

EXPLORING PERSONALITY PATHOLOGY:
A PERSON-CENTERED APPROACH TO THE DSM-5'S
ALTERNATIVE MODEL OF PERSONALITY DISORDERS

BY

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LIST OF ABBREVIATIONS

LPA – Latent Profile Analysis

PD – Personality Disorder

BPD – Borderline Personality Disorder

OCPD – Obsessive-Compulsive Personality Disorder

BIC – Bayesian Information Criterion

ICL – Integrated Complete-data Likelihood

ABSTRACT

The purpose of this paper is to investigate the gap between the two models of personality pathology in the DSM-5 and to attempt to bridge this gap. These models are the traditional categorical personality disorder model and the proposed alternative dimensional model. Based on this purpose, a person centered analysis approach was applied to the Criterion B traits of the alternative dimensional model to explore whether these pathological personality traits define distinct diagnostic categories. This work is important because it contributes to the search for the elusive “optimal approach for diagnosing a personality disorder” (Hallquist & Wright, 2014, p. 6). Clarifying the conceptualizations of personality pathology has the potential to increase understanding of these disorders and facilitate treatment for patients with personality pathology. It may also contribute to the implementation of the DSM-5’s alternative personality disorder model in the future. The current project consists of two studies. The first study analyses online self-report data on the pathological personality traits. The second study analyses an archival data set that contains both self-reported and clinician-rated levels of the pathological personality traits. Both studies use latent profile analysis (LPA) to explore the existence of categorical latent groups defined by these traits. I also looked for categories both within the whole sample, and within a high pathology sub-sample in the two studies. In general, the results showed quantitative differences in personality pathology rather than qualitative. The group recovered from the LPA reflected different mean levels of pathology overall, not distinct patterns. This suggests that personality pathology may be best conceptualized dimensionally.

INTRODUCTION

There is a tension in the personality pathology literature. Since the DSM-III, personality pathology has been defined as a set of distinct syndromes, or personality disorders (PDs) (Clarkin, Meehan, & Lenzenweger, 2015; Widiger & Trull, 2007). However “the optimal approach for the diagnosis of a PD remains elusive” (Hallquist & Wright, 2014, p. 6). Many researchers argue that the traditional categorical conceptualization of personality pathology is problematic and that a dimensional approach would be more beneficial (Al-Dajani, Gralnick, & Bagby, 2016; Widiger & Trull, 2007). However, others argue that there are practical reasons for keeping the traditional model, which is based on the experience of generations of therapists (Bernstein, Iscan, & Maser, 2007; Zimmerman, 2012). Recently this debate has culminated in the creation of two separate frameworks for personality pathology (American Psychiatric Association, 2013a). There is a traditional model, containing the same diagnostic categories that have been used previously, and an alternative approach, which presents an empirically derived dimensional framework made up of pathological personality traits. The purpose of this paper is to investigate the gap between these two frameworks and to attempt to bridge it. Pursuant to this purpose, I applied a person centered analysis to the criterion B, pathological personality traits, of the DSM-5’s alternative dimensional model to explore whether these traits define distinct diagnostic categories.

This project is important for two reasons. First, it may reveal clinically useful ways of implementing the alternative trait model of personality pathology. Currently the DSM-5 recommends a hybrid form of this model, which organizes the new dimensions

around the categories of the traditional model (Yam & Simms, 2014). Individuals with “high levels” of certain dimensional traits qualify for particular PD diagnoses (American Psychiatric Association, 2013a). This compromise suggests that there still may be work to be done in determining the best way to represent pathology, categorically or dimensionally. Categories are useful to the extent that they are informative (Widiger & Trull, 2007). However traditional personality disorders categories have a number of flaws which impact their utility. They are highly comorbid, suggesting that they may not actually be distinct syndromes (Carragher, Krueger, Eaton, & Slade, 2015). In addition, traditional PDs allow for high levels of heterogeneity, meaning the disorder may take an almost completely different form in different people. This eliminates one of the main advantages of a categorical approach, because the categories fail to simplify communication. Finally, the diagnostic categories have so many specific requirements that many individuals with clear personality dysfunction do not fit into any of them (Carragher et al., 2015; Widiger & Trull, 2007). The current project has the potential to maximize utility by identifying a solution that balances a categorical model’s simplified communication with the dimensional model’s specificity in describing pathology.

Second, this project will increase insight into the nature of personality pathology. A clear and accurate understanding of the nature of personality pathology is essential because it provides a foundation for “diagnosis, assessment, intervention, and research” (Carragher et al., 2015, p. 339). This project may reveal how combinations of pathological traits can interact to create personality dysfunction. Alternatively, it may suggest the best approach is to model personality pathology dimensionally, because there are not empirically identifiable PD diagnoses. In either case, the results will facilitate

increased understanding of personality pathology. This understanding may help integrate personality pathology into a larger psychological framework which includes personality and pathology, and guide future research on personality pathology.

Current Models of Personality Pathology

The two models of personality pathology in the DSM-5 are the traditional diagnoses retained from the DSM-IV, and an alternative model based on empirically derived traits (American Psychiatric Association, 2013b).

The traditional model of personality pathology. Personality disorders were first defined as a set of distinct syndromes in the DSM-III (Clarkin et al., 2015; Widiger & Trull, 2007). The traditional model conceptualizes personality pathology as a pattern of dysfunctional thoughts and behaviors which are distinct from the person's culture (American Psychiatric Association, 2013c). Additionally, personality disorders are relatively stable, enduring across the person's lifespan, and pervasive, affecting different areas of the person's life. Finally, a personality disorder must be the best explanation for an individual's distress, rather than some other psychiatric disorder, disease, or life event. If an individual meets these general personality disorder criteria, then a list of symptoms is considered to determine whether he/she meets the threshold for a particular disorder.

The official disorders in the current DSM-5 have retained the same traditional structure, which has been carried forward from the DSM-III and the DSM-IV (Carragher et al., 2015; Clarkin et al., 2015). They are categorical and polythetic, meaning that there are multiple combinations of symptoms can be used to diagnose the same disorder. This structure was adopted as part of an effort to make psychological disorders fit a medical

framework (Krueger, 2013). However, advances in statistics and in our understanding of personality have indicated a number of flaws in this structure (Carragher et al., 2015; Clark, 2007; Widiger & Trull, 2007). It has been frequently suggested that a shift to a dimensional conceptualization of personality disorders might be necessary. Concerns about the traditional model include: the high comorbidity with all types of psychiatric disorders, high levels of heterogeneity within diagnoses, subjective diagnostic boundaries, inadequate representation of existing personality pathology and concerns about diagnostic consistency and validity (Al-Dajani et al., 2016; Anderson, Snider, Sellbom, Krueger, & Hopwood, 2014; Bach & Sellbom, 2016; Miller, Morse, Nolf, Stepp, & Pilkonis, 2012; Mullins-Sweatt et al., 2012; Widiger & Trull, 2007) .

The source of these problems is not entirely clear. It has been suggested that these problems are inherent in the categorical structure and the only way to fix them is to abandon that structure for a dimensional one (Widiger & Trull, 2007). However, it also seems possible that the particular categories in the traditional model are simply not the right ones for describing personality pathology. It may be the particular categories that need to be revised, but not the type of underlying framework (i.e. categorical or dimensional). In light of these considerations, the conceptualization of personality disorders has been under continuous examination, which led to the DSM-5's proposed alternative model (American Psychiatric Association, 2013c).

The DSM-5 alternative model of personality disorders. The DSM-5's proposed alternative model shares some features with the traditional model. A personality disorder diagnosis still requires relatively inflexible and pervasive personality dysfunction (American Psychiatric Association, 2013a). In addition, this dysfunction is still long

lasting, not better explained by another cause, and emerges in adolescence or young adulthood. The difference between the models is how the pathology is described. The traditional model provides a list of symptoms, which are the indicators of the underlying psychopathology. In contrast, the DSM-5's alternative model attempts to describe the underlying dimensions of psychopathology which are causing the individual's distress. This dimensional description of personality pathology consists of two parts, the severity of problems with personality functioning (criterion A) and the pathological personality traits (criterion B).

