiuseppe and Tafrate. 20.4% of the general outpatient sample were assigned to Profile 3, followed by 22.2% of the sex offenders and 19.7% of the standardization sample.

Figure 4: Profile 4, Anger-Regulation Expression Disorder, Combined Type: Verbal-Coercive (n = 167)

Profile 4: ARED, Combined Type: Verbal-Coercive. Profile 4 produced a profile with the highest T-scores on Duration (T = 75), followed by Rumination (T = 73), Physiological Arousal (T = 72), Verbal Aggression (T = 71), and Impulsivity (T = 70). Individuals in this group also showed elevations on Coercion (T = 65), Revenge (T = 64), Suspiciousness (T = 63), Resentment (T = 62), and Passive Aggression (T = 64). Individuals in this profile experience anger across a range of situations (Scope, T = 65) and during instances of Hurt/Social Rejection (T = 63). Individuals in this profile also just met the criteria for dysfunctional Anger-In (T = 61). This group was 52% male and most came from the general outpatient sample (23.8%), followed by the normal sample (22.62%). This group appeared to be most like DiGiuseppe and Tafrate's (year) Profile 11, Verbal/Expressive, Passive, but Not Relational Aggression, and our proposed ARED, Expressive Type: Verbal-Coercive. The major difference between this profile and DiGiuseppe and Tafrat"'s, however, is the lack of problematic physical aggression (T = 53). DiGiuseppe and Tafrate note that this profile often presents in couples counseling or people with romantic relationship problems. They referred to this group as the "dysphoric-mat" profile (2007). Individuals in this profile experience strong revenge and desire to control others, which can lead to periods of intense rumination, ultimately resulting in impulsive and uncontrolled expressions of verbal aggression. When angered, individuals in this profile would refuse to cooperate with others and intentionally fail to meet obligations (Passive Aggression, T = 64).

Figure 5: Profile 5, Anger-Regulation Expression Disorder, Expressive Type: Impulsive & Poly-Aggressive (n = 149)
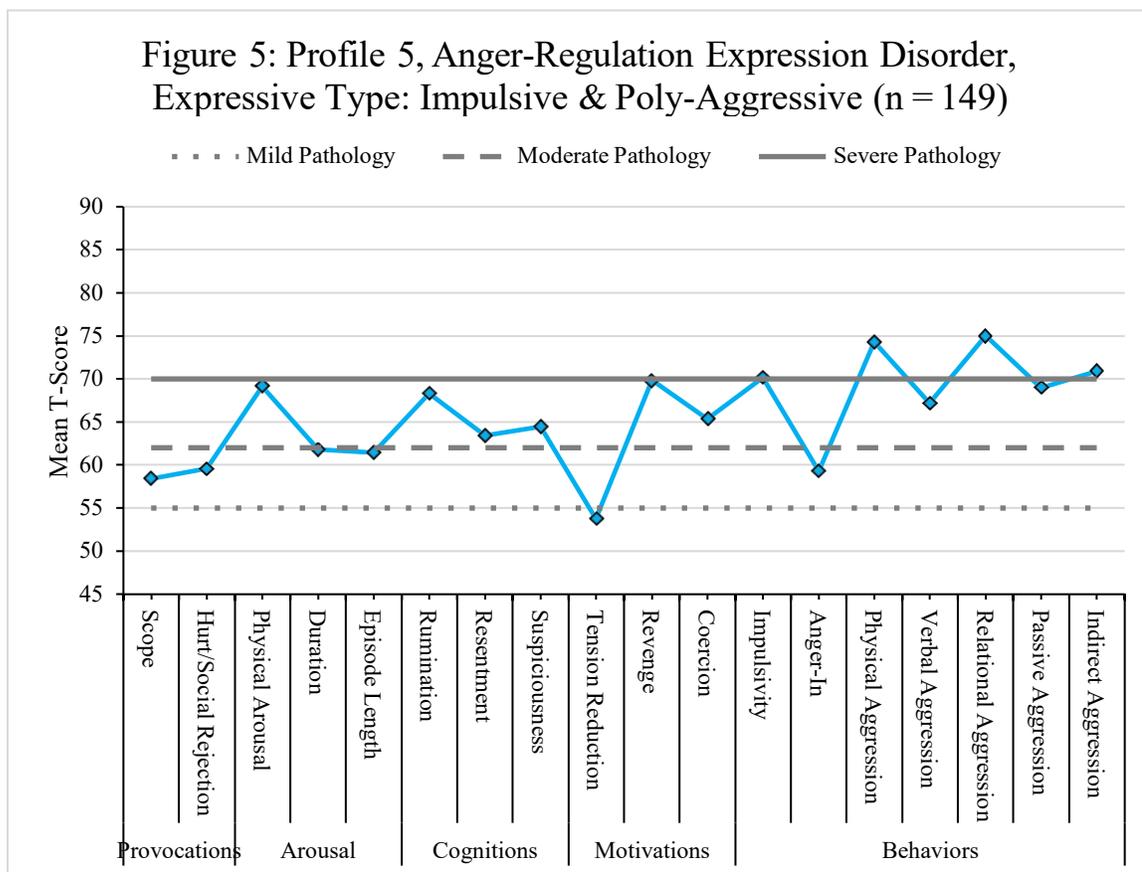
Profile 5: ARED, Predominantly Expressive Type: Impulsive & Poly-Aggressive.