Criterion A. Criterion A was conceptualized as a continuum of personality functioning (American Psychiatric Association, 2013a). At one end of this continuum is the optimally functioning individual, who is functioning excellently both internally and interpersonally. At the other end is someone with extreme levels of personality pathology, both their internal and interpersonal functioning is severely dysfunctional. The general personality functioning continuum encompasses two broad domains, problems with self-functioning, and problems with interpersonal functioning. These domains, of self and interpersonal functioning, can be further broken down into four subdomains. The domain of problems with self-functioning reflects problems with identity, and problems with self-direction. The domain of problems with interpersonal function reflects problems with empathy and problems with intimacy.

These subdomains are highly interrelated, and problems in one area will frequently lead to problems in another area and vice versa (American Psychiatric Association, 2013a; Morey, 2017). In fact, the level of interrelation is so high it seems possible they are all simply different expressions of one construct (Morey, 2017). This suggests that

criterion A might be better expressed as a single dimension. Overall, the DSM-5's alternative model uses the severity of personality dysfunction, defined by criterion A, to identify the presence or absence of a personality disorder (American Psychiatric Association, 2013a). Individuals with high levels of criterion A would qualify for a personality disorder diagnosis, and individuals with a low level of criterion A would not.

Criterion B. Criterion B describes the nature of the pathology indicated by the dysfunction found in criterion A (American Psychiatric Association, 2013a). Criterion B consists of a set of 25 pathological personality traits, which were the product of a review of personality pathology measures (Krueger et al., 2011). The traits reflect five broad domains (see Figure 1). These domains are Negative Affectivity, Detachment, Antagonism, Disinhibition, and Psychoticism (American Psychiatric Association, 2013a). The pathological trait domains are each characterized by three to nine facet level pathological traits, with some traits relating to multiple domains (see Figure 1). These 25 traits reflect relatively consistent patterns of dysfunctional thoughts, feelings, and behaviors

The five broad domains of the criterion B pathological personality traits roughly map onto the domains of the Big Five a common model for normal range personality (Anderson et al., 2014; DeYoung, Carey, Krueger, & Ross, 2016). The domains of the Big Five are Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism. Negative Affectivity corresponds with Neuroticism (which is called Emotional Stability at its positive pole). Detachment, Antagonism, Disinhibition and Psychoticism seem to correspond with the opposite poles of Extraversion, Agreeableness, Conscientiousness and Openness respectively. There is also evidence to suggest that

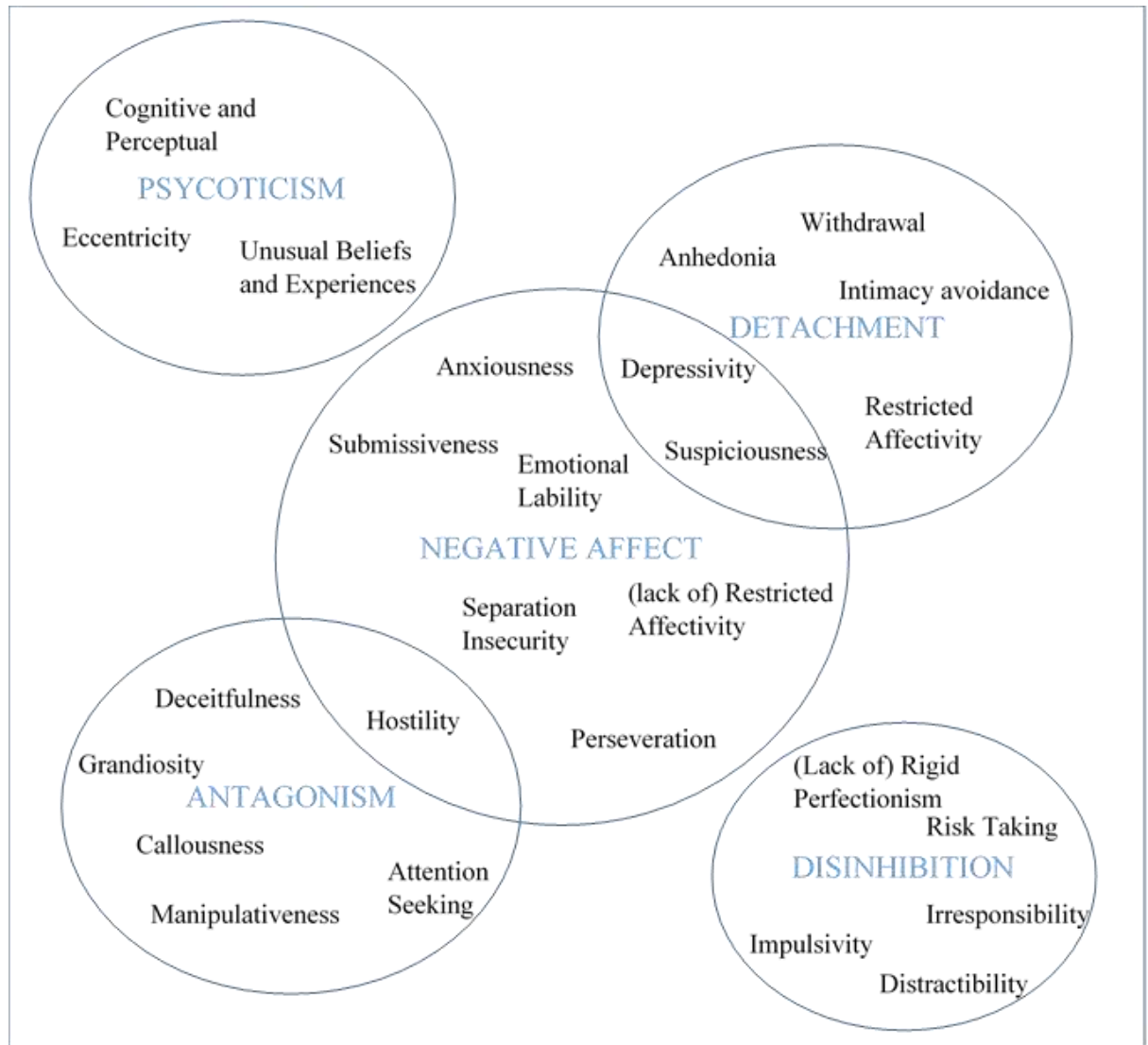


Figure 1: Criterion B Pathological Personality Traits and Domains

personality traits are only maladaptive at one end of the domain and not at both extremes, which could mean that the big five traits and the pathological traits are simply opposite poles of overarching dimensions (T. F. Williams & Simms, 2018).

Utilizing the DSM-5 alternative personality disorder model. In order to bridge the gap between the two models, the DSM-5 presents a hybrid form of the alternative model where subsets of the dimensional traits are used to reconstitute the traditional categorical

personality disorders (Yam & Simms, 2014). For example, borderline personality disorder (BPD) is one of the traditional disorders assigned a profile in the DSM-5 alternative personality disorder model. In this profile, seven of the 25 pathological personality traits from the DSM-5 were identified as hallmarks of BPD. Thus the hybrid model suggests that individuals with high levels on four of these seven hallmarks, along with high levels of criterion A, qualify for a diagnosis of BPD. Similar diagnostic profiles have been identified for antisocial, avoidant, narcissistic, obsessive-compulsive, and schizotypal personality disorders. Restructuring the dimensions into categories via this hybrid model was intended to facilitate clinical utility and create a clear connection between the traditional and alternative personality disorder models (Morey & Skodol, 2013).

Potential Value of a Categorical Model

While many researchers have advocated for the implementation of a dimensional model, others have raised some concerns about making such a dramatic shift in how we think about personality pathology (Widiger & Trull, 2007; Zimmerman, 2012). The most basic argument for retaining the categorical framework is simply that there is insufficient justification for abandoning an established model for personality pathology (Zimmerman, 2012). Any change in a model can make it difficult to know whether past research still applies and whether treatments based on the previous model will still work. The suggested change from the traditional categorical model to a dimensional model is a fundamental change in the conceptualization of personality disorders. Therefore, if this model is adopted, new research will be needed on topics that have already been examined in the traditional framework. This process of repeating research becomes especially

problematic if the conceptualizations is changed multiple times. Of course, smaller shifts in a model mean that more research and treatments are likely to remain relevant, but one big shift may be preferable to multiple small ones. Continually shifting diagnoses may keep the field of personality pathology from advancing because there is a lack of continuity and understanding needed for ongoing research. Because of the consequences of dramatically shifting conceptualizations personality pathology, it is important that we make sure such a shift is necessary and that any new model is superior to the old one.

A more general argument for categorical models is their clinical utility (Widiger & Trull, 2007). Dimensional models are hard to implement because they lack the qualitative distinctions between sick and well that are normally used to make decisions about treatment and other activities in medical settings (Krueger, 2013; Widiger & Trull, 2007). Categories also make describing pathology in order to share information about a patient or find relevant treatments much simpler. It is far easier to name one disorder than to list off a patient's levels on varying dimensions. Additionally, there is a concern that a departure from this medical model of disorders will make psychological problems seem less like legitimate "diseases" (Al-Dajani et al., 2016). This concern also suggests that there may be other problems with straying too far from a traditional diagnostic framework, such how health insurance would cover non-categorical disorders. So there are many practical reasons why utilizing a categorical model for personality pathology could be useful, even if it is different than the current traditional model.

Categories can also help us to understand patterns in personality pathology at a theoretical level. Knowing which symptoms appear together can be very useful. Sometimes this is because the specific combinations of symptoms can have effects over

and above the sum of their parts (Hicks, Clark, & Durbin, 2017). However, even without added explanatory value, knowing which symptoms co-occur can be helpful. This knowledge may point to links between traits that will allow researchers to better understand the etiology of a pathology or identify potential treatments. Additionally, simplifying the complex network of pathological personality traits into a smaller number of categories may clarify personality pathology's relation to other psychological frameworks, such as personality and pathology.

Finally, the structure of the current DSM-5 alternative personality disorder model illustrates a belief that there is value in a categorical model. Instead of implementing a purely dimensional model, the experts who created the DSM-5's alternative model suggested a hybrid format such that categories still exist, even within the dimensions (American Psychiatric Association, 2013a). This is a clear attempt to bridge the gap between the traditional categorical model and the new dimensions. It suggests that the categories have meaning or utility. Therefore, it makes sense to further explore how the dimensions of the alternative model relate to meaningful or useful categories.

Based on these arguments, it seems reasonable to consider alternatives before fully abandoning a categorical framework of personality pathology for a dimensional one. Retaining some type categorical model would be less of a change than implementing a dimensional model, which could potentially make it easier to connect research and treatments from the old framework to the new one. Additionally, there are practical and theoretical reasons to consider potential categorical models, such as the clinical utility of the model, and increased understanding connections between personality pathology symptoms. Finally, the DSM-5 has already indicated that a categorical framework may be

helpful by structuring its alternative dimensional model around a hybrid format.

Therefore, the question of whether personality pathology categories exist should be considered further.

Exploring Categorical Models

Problems with the traditional model have led researchers to call for a replacement (Widiger & Trull, 2007). However, the long history of the traditional categorical model, and the large literature relating to it, means that it is important to carefully consider all potential alternatives before replacing it (Zimmerman, 2012). It must be shown that any potential replacement is a superior representation of personality pathology compared to all the other potential models, including the current traditional model. Researchers should consider both the type of models (categorical vs. dimensional) that should replace it, and how the parts of that model, the categories or dimensions, should be characterized.

One approach to consider for improving the conceptualization of personality pathology is to integrate the empirically derived dimensions of the DSM-5's alternative model into a categorical framework (American Psychiatric Association, 2013a). Integrating dimensional traits into a categorical framework may create a framework that reflects existing qualitative differences between groups while accounting for underlying continuous differences in pathology severity (Carragher et al., 2015). A survey of 96 personality disorder experts found support for this type of model among both researchers and clinicians (Bernstein et al., 2007). Around 70% of respondents endorsed the idea of a personality disorder system that integrated both categories and dimensions, compared to 25% for the traditional categorical model and 55% for a purely dimensional system.

The current DSM-5 alternative model suggest that there has been at least some thought about how to integrate dimensional and categorical approaches, because it includes a hybrid format that bridges dimensions and categories (American Psychiatric Association, 2013a). However, these hybrid categories still suffer from many of the problems of the traditional models especially comorbidity (Clark et al., 2015). This may not be surprising because the hybrids are just using the trait criteria to reconstruct the same traditional categories. So, it is possible that the problem is not with the type of model (categorical vs. dimensional), but with the specific categories used in the traditional model. There may be unidentified personality pathology categories that overlap less or that have less heterogeneity. Therefore, it may be helpful to explore other possible categories which are defined by patterns of these traits.

Person centered analyses can be used to explore this question. They are designed to reveal hidden subgroups that share certain patterns of characteristics (Hicks et al., 2017). This means these analyses can empirically identify natural latent subgroups in a population which are defined by a constellation of pathological personality traits (Daljeet, Bremner, Giammarco, Meyer, & Paunonen, 2017; Hicks et al., 2017). Exploring these analyses may suggest theories and models which will increase understanding of personality pathology (Hicks et al., 2017). If meaningful groups are identified, then they could simplify communication about an individual's pathology. Identifying these groups would also allow us to explore how the interaction between the underlying personality traits lead to particular symptoms and outcomes. Since the current set of traits in the DSM-5's alternative model has been empirically derived as a framework to describe

personality pathology it makes sense to see if this framework can be used to describe categories.

Hypothesized models. One type of person centered analysis is called latent profile analysis (LPA) (Hallquist & Wright, 2014; Hicks et al., 2017; G. Williams & Kibowski, 2016). LPA is an exploratory procedure that searches for patterns in a set of dimensional traits which can be used to differentiate individuals into a particular number of categories. The pattern of traits which defines a category is called a profile. There are three steps to the LPA process. The first is identifying the number of categories that may exist in a potential model. Next, based on that number of categories, the LPA looks for profiles of traits that can be used to divide the participants up into that number of groups. Finally, the profiles need to be interpreted to see if they are meaningful or just the result of random noise. No matter how well a model fits the data, the meaning of the profiles recovered by the model must be taken into account. Prior research indicates five different meaningful models that might be found in a latent profile analysis of the DSM-5 criterion B traits.

The first model is one that is recovered by mixture models when the underlying pattern in the data is really dimensional and not categorical at all (Hallquist & Wright, 2014). Sometimes referred to as the “salsa pattern,” these profiles consist of “mild, medium and hot levels” or in other words, low, medium and high profiles (Hallquist & Wright, 2014, p. 9). Individuals in the low group will be relatively low on all the traits. Individuals in the high group will be relatively high on all the traits, and individuals in the medium group will be in the middle. This pattern emerges when the only real

differences in the data are dimensional and a categorical structure with a certain number of groups is artificially enforced in the data.

A second possibility is that patterns of personality pathology will organize themselves by general type of pathology: internalizing, externalizing and thought disorders (Kotov et al., 2017). These general categories were identified as part of a project which aims to integrate all of pathology into one framework. If this model emerges, then I would expect to see three profiles. First, an internalizing group that is high on the trait facets in the negative affect domain (see Figure 1 for the facets in each domain). Second, an externalizing profile where individuals are high on the traits in the disinhibition and antagonism. Finally, a thought disorder profile with individuals who are high on the psychoticism facets. If this model is recovered, then these categories would help integrate personality pathology into the larger framework of pathology.