Profile 5 produced a profile with the highest T-scores on Relational Aggression (T = 75) and Physical Aggression (T = 74), followed by Indirect Aggression (T=71), Impulsivity (T = 70) and Revenge (T = 70). Although this profile shares similarities with Profile 4 on several cognitive dimensions, as well as on impulsivity, they are more likely to act aggressively in both indirect and direct ways, instead of directing their anger inward (Anger-In, T-score = 58). Their scope of anger-provoking situations does not appear to be as large (Scope, T = 58). In addition, they do not view their anger as being a problem for nearly as long as the combined, verbally-coercive group (Duration, T = 62). This group has very high Relational Aggression scores compared to all profiles except for Profile 8, our most dysfunctional anger group. Profile 5 was 64% male, and the most came from the

normal standardization sample (49.4%), followed by the angry drivers sample (16.5%). The highest percentage of court-mandated outpatients fell within this profile (28%), and the second-highest percentage of individuals in the angry drivers study were assigned to this profile following Profile 6 (21.4%). This profile is most like DiGiuseppe and Tafrate's (2004) proposed Cluster 3, Poly-Aggressive, Impulsive, Average Anger, which they believe typifies IED. Individuals in this group tend to impulsively react when others transgressed against them, leading to aggressive behaviors that might include social disparagement, covertly sabotaging or causing problems to others, or outward physical and verbal aggression.

Figure 6: Profile 6, Situational Anger, Expressive Type (n = 102)
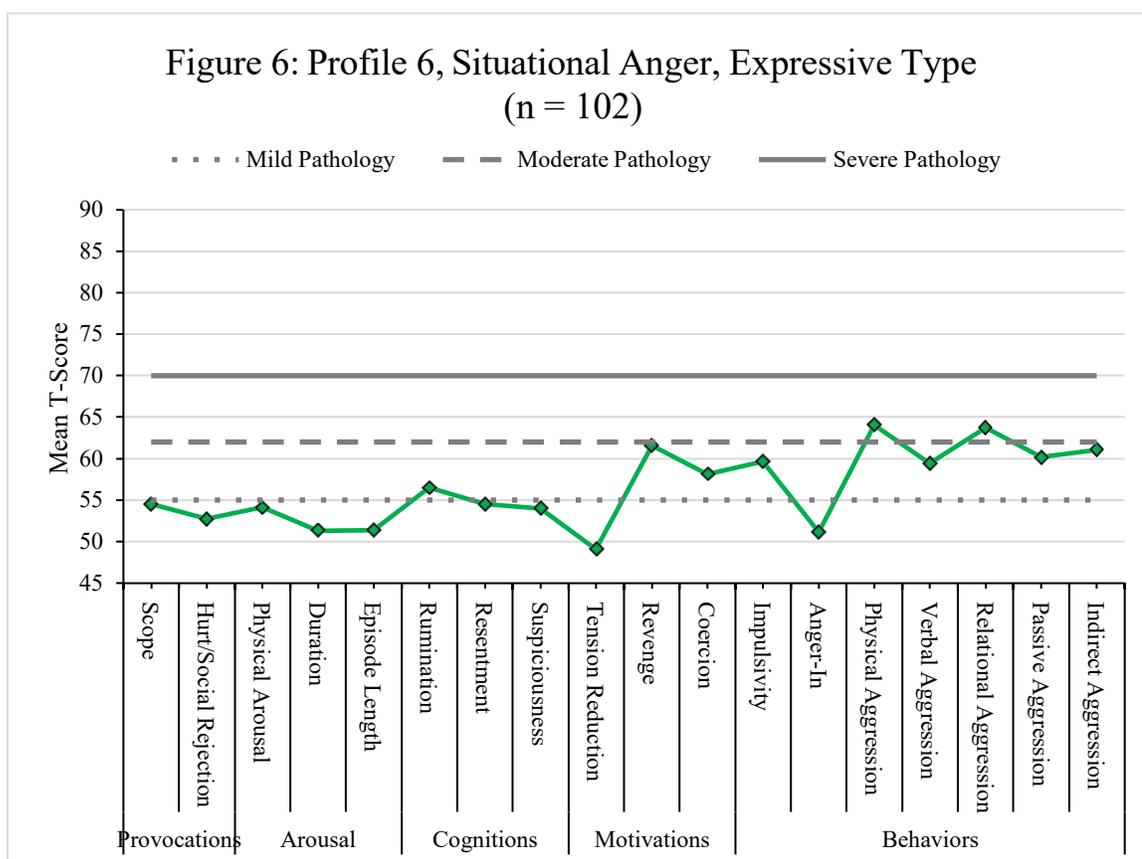
Profile 6: Situational Anger with Aggression. Individuals in Profile 6 show elevations only on Physical Aggression (T = 64), Relational Aggression (T = 64), and Revenge (T = 62). Their angry reactions do not appear to have a large scope of provocations (T = 55), and they do not view their anger as having been a problem for a long period (T = 51). This group showed slight elevations on impulsivity (T = 60), Passive Aggression (T = 60), and Indirect Aggression (T = 61). Profile 6 was comprised of 52.6% males, and individuals in this profile were most likely to have been recruited from the standardization sample (61.43%), followed by the angry drivers study (27.7%). They appear to have been included in the cutoff due to elevated scores on the higher-order factor of Reactivity/Expression. This group is notably less angry than the other profiles but still experiences episodes of both indirect and direct aggression motivated by the desire to "get back" at others who have transgressed against them. This group may represent individuals who have been experiencing problematic anger for a short period (i.e., an adjustment reaction), but it seems more likely that this group represents individuals who become angry and aggressive only in specific situations. Unlikely to ruminate about their anger or harbor resentful or suspicious thoughts about others, individuals in this group will react aggressively when threatened but easily "come down" from these aggressive episodes once the situation has resolved. They do not view themselves as generally angry people but recognize the potential negative consequences of their aggressive behaviors.

Figure 7: Profile 7, Persistent Mild Anger Pathology with Mild Aggression (n = 81)
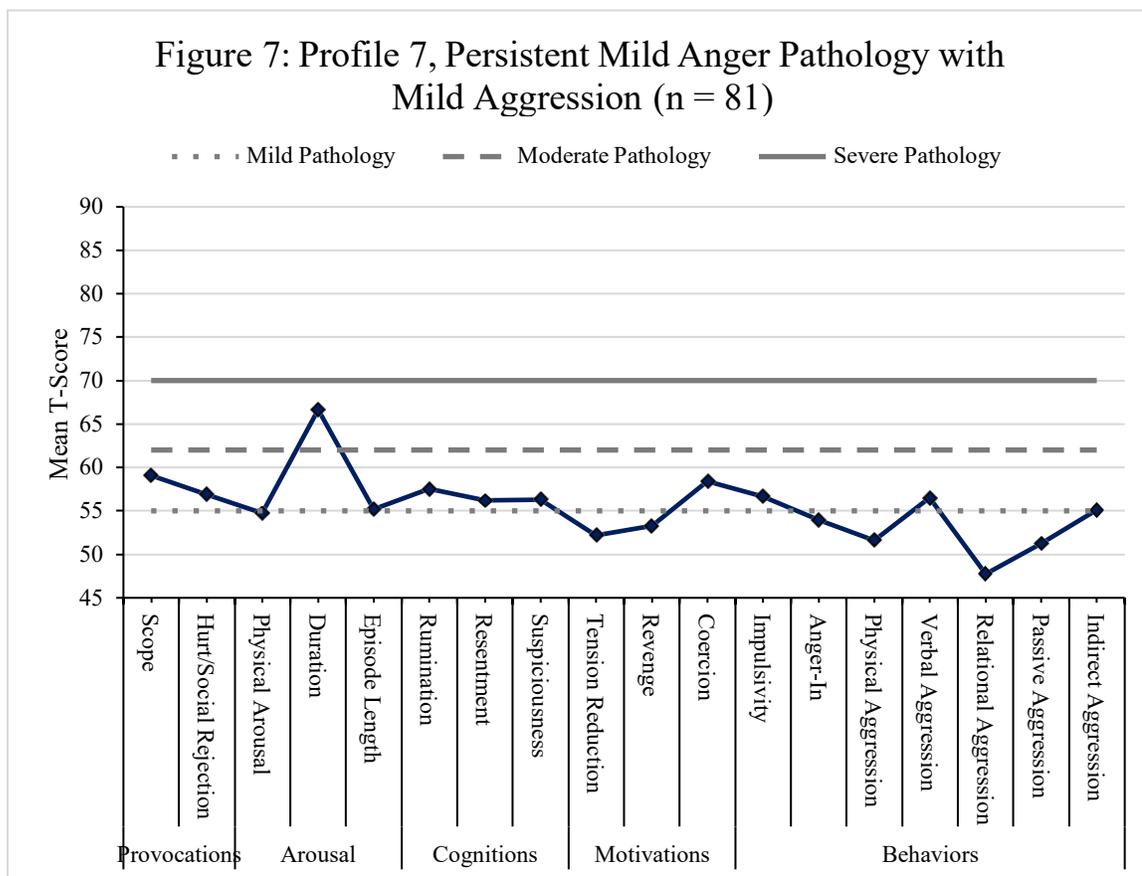
Profile 7: Persistent Mild Anger Pathology with Mild Aggression. Individuals in Profile 7 appear very similar to those in Profile 2, with only elevated Duration scores (T = 67), despite average or mild anger pathology on all other scores. Individuals in Profile 7 appear to be even less angry than those in Profile 2. However, they are slightly more likely to aggress towards others in some indirect and direct ways (Verbal Aggression, T = 57; Indirect Aggression = 55) for Coercive (T = 58) reasons. This group was 53.3% female and most likely recruited from the normal standardization sample (47.1%), followed by the general outpatient sample (12.8%). Interestingly, 24% of the court-mandated outpatient sample were assigned to this profile, second only to Profile 5. This profile did not correspond to any of the hypothesized profiles.