The third and fourth hypothesized models are suggested by the literature on normal range personality traits. Since the criterion B traits of the alternative personality disorder model map onto the Big 5 personality traits, it seems reasonable that similar profiles might appear with both sets of traits. Research on Big-5 profiles suggests two possible models. One with three groups and one with five. The three group model is the model that has historically been reported in Big-5 profile research (Daljeet et al., 2017). The groups in these models are defined by a resilient profile, an over-controlled profile, and an under-controlled profile. While different researchers have assigned slightly different traits to each of these profiles over the years, there is a general pattern I would expect to find. For the resilient profile individuals would be low on all of the pathological personality traits. In the over-controlled profile, they would be high on the facets of

Detachment and low on the facets of Negative Affect and Antagonism. Finally, for the under-controlled profile, the pattern would be low on Detachment traits and high on facets of Antagonism and Disinhibition.

Alternatively, some more recent research on normal range personality has suggested a five group model (Daljeet et al., 2017). The profiles for these groups are called socially considerate, self-confident, goal oriented, withdrawn, and maladjusted. These profiles can also be translated into the criterion B framework and are described in Table 1. Finding either of the models suggested by research on normal range personality would help integrate personality pathology with the larger personality framework. It would also be added evidence that the Criterion B traits and the Big-5 are simply opposite versions of the same traits, because both sets of traits yield the same results.

Table 1
Expected Five Profile Model

	<u>Socially Considerate</u>	<u>Self- Confident</u> Disinhibition	<u>Goal- oriented</u> Negative Affect, Antagonism	<u>Withdrawn</u> Detachment	<u>Maladjusted</u> Everything
Expected high					
Expected Low	Antagonism, Disinhibition, Detachment	Detachment, Antagonism, Negative Affect	Detachment	Negative Affect	

The final hypothesized model for personality pathology groups is the traditional personality disorder categories. There are two ways to explore this possibility. The first is to see whether the profiles recovered by the LPA match the traits assigned to each traditional disorder in the hybrid version of the alternative personality disorder model (see Table 2) (American Psychiatric Association, 2013a). Alternatively, I can look at

whether the individuals assigned to a group based in the LPA model all share a traditional PD diagnosis based on a separate measure.

Table 2
The DSM-5 Alternative PD Model's Hybrid Format

<u>Disorder</u>	<u>Traits</u>
Antisocial PD	Manipulativeness, Callousness, Deceitfulness, Hostility, Risk Taking, Irresponsibility
Avoidant PD	Anxiousness, Withdrawal, Anhedonia, Intimacy Avoidance
Borderline PD	Emotional Lability, Anxiousness, Separation Insecurity, Depressivity, Impulsivity, Risk Taking, Hostility
Narcissistic PD	Grandiosity, Attention Seeking
Obsessive-compulsive PD (OCPD)	Rigid Perfectionism, Perseveration, Intimacy Avoidance, Restricted Affectivity
Schizotypal PD	Cognitive and Perceptual Dysregulation, Unusual Beliefs and Experiences, Eccentricity, Restricted Affectivity, Withdrawal, Suspiciousness

These five hypothesized models provide a framework within which to interpret the LPA result for the current project. Finding any of these models will reveal something about the structure of personality pathology and how it fits into the larger frameworks of personality and pathology.

The Current Studies

The current project consists of two studies which aim to reveal whether empirically justifiable personality pathology categories exist and to examine the nature of

those categories if they do exist. In both studies, I used latent profile analysis to determine whether the 25 traits from DSM-5 Alternative Personality Disorder Model's Criterion B define latent personality pathology types. There does not appear to be any previous studies that have explicitly examined this question. However, a number of recent articles have suggested that person centered approaches, such as latent profile analysis, may be helpful in understanding the conceptualization of personality pathology (Carragher et al., 2015; Hallquist & Wright, 2014; Hicks et al., 2017).

In order to explore personality pathology more specifically, I examined possible models in both the full samples, which contains a spectrum of people from those with no pathology to those with significant pathology, and in the subset of participants who had relatively high levels of personality dysfunction (Criterion A). Criterion A is a useful indicator of personality dysfunction because the DSM-5's alternative dimensional model suggests that individuals need to be high on this trait in order to qualify for a personality disorder diagnosis (American Psychiatric Association, 2013a). So using criterion A to separate the high pathology subgroup not only allows me to explore patterns within this population of interest, but also parallels the way the alternative personality disorder model would be implemented

Finally, in the second study of the current project I was able to analyze clinician trait ratings of the participants' levels on the criterion B pathological personality traits, as well as self-reports of these traits. Getting an outside perspective on levels of personality pathology may be helpful because individuals may be biased about their own levels of pathology and because clinicians may need to make these judgements if a model based on these dimensions is implemented in clinical practice.

STUDY 1

Study 1 allowed for an initial exploration of potential personality pathology categories defined by the DSM-5 criterion B pathological personality traits.

Method

Participants. Participants were recruited for an online study via the Amazon Mechanical Turk website. They completed a number of personality measures in exchange for monetary compensation. A total of 538 participants completed the measures for this study, with a mean age of 33.51 (*s.d.* =10.57). The sample consisted of 336 men (62%) and 200 women (37%) with two participants choosing not to report their gender. The sample was moderately diverse (see Table 3).

Table 3
Study 1: Distribution of Race in the Sample

<u>Race</u>	<u>Frequency</u>	<u>Percent</u>
American Indian or Alaska Native	31	5.8%
Asian	125	23.2%
Native Hawaiian or Pacific Islander	1	.2%
Black or African American	58	10.8%
White	326	60.6%
Bi-racial	11	2%
Multi-racial	3	.6%

Additionally, participants were asked to self-report any current or previous personality disorder diagnoses. A total of 133 (24.7%) reported either a current or past PD diagnosis, with 92 (17.1%) with reporting both a current and past diagnosis. The breakdown of self-reported personality pathology can be found in Table 4.

Table 4
Study 1: Self-Reported Personality Pathology

<u>Disorder</u>	<u>Present (percent)</u>	<u>Past (percent)</u>
Schizotypal	10 (1.9%)	18 (3.3%)
Schizoid	22 (4.1%)	23 (4.3%)
Paranoid	23 (4.3%)	38 (7.0%)
Histrionic	45 (8.3%)	46 (8.6%)
Narcissistic	19 (3.5%)	28 (5.2%)
Anti-Social	37 (6.9%)	32 (5.9%)
Borderline	25 (4.6%)	24 (4.5%)
Dependent	26 (4.8%)	28 (5.2%)
Avoidant	12 (2.2%)	19 (3.5%)
Obsessive-Compulsive	14 (2.6%)	10 (1.9%)
Non-Specified	10 (1.9%)	7 (1.3%)

Note: Some participants indicated multiple personality disorder diagnoses.

Measures. *Levels of Personality Functioning Scale Brief Form (LPFS-BF).* (Bach & Hutsebaut, 2018) This scale consists of 12 items designed to measure general personality impairment for Criterion A of the DSM-5's alternative dimensional model. Participants rated items on a four-point scale, where 0 was "very false or often false" and 3 was "very true or often true." The items all reflected personality dysfunction, such that a high score on this scale indicated a high amount of personality dysfunction (e.g. "I often do not know who I really am.") For the purpose of this study I calculated the total scale score, which had excellent reliability, with $\alpha=.95$ in our sample.

Personality Inventory for the DSM-5 Short form (PID-5-SF). (Maples et al., 2015) This measure is a 100 item version of the Personality Inventory for the DSM-5 (Krueger, Derringer, Markon, Watson, & Skodol, 2012). The PID-5 measure reflects criterion B, the 25 pathological personality traits alternative model, and is cited in the DSM-5 as a way to operationalize them (American Psychiatric Association, 2013a). Participants rated how well items described them on a 0 to 3 scale, where 0 was "very false or often false" and 3 was "very true or often true." Four items reflect each of the 25 facet level traits

from Criterion B. Higher scores on each trait indicate a higher level of that pathology. The reliability for the facet level scales in our sample was excellent, ranging from $\alpha=.81$ to $\alpha=.92$ (See Table 5 for more details).