Figure 8: Profile 8, Anger-Regulation Expression Disorder, Combined Type: Extreme Anger & Aggression (n = 70)
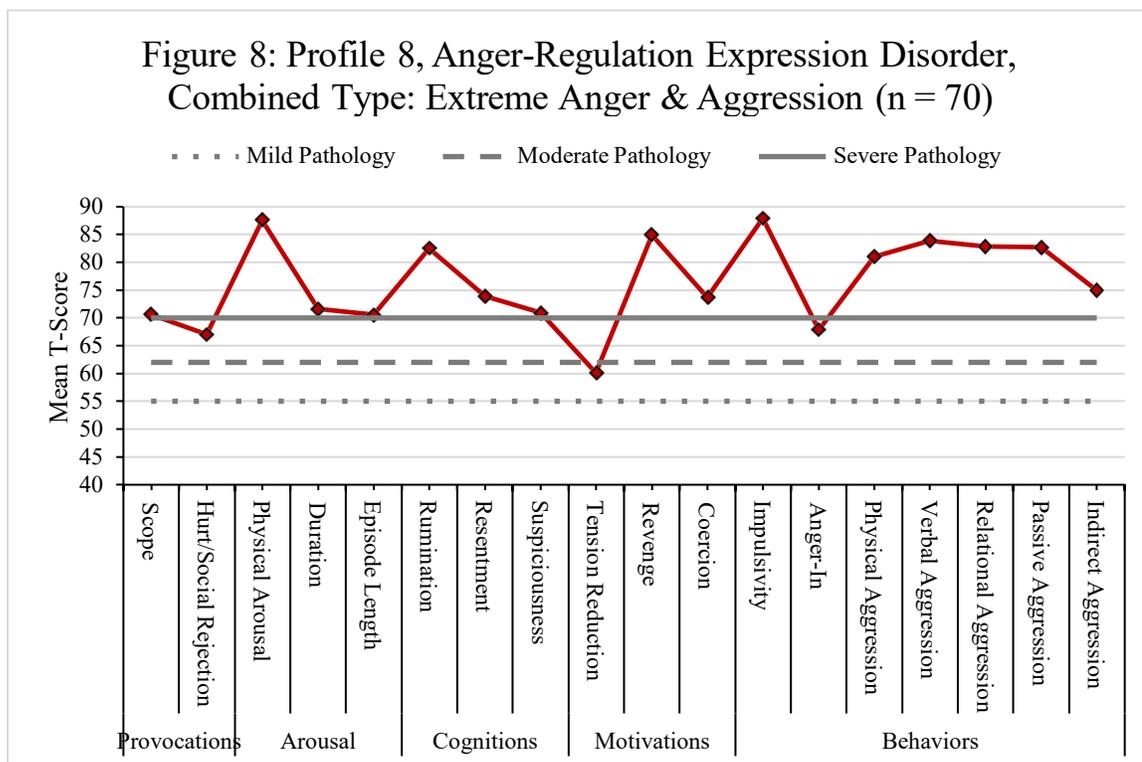
Profile 8: Anger-Regulation Expression Disorder, Combined Type: Extreme Anger & Aggression. Profile 8 produced a profile with severe anger pathology on nearly every indicator, with the highest scores on Physiological Arousal (T = 88), Impulsivity (T = 88), Revenge (T = 85), and Verbal Aggression (T = 84). Individuals in Profile 8 also showed severe anger pathology on Relational Aggression (T = 83), Passive Aggression (T = 83), Physical Aggression (T = 81), Rumination (t = 83), Resentment (T = 74), Coercion (T = 74), Suspiciousness (T = 71), Episode Length (T = 71), Duration (T = 72), and Scope (T = 71). Anger-In scores were in the moderate range (T = 68). This group was 54.8% male, with the highest percentage of members drawn from the angry outpatient sample (35.3%), followed by the general outpatient sample (23.5%). Sixteen % of the angry outpatient sample were assigned to Profile 8. This group corresponds to the hypothesized ARED, Mixed Type: Severe, and appeared most similar to DiGiuseppe and

Tafrate's Extreme Anger and Aggression cluster. Individuals in this group are likely to often experience issues related to their anger and aggression and have likely been told by friends/family that their anger is a problem. Individuals in this profile would most easily be recognized as having an anger problem in either an outpatient or institutional setting.

Comparison of Profiles

Using the eight-profile solution, participants were assigned to the most likely latent profile and were compared on the Anger Disorders Scales (ADS) indicators, age, sex, and recruitment site. Differences between age and profile membership were also statistically significant, $F(7, 999) = 15.664$, $p < .001$. Post-hoc Tukey HSD tests show that the mean age of Profile 1 ($M = 35.93$, $SD = 12.51$) was significantly older than Profiles 3 ($MD = 5.05$, $p < .001$), 5 ($MD = 5.41$, $p < .001$), 6 ($MD = 12.59$, $p < .001$), 7 ($MD = 10.63$, $p < .001$), and 8 ($MD = 8.95$, $p < .001$); the mean age of Profile 2 was significantly older than Profiles 6 ($MD = 10.13$, $p < .001$), and 7 ($MD = 8.17$, $p < .001$); mean age of Profile 3 was significantly older than Profile 6 ($MD = 7.54$, $SD = 1.46$); mean age of Profile 4 was significantly older than Profiles 6 ($MD = 10.12$, $p <.001$), and 7 ($MD = 8.16$, $p <.001$); and the mean age of Profile 5 was significantly older than Profile 6 ($MD = 7.18$, $p < .001$). A chi-square test of independence showed that there was a significant association between gender and profile membership, $X^2 (14, N = 1170) = 45.17$, $p <.001$, as well as a significant associate between recruitment sample and profile membership, $X^2 (49, N = 1165) = 240.81$, $p <.001$. Based on z-tests for independent proportions with Bonferroni adjustments, Profiles 1 and 4 had significantly more women than men, and Profiles 3, 7, and 8 had significantly more men than women.

Discussion

Although our lack of language and diagnostic categories have limited our understanding of dysfunctional anger, there have been notably few attempts to clarify anger as a clinical disorder independent from other mental health diagnoses. Using the Anger Disorders Scale (ADS) to evaluate anger across several domains comprehensively, DiGiuseppe and Tafrate (2007) proposed a 13-profile solution with subtypes of anger falling within three primary diagnoses reflecting the independence of aggressive behaviors and anger. Attempts to verify this typology in adult and adolescent populations have supported the theory that dysfunctional anger varies by expression and trait anger; some individuals present as highly aggressive with or without high affective anger or non-aggressive with suppressed overcontrolled anger (Ahmed et al., 2012; Kagedan, 2013). However, studies have been inconclusive about other differences within these categories. This study aimed to expand upon DiGiuseppe and Tafrate's (2004) work by using latent profile analysis, an increasingly popular statistical strategy for identifying subtypes of clinical presentations.

For the purposes of a diagnostic typology that is less cumbersome, it may be best to view our eight profiles as fitting into four greater subtypes of dysfunctional anger: Persistent Mild Anger Pathology (Profiles 2 and 7); ARED, Primarily Expressive Type (Profile 5); ARED, Combined Type (Profiles 1, 4, and 8); and Situational Anger (Profiles 3 and 6). Persistent Mild Anger Pathology can be further differentiated between Expressive (exhibiting mild aggression) and subjective (displaying mild affective anger). The ARED Combined Types emerged as either Verbally-Coercive (4), Passive Aggressive (1), or having the most extreme anger presentation (Profile 8). This is mostly confirmed by

the mean t-scores of our 4-profile solution which show two profiles exhibiting aggressive behaviors, but one without elevated Anger-In and one profile with elevated Rumination, Scope, and Duration scores, but mild pathology across other ADS subscales. Our final profile appears to capture individuals with slight elevations on Resentment and Suspiciousness, with low scope and duration of anger as a problem. It is possible that this profile represents our Situational Anger subtype, but the elevated aggressive behaviors seen in Profile 6 are lowered by those in Profile 3.

Our results indicate that those experiencing primarily Anger-In symptoms in the absence of aggressive behaviors may be better captured as having Persistent Mild Anger Pathology instead of a subtype of ARED. These individuals are clearly much less angry than those in the ARED groups, but regardless, they view their anger as problematic. In Profile 7 we also begin to see some mild aggressive behaviors on indirect and verbal measures of aggression, while those in Profile 2 saw their highest elevations on measures of rumination. Following Profile 1, the highest percentage of the general outpatient group participants fell into Profile 2. Following Profile 5, the highest rate of participants from the court-mandated outpatient group fell into Profile 7. This provides some evidence that there may be concerning pathology in these groups, despite many of their scores falling within the mild range. It is also possible that another disorder better captures their symptoms. Although present, anger is not their presenting problem or primary concern, but may be having a significant impact on their prognosis.

Three of our eight profiles show a combined presentation with similarly moderate Anger-In scores but varied aggressive expressions. Considering the lower duration score and generally more mild-moderate pathology seen in the Passive-Aggressive profile, it is

also possible this profile represents a mild version of ARED, Combined Type. However, we believe identifying passive-aggressive behaviors as indicative of anger dysfunction would benefit individuals who are less likely to identify their anger as problematic. This profile also shows more deliberate engagement in aggressive behaviors than individuals in Profiles 4, 5, and 8 who engage in much more visible and impulsive behaviors.

It is also important to consider the differences between profile memberships between sample populations. We cannot generalize any conclusions about the sex offender or court-mandated outpatient population based on this study due to the smaller sample size. However, the variability in anger expression and experience for angry outpatients and correctional inmates indicates that anger profiles vary even in populations where one may assume that anger may appear in mostly aggressive ways. Most of these populations fell into profiles with moderate-severe Anger-in pathology in addition to a variety of aggressive behaviors. Although individuals in incarcerated settings or specifically in treatment for anger problems may be diagnosed with IED due to their impulsivity or aggressive behaviors, this diagnosis is missing the involvement of suppressed anger in maintaining symptoms.