Traditional Personality Disorder Prevalence. At the end of the study, participants were asked to self-report on any current or past personality disorder diagnoses that they had received. First they were asked whether they had a current PD diagnosis. If they indicated that they had a diagnosis, then they were presented with a list of the traditional PDs and asked to check all that applied. The process was then repeated for past personality disorder diagnoses.

Results

Descriptives. First I examined levels of personality (dys)functioning (criterion A) in this sample. The mean level of personality functioning was 1.03 ($s.d.=.84$). For part of the analyses I wanted to designate a high end group, because the DSM-5 alternative model suggest that individuals must be high on criterion A in order to qualify for a personality disorder diagnosis. However, it does not define what qualifies as a high level of personality dysfunction. In this study roughly a fourth of participants (24.7%) reported either a current or past personality disorder diagnosis, so I used that as an indicator of the amount of pathology which might be present in the sample. Therefore, the “high end” group for this sample was defined as those in the top quarter for levels of personality (dys)functioning (i.e. Those above the 75th percentile on the LPFS-BF). This gave me an $n=135$ for the high end group, which contained the participants with the highest levels of criterion A. The high end group had personality (dys)functioning scores ranging from

1.75 to 2.92, ($Mean=2.17$, $s.d.=.27$). The low end group had levels of personality (dys)functioning scores ranging from 0.00 to 1.75 ($Mean= .64$, $s.d= .56$).

Descriptive statistics were also calculated for the 25 criterion B traits from the PID-5. The trait means ranged from Callousness with a mean of 0.85 ($s.d.=.91$) to submissiveness with a mean of 1.32 ($s.d.=.83$) (see Table 5). When broken down by groups, the means in the high end group range from 1.89 to 2.24, and the means in the low end group range from 0.49 to 1.05 (see Table 5).

Latent Profile Analyses. LPA analysis was used to explore the question of whether meaningful categorical groups could be recovered from the PID-5 (criterion B) pathological personality traits.

Full Sample. First I examined the data from the full sample to see whether there were any latent groups present in the full spectrum sample.

PID-5-SF. The first step in Latent Profile Analysis is to compare possible models based on their fit statistics. Fit statistics are used to assess the probable number of profiles present in the data (Daljeet et al., 2017). A number of fit statistics exist. In this case, the Bayesian Information Criterion (BIC; Schwarz, 1978) and the Integrated Complete-data Likelihood (ICL; Biernacki, Celeux, & Govaert, 2000) were used. These two statistics are related, but use slightly different information to assess model fit. They provide two different indicators of the which models to investigate (Bertoletti, Friel, & Rastelli, 2015; Biernacki et al., 2000). Better model fit is indicated by smaller values for both BIC and the ICL.

Table 5
Study 1: PID-5 Descriptives

Trait	Whole Group			Low End		High End	
	Mean	S.D.	α	Mean	S.D.	Mean	S.D.
Perceptual Dysreg	.86	.93	.92	.50	.69	1.95	.69
Eccentricity	1.17	.91	.89	.86	.79	2.09	.55
Unusual Beliefs	.94	.92	.88	.59	.71	1.96	.63
Withdrawal	1.22	.88	.86	.91	.75	2.14	.54
Anhedonia	1.00	.92	.91	.65	.75	2.05	.49
Intimacy Avoidance	1.03	.93	.90	.71	.78	2.00	.61
Restricted Affect	1.11	.82	.81	.81	.66	2.00	.56
Depressivity	.98	.98	.92	.58	.72	2.21	.54
Suspiciousness	1.03	.88	.87	.70	.69	2.03	.56
Anxiousness	.99	.90	.88	.97	.80	2.24	.51
Submissiveness	1.32	.83	.86	1.05	.73	2.12	.53
Emotional Lability	1.00	.90	.91	.63	.70	2.08	.48
Separation Insecurity	1.06	.87	.86	.74	.70	2.02	.56
Perseveration	1.13	.89	.89	.79	.73	2.13	.49
Hostility	1.02	.89	.88	.67	.69	2.06	.56
Deceitfulness	.94	.86	.89	.63	.66	1.90	.66
Grandiosity	.94	.93	.91	.62	.72	1.91	.80
Callousness	.85	.91	.91	.49	.64	1.90	.77
Manipulativeness	1.06	.90	.88	.77	.74	1.94	.73
Attention Seeking	1.07	.89	.89	.78	.74	1.92	.75
Rigid Perfectionism	1.16	.88	.87	.86	.76	2.07	.54
Risk Taking	.96	.87	.88	.64	.69	1.89	.68
Irresponsibility	.88	.91	.90	.52	.64	1.97	.69
Impulsivity	1.06	.92	.92	.73	.76	2.02	.65
Distractibility	1.14	.90	.90	.83	.78	2.07	.52

Note: The facets are in order by domain: Psychoticism, Detachment, Negative Affect, Antagonism, and Disinhibition. This order is retained for all additional Tables and Figures in this paper.

The BIC for the PID-5 in this study is presented in Figure 2 and the ICL is presented in Figure 3. Neither of these fit statistics seem to indicate a clear model of choice. Therefore, I ran a variety of models with different numbers of profiles to see whether any fit with the hypothesized models. The models I generated showed a clear pattern. They all showed the “salsa” pattern where one group was high on all of the

personality pathology variables, one was low, and one was in the middle (Hallquist & Wright, 2014).