Lastly, two of our profiles have scope and duration scores below the threshold of T = 55 but mild-moderate anger-in-related scores or aggressive behaviors. There is a possibility that these profiles represent either situational anger, as proposed by Eckhardt and Deffenbecher (1995), or represent an adjustment reaction. The ADS is a measure of general anger instead of specific anger, so this hypothesis would have to be tested in another sample, so a measure of specific anger is collected in addition to the ADS. This would allow researchers to see if scope scores reliably predict situational vs. general anger.

The ADS could potentially benefit from collecting data about the situations in which individuals view their anger as problematic. This could be done in a binary manner where participants are asked to answer "Yes/No" for a range of situations determined to commonly trigger anger reactions. Despite not having this information in our current assessment, we know that scope t-scores in the proposed situational profiles were significantly lower than all other profile groups indicating that these profiles likely do exhibit anger that is not generalizable across many situations.

Many of this study's limitations are due to a lack of assessment of additional measures of anger to confirm and further validate these profiles and a lack of information about concurrent diagnoses, including substance use disorders. It would be clinically beneficial to know if certain profiles were related to specific diagnoses or if several profiles were just as likely to be found within one disorder. However, in recognition of the lack of empirical evidence for some diagnostic categories within the DSM-5, as well as the substantial comorbidity between disorders, it may be just as helpful to know that, regardless of diagnosis, these types of anger may present clinically across clinical populations and presentations and warrant further exploration throughout treatment.

Future studies validating these anger profiles would ideally include questionnaires that measure substance use, situational vs. general anger, and other diagnosed mental health disorders. Although it is possible to gather this information quantitatively, a qualitative component may provide meaningful information. Structured interviews could verify how participants are answering questions and collect information about how these individuals view their anger and what triggers they endorse as being most anger-inducing. This would also allow clinicians to understand how the different profiles present in clinical settings.

This is especially relevant for those individuals falling in the situational anger groups since it is unclear how often individuals experiencing situational anger are likely to reach out for treatment or how readily they acknowledge their anger as problematic.

Researchers and clinicians specializing in the treatment and exploration of anger as an emotional experience have consistently called for a greater emphasis on anger as a clinical problem. In our attempt to create a typology for anger disorders using a measure like the ADS, which encompasses the multiple facets of anger expression, we can better communicate and understand disparate presentations of dysfunctional anger. A tremendous clinical utility exists in explaining to clients that anger, like any other negative emotion, exists along a continuum of normal functioning. By administering the ADS to individuals entering treatment for anger or other mental health disorders with evidence of anger involvement, clients can be explained that their symptoms fall within a typical prototypical profile, or perhaps, that their endorsed symptoms show different elements of commonly seen presentations. Providing personalized psychoeducation and bringing client" awareness to the variability within anger expression may help begin the therapeutic process of distinguishing healthy from problematic anger reactions and allow clinicians to format interventions for the individual. By adopting empirically-based typologies, we acknowledge varied presentations and encourage open communication between clinicians about best practices for diagnosis and intervention. We hope research efforts will expand upon our findings as we move towards a clinical taxonomy of dysfunctional anger.

APPENDIX

Table 2: Comparison of Dysfunctional Anger Subtypes in Literature

DiGiuseppe & Tafrate (2007)	Ahmed et al. (2012)	Proposed Profiles (Romero)
High Expression and Aggression Without High Anger		
Cluster 1. Average Anger and Passive Aggression	Cluster 1. Pervasive Dysfunctional Anger - Indirect, Vengeful Type	**(1) ARED, Predominantly Expressive Type**
		(2) w/ Passive Aggression
Cluster 2. Vengeful, Indirect Aggression	Cluster 2. Pervasive Dysfunctional Anger - Impulsive Type*	(3) w/ Vengeful-Indirect Aggression
		(4) Impulsive & Poly-Aggressive (IED)
Cluster 3. Poly-Aggressive, Impulsive, Average Anger		(5) w/ Coercive-Verbal Aggression
Cluster 4. Enduring, Controlling, and Nagging Anger		**(6) ARED, Predominantly Subjective Type**
Higher Anger with lower Levels of Expression and Aggression		
Cluster 5. Enduring Anger with Behavioral Control (Subclinical)	Cluster 3. Over-Controlled Dysfunctional Anger	
Cluster 6. Ruminating, High Arousal, Enduring Anger-In	Cluster 4. Suppressed Organized Anger Disorder*	
Cluster 7. Low-Intensity Hostile Attitudes, and Anger-In	Cluster 5. Pervasive Dysfunctional Anger - Mixed Type*	
High Anger with Expressive-Aggressive Behavior	Cluster 6. Pervasive Dysfunctional Anger - Indirect, Vengeful Type	**(7) ARED, Combined Type**
Cluster 8. Nonconfrontational Vengeance	Cluster 7. Pervasive Dysfunctional Anger - Deliberate	(8) w/ Vengeful-Indirect Aggression
Cluster 9. Social Vengeance		(9) w/ Deliberate Relational Aggression
Cluster 10. Impulsive, High-Arousal, Confrontational Aggression		
Cluster 11. Verbal/Expressive, Passive, but not Relational aggression		
Cluster 12. Total War, High Arousal		
Cluster 13. Extreme anger and aggression	Cluster 8. Impulsive, Aggressive Dysfunctional Anger*	(10) Severe (Extreme Anger and Aggression)
		(11) Adjustment Reaction with Angry Mood
	Cluster 9. Adjustment Reaction with Angry Mood	