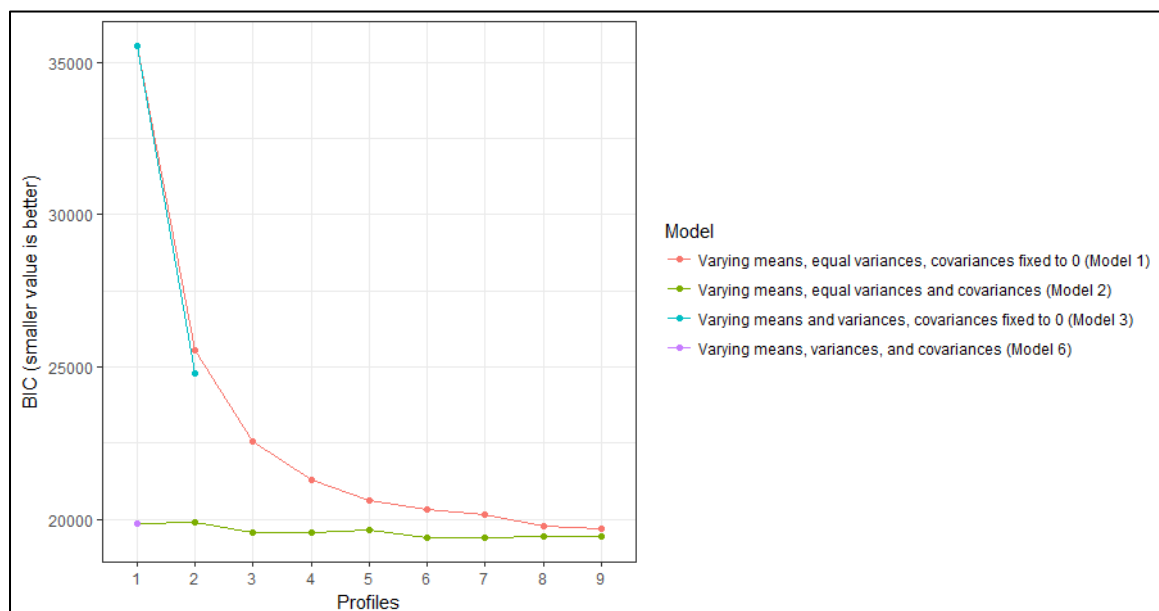


Figure 2: Study 1 BIC for the Full Sample

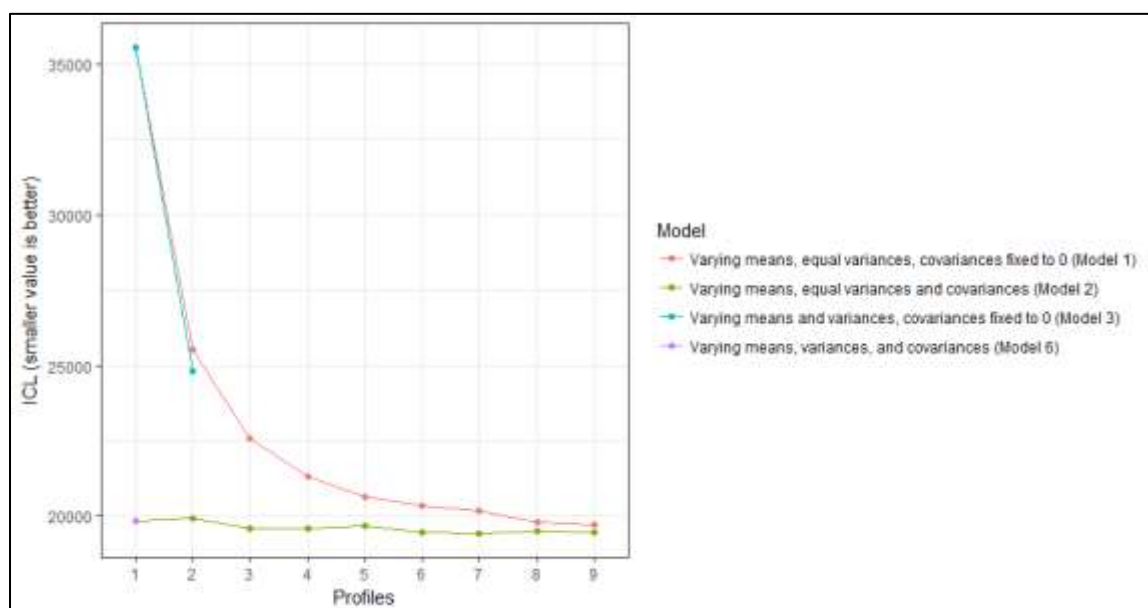


Figure 3: Study 1 ICL for Full Sample

One fairly typical example of what these models look like is the three profile model. The means for each profile in this model are listed in Table 6 and graphed in

Figure 4. Profile 1 has high levels of the pathological personality traits, with the pathological personality trait means ranging from 2.04 to 2.21. Profile 2 is characterized by medium levels of the pathological personality traits ranging from .90 to 1.61, and profile 3 shows low levels of the pathological personality traits with a range of .07 to .78. These profiles also converge with our other measures of personality dysfunction. At the bottom of Table 6, the means of levels of personality (dys)function are reported, along with the percent of individuals in each category who reported a past or present personality disorder diagnosis. The mean level of personality dysfunction was highest in profile 1, lowest in profile 3 and in the middle in profile two. Similarly, profile 1 contained the highest proportion of people with self-reported PD diagnoses, followed by profile 2 and then profile 3.

High End. Next, I ran the model with just the participants who had high levels of criterion A, general personality pathology. This served two purposes. First, it parallels the DSM-5's alternative dimensional model by incorporating both of the alternative model's components. A high level of criterion A is a requirement for receiving a PD diagnosis (American Psychiatric Association, 2013a). Once an individual meets this threshold for a personality disorder diagnosis, the criterion B pathological personality traits can then be used to determine the "flavor" of that individual's pathology. Running the LPA analysis on the high criterion A group allows me to explore the sorts of criterion B "flavors" that might exist in the DSM-5's alternative personality disorder framework.

Table 6
Study 1: Three Profile Model of the PID-5

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>
Perceptual Dysregulation	2.17	1.01	.07
Eccentricity	2.15	1.47	.44
Unusual Beliefs	2.14	1.12	.17
Withdrawal	2.07	1.45	.62
Anhedonia	2.04	1.34	.22
Intimacy Avoidance	2.09	1.16	.38
Restricted Affectivity	2.09	1.27	.48
Depressivity	2.21	1.25	.15
Suspiciousness	2.15	1.28	.27
Anxiousness	2.16	1.61	.61
Submissiveness	2.19	1.42	.78
Emotional Lability	2.11	1.24	.24
Separation Insecurity	2.09	1.27	.38
Perseveration	2.14	1.47	.35
Hostility	2.14	1.27	.26
Deceitfulness	2.06	1.12	.23
Grandiosity	2.18	1.02	.24
Callousness	2.08	.90	.16
Manipulativeness	2.18	1.23	.36
Attention Seeking	2.17	1.14	.44
Rigid Perfectionism	2.12	1.36	.52
Risk Taking	2.12	1.07	.26
Irresponsibility	2.15	1.00	.13
Impulsivity	2.20	1.28	.30
Distractibility	2.10	1.49	.39
LPFS-BF	3.09	2.29	1.28
Percent PD	65.9%	23.8%	4.6%
n	126	171	241

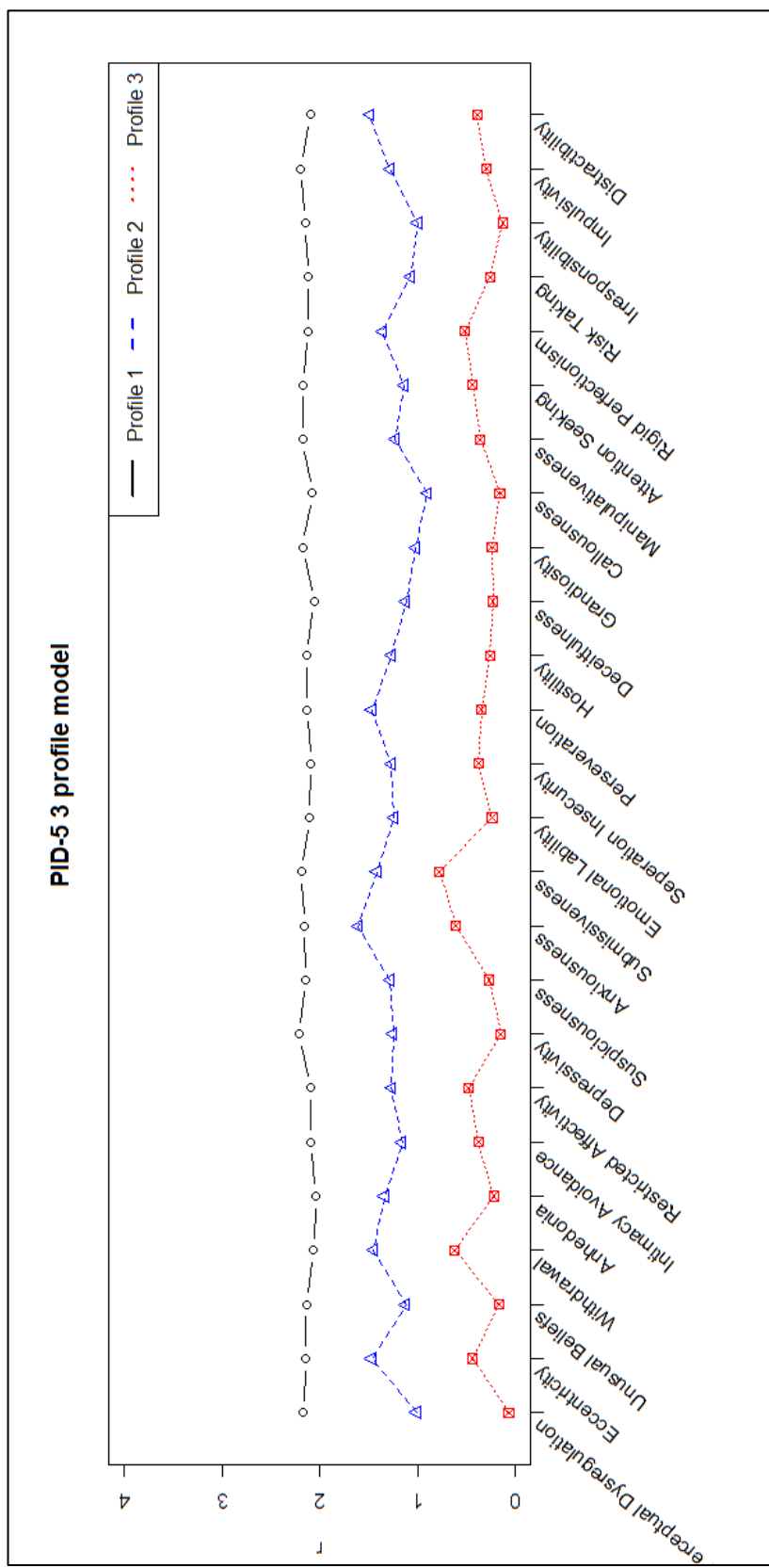


Figure 4: Study 1 PID-5 Three Profile Model

The second reason to run the LPA analyses on just the high criterion A group is that it allowed me to separate out and focus on those participants who are high in pathology. This means that if there are latent subgroups within this portion of the population, then I have a better chance of identifying them rather than defaulting to the “salsa pattern.” Even if the overall underlying structure of personality pathology is dimensional, there could be some patterns at the extreme ends of these dimensions which is worth investigating.

PID-5-SF. As with the full sample analyses, neither the BIC of the ICL suggested a specific model, so I tested several models (see Figures 5 and 6). The pattern in these models was slightly less clear than with the full sample. However, it still appears to be a salsa pattern, but instead of high medium and low groups, there is a medium/high group and an even higher group(s). See Figure 7 and Table 7 for an example of a two profile model. The other models I examined followed a similar pattern, simply squeezing additional levels in between as needed. In the 2 profile model, profile 1 has slightly lower levels of the pathological personality traits, with means ranging from .68 to 2.10, and lower levels of general personality dysfunction (criterion A). This group also has a lower concentration of individuals who have a past or current personality disorder diagnosis. In contrast, profile 2 has slightly higher means for the pathological personality traits (ranging from 2.10 to 2.27) and higher levels of criterion A. Additionally a larger percentage of people in category 2 have a past or present personality disorder diagnosis.

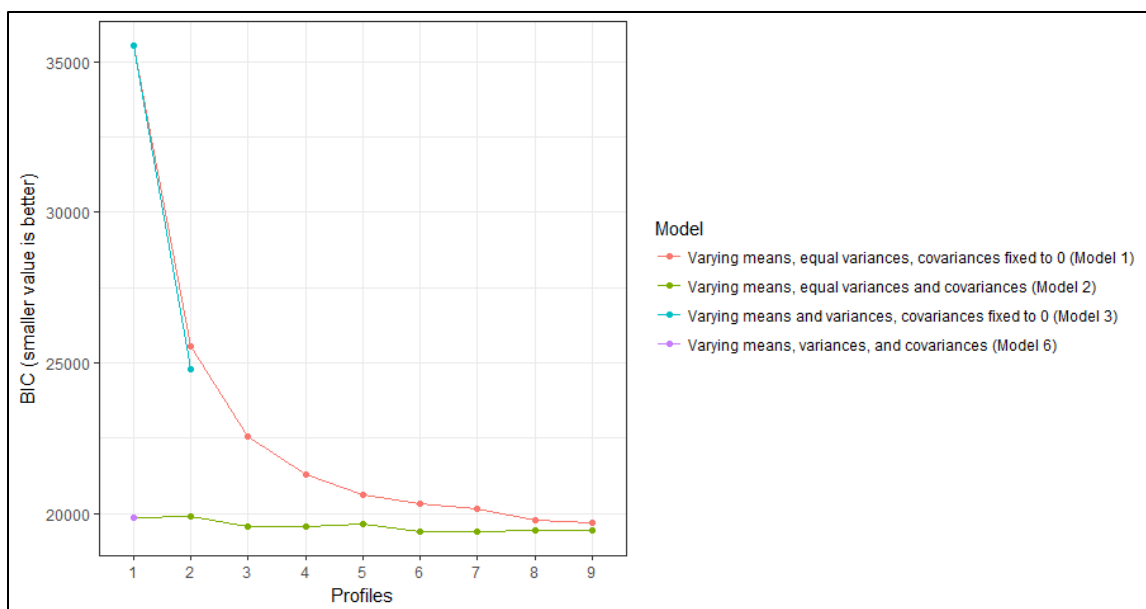


Figure 5: Study 1 High End BIC

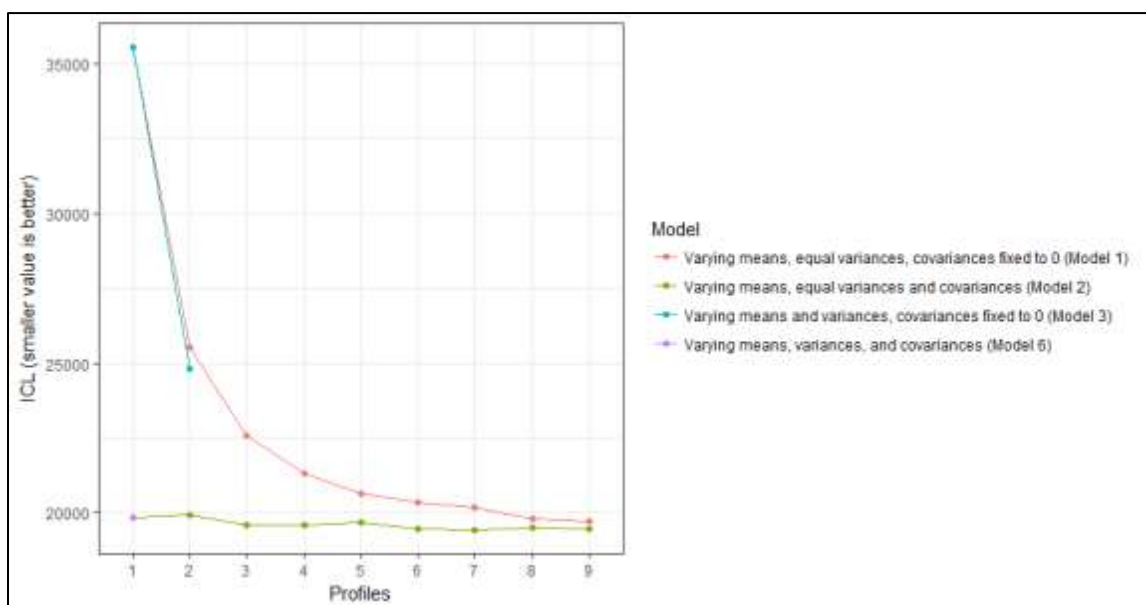


Figure 6: Study 1 High End ICL

Table 7

Study 1: High End Two Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>
Perceptual Dysregulation	.93	2.20
Eccentricity	1.71	2.18
Unusual Beliefs	1.12	2.17
Withdrawal	1.99	2.18
Anhedonia	1.81	2.10
Intimacy Avoidance	1.44	2.13
Restricted Affectivity	1.32	2.17
Depressivity	1.94	2.27
Suspiciousness	1.41	2.18
Anxiousness	2.26	2.23
Submissiveness	1.62	2.24
Emotional Lability	1.76	2.16
Separation Insecurity	1.43	2.17
Perseveration	1.87	2.19
Hostility	1.52	2.19
Deceitfulness	.96	2.12
Grandiosity	.68	2.20
Callousness	.78	2.17
Manipulativeness	.76	2.22
Attention Seeking	.80	2.19
Rigid Perfectionism	1.61	2.18
Risk Taking	.79	2.15
Irresponsibility	.95	2.21
Impulsivity	1.11	2.24
Distractibility	1.82	2.14
LPFS-BF	3.08	3.20
Percent PD	23.1%	74.6%
n	26	109