Table 3.

Hypothesized Dysfunctional Anger Subtypes with Indicator Values

Anger Domain	ARED, Expressive Type — w/ Passive Aggression	ARED, Expressive Type — w/ Vengeful-Indirect Aggression	ARED, Expressive Type — Impulsive & Poly-Aggressive (IED)	ARED, Expressive Type — w/ Coercive-Verbal Aggression	ARED, Subjective Type	ARED, Combined Type — w/ Vengeful-Indirect Aggression	ARED, Combined Type — w/ Deliberate Relational Aggression	ARED, Combined Type — Severe (Extreme Anger and Aggression)	Adjustment Reaction
Anger-In	T < 62	T < 62	T < 62	T < 62	T > 62	T > 62	T > 62	T > 62	
Physiological Arousal								T > 62	
Impulsivity			T > 62					T > 62	
Rumination					T > 62			T > 62	
Duration	T > 62	T > 62	T > 62	T > 62	T > 62	T > 62	T > 62	T > 62	T < 62
Episode Length								T > 62	
Scope								T > 62	
Hurt/Social Rejection									
Resentment								T > 62	
Suspiciousness								T > 62	
Coercion				T > 62		T > 62		T > 62	
Revenge	T > 62	T > 62						T > 62	
Verbal Aggression			T > 62	T > 62				T > 62	
Physical Aggression			T > 62					T > 62	
Indirect Aggression		T > 62	T > 62					T > 62	
Passive Aggression	T > 62		T > 62					T > 62	
Relational Aggression			T > 62				T > 62	T > 62	

Note: * indicates that cluster was clinically verified in study

Table 4.
Demographic Information for 8-Class solution

Cluster	N	% Male/Female	Average Age	% Normal
1	220	39.9/59.1	32.9	32.1
2	195	41.6/57.9	34.8	40.7
3	186	37.2/62.3	33.8	48.7
4	167	58.5/41.1	30.3	22.6
5	149	34.3/64.1	28.1	49.4
6	102	47.4/51.6	25.3	61.4
7	81	53.3/46	31.4	47.1
8	70	43.8/54.8	27.3	14.2

Table 5.

8-Profile Solution Class Membership by Sample (Percentage)

(Percentage)

Cluster	Normal	Angry Drivers (n = 117)	Court-Mandated Outpatients (n = 25)	General Outpatients (n = 294)	Angry Outpatients (n = 149)	Correctional Inmates (n = 108)	Sex Offenders (n = 18)
1	15.1	17.1	0	27.6	11.7	26.9	16.7
2	17.1	9.4	20	23.1	16.6	3.7	22.2
3	19.7	6	8	20.4	7.6	10.2	22.2
4	8.2	15.4	12	13.9	29.7	20.4	11.1
5	15.8	21.4	28	5.1	9	12	16.7
6	13.8	23.1	0	0.7	0	7.4	5.6
7	8.2	6.8	24	3.4	9	4.6	5.6
8	2.2	0.9	8	5.8	16.6	14.8	0

Figure 9: Comparison of Mean T-Scores of ADS subscales for 8 Profile Solution
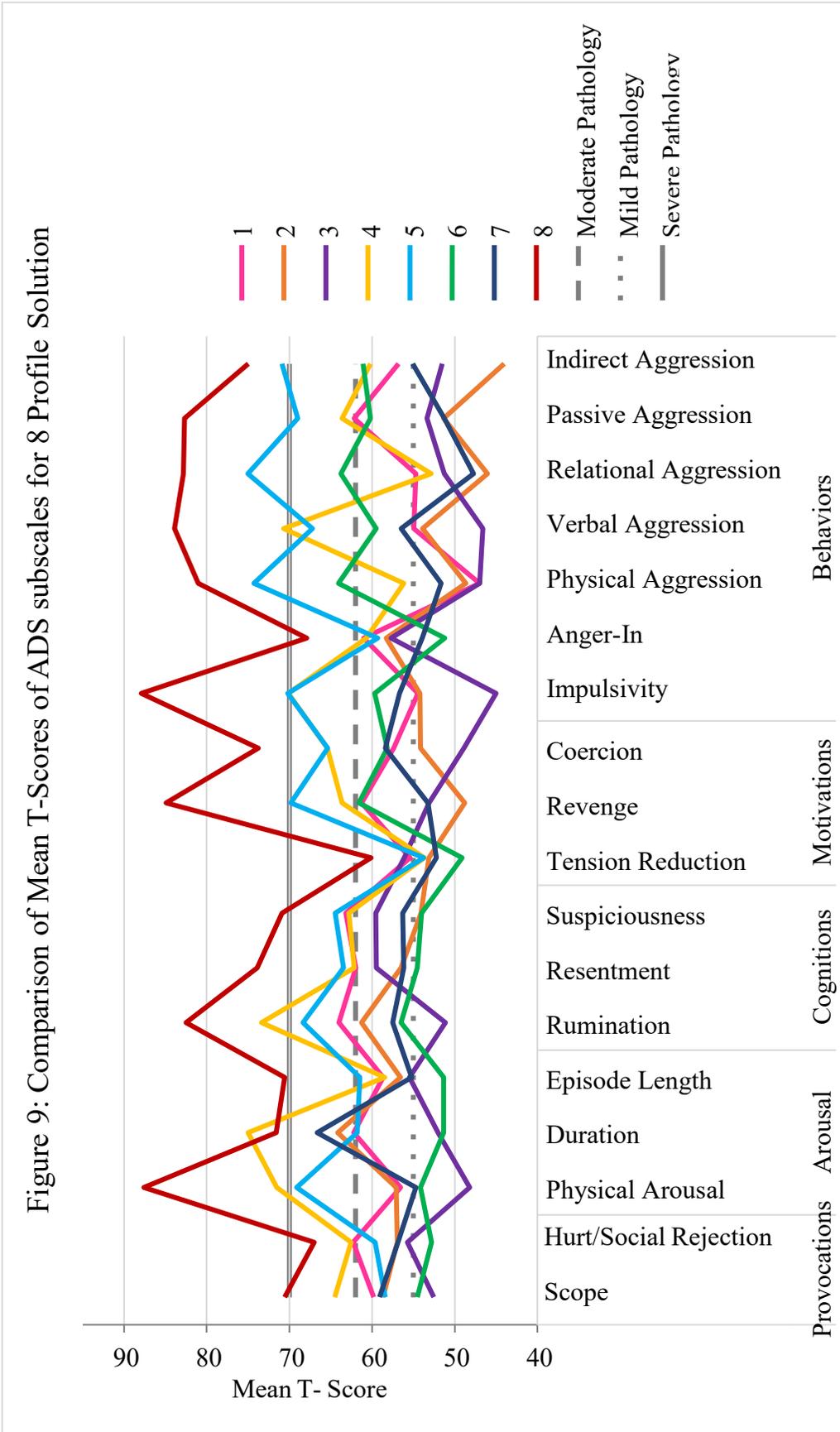
Table 6.

Mean T-Scores of 8-Profile Solution by Anger Domain and Indicator

Domains	Indicators	1	2	3	4	5	6	7	8
Provocations	Scope	59.82	58.65	52.56	64.55*	58.43	54.51	59.07	70.61**
	Hurt/Social Rejection	62.26*	56.94	55.73	62.54*	59.58	52.76	56.89	67.00*
Arousal	Physical Arousal	56.58	57.07	48.18	71.52**	69.14*	54.14	54.71	87.59**
	Duration	62.25*	64.15*	52.05	75.00**	61.77	51.34	66.64**	71.60**
	Episode Length	58.67	56.54	55.49	58.45	61.44	51.35	55.19	70.57**
Cognitions	Rumination	64.01*	61.26	51.15	73.39**	68.34*	56.50	57.51	82.53**
	Resentment	62.05*	56.47	59.49	62.15*	63.41*	54.50	56.17	73.87**
	Suspiciousness	63.17*	54.08	59.55	62.82*	64.48*	54.00	56.28	70.90**
	Tension Reduction	55.38	53.12	56.10	53.70	53.75	49.09	52.19	60.12
Motivations	Revenge	61.26	48.79	53.12	63.65*	69.83*	61.59	53.24	84.94**
	Coercion	57.36	54.13	48.88	65.42*	65.37*	58.16	58.39	73.75**
	Impulsivity	54.45	54.16	45.00	70.11**	70.18**	59.65	56.65	87.93**
	Anger-In	61.04*	58.28	57.69	60.69*	58.00	51.19	53.94	67.91*
Behaviors	Physical Aggression	47.00	48.61	47.00	56.14	74.27**	64.06**	51.61	81.05**
	Verbal Aggression	54.98	53.90	46.59	70.71**	67.20*	59.46	56.47	83.89**
	Relational Aggression	54.67	46.00	51.26	52.86	75.02**	63.74**	47.73	82.80**
	Passive Aggression	62.18*	51.35	53.34	63.60*	69.00*	60.20	51.25	82.72**
	Indirect Aggression	56.83	44.00	51.48	60.18	70.90**	61.07	55.09	75.01**

*Indicates Moderate Pathology (t-score ≥ 62, Anger-In, t-score ≥ 61)

**Indicates Severe Pathology (t-score ≥70)

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