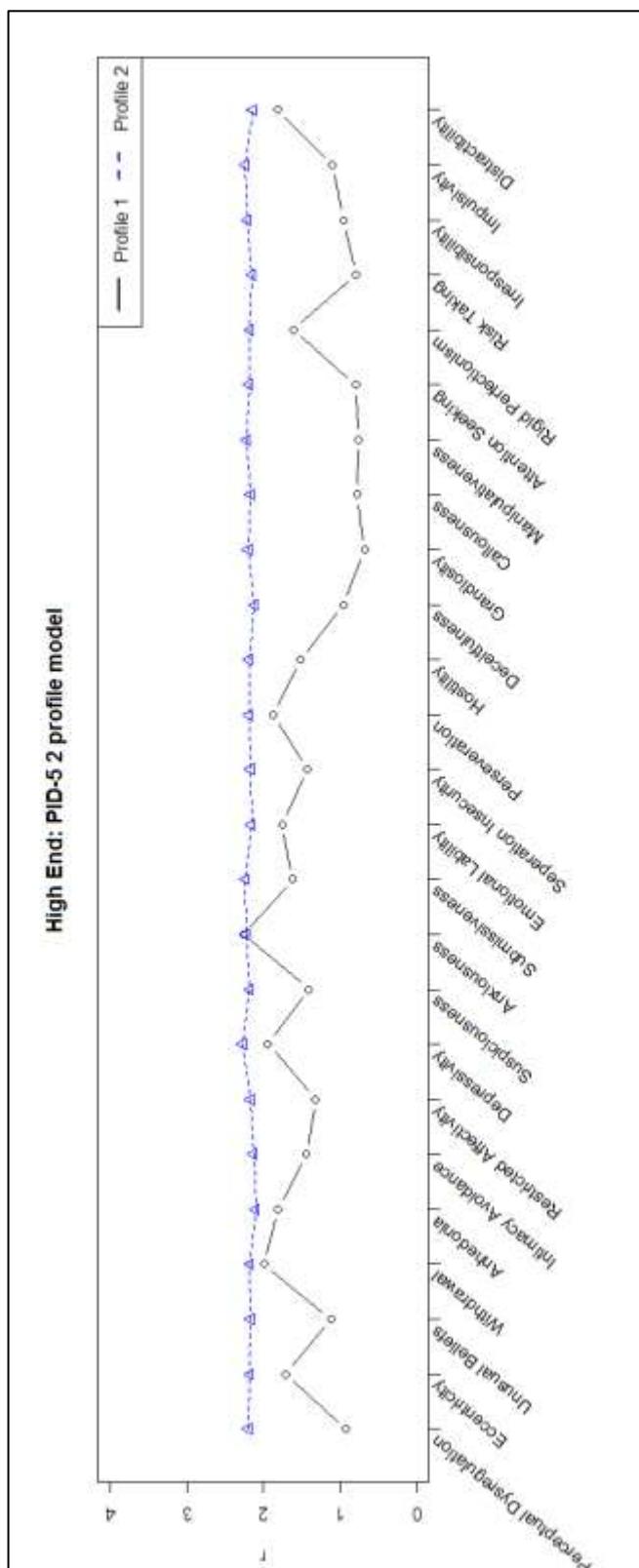


Figure 7: Study 1 High End Two profile model

Discussion

The results of Study 1 suggest that the differences in personality pathology are more quantitative than qualitative. Both the overall and the high end samples clearly showed a “salsa pattern,” with a high group and a low group. This suggests that personality pathology might be better represented by dimensions rather than by categories, because this pattern emerges when data that is completely dimensional is forced into a categorical framework (Hallquist & Wright, 2014). However, this is just one data set so the pattern might be unique to this group of people. Other profiles might exist in a different sample because the sample contains different people. So more evidence is needed to draw a conclusion about the larger population.

This study also has some limitations. Because the data was collected online it relies on self-report information. This is especially important for the personality disorder diagnoses. Individuals in our sample might qualify for a personality disorder without knowing it because they have never been to see a clinician. Additionally, all self-reports are subject to bias especially when it comes to evaluative traits (Yalch & Hopwood, 2017). Pathological traits may be especially evaluative by their very nature because they are the dysfunctional version of the traits. Endorsing them means identifying and admitting to negative qualities, which may be easier to do accurately for others than it is for the self.

The implications of this study are clear. Personality pathology appears to be dimensional. However, it would be useful to replicate these results and to investigate whether different profiles exist when pathology is rated by informants rather than by self-report data.

STUDY 2

Study 2 used archival data to replicate and extend Study 1. Because the data is archival slightly different measures were used, but the same analysis approach was taken. This study built on Study 1 by using clinician reports. Clinicians provided an actual traditional personality disorder diagnosis for all the participants and also rated them on the pathological personality traits (criterion B). While any sort of informant report would be a useful extension of Study 1 clinician ratings of the on the criterion B traits is especially interesting. If the alternative model, or some variation of it, is adopted in future versions of the DSM then clinicians will need to be able to assess these traits in order to diagnose and treat patients. Therefore, it is important to consider their perception of other's personality pathology.

Method

Participants. Participants were recruited as part of a 3-wave longitudinal study of personality pathology. The original study specifically targeted borderline personality disorder, but the current analysis is intended to look at personality pathology more broadly. My data comes from the second wave of the study, which had a total sample of 204 participants. The mean age of this sample was 45.4 (*s.d.*=11.8). Most of the participants were White (60.0%) or Black/African America (39.0%). A small number of Asians (1.1%) and Native Americans (5.9%) participants were also in the sample. Gender was only measured at wave 1 of the longitudinal study so this information is not available for the whole wave 2 sample. However, the group for which gender information was available at wave 2 was 66% female. Additionally, 76 participants (37.3%) qualified for a

traditional personality disorder diagnosis based on the SIDP-IV criteria. See Table 8 for the frequency of individual disorders.

Table 8

Study 2: Traditional PD frequencies in the sample

<u>Disorder</u>	<u>Frequency</u>	<u>Percent</u>
Schizoid	4	2.0%
Paranoid	12	5.9%
Schizotypal	1	0.5%
Anti-social	31	15.2%
Borderline	34	16.7%
Histrionic	2	1%
Narcissistic	7	3.4%
Avoidant	21	10.3%
Dependent	3	1.5%
Obsessive-Compulsive	23	11.3
Mixed	15	7.4%

Measures. *General Personality Pathology Measure (GPP)*¹. (Morey et al., 2011)

Participants completed 64 self-report items reflecting a general factor of personality functioning which included both internal and interpersonal dysfunction (Bender, Morey, & Skodol, 2011; Morey, 2017). This measure was intended to assess criterion A of the DSM-5's alternative model. Participants rated their agreement with each item on a 4 point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Previous exploratory factor analysis has been conducted which concluded that a one-factor structure was appropriate for this scale. Therefore, a single scale score was calculated with an alpha reliability of 0.98.

Personality Inventory for the DSM-5 (PID-5). (Krueger et al., 2012). This

measure reflects criterion B, the 25 pathological personality traits alternative model, and

¹ The GPP was only recently given an official name (Morey, 2017), it has previously been referred to as the Personality Level Measurement, or the Levels of Personality Functioning.

is cited in the DSM-5 as a way to operationalize them (American Psychiatric Association, 2013a). For the purpose of this study, 103 of the total 220 items were selected. They were intended to reflect all 25 of the trait facets. This data was collected before the short form used in Study 1 was introduced, so it uses a slightly different set of items. Specifically, all the items for the seven hallmarks traits of BPD were included (emotional lability, anxiousness, separation insecurity, impulsivity, depressivity, hostility, and risk-taking) because BPD was a focus of the original study. Two additional items were selected for each of the remaining 18 traits. Participants responded to the items on a 5 point Likert scale from 0 (very false or often false) to 4 (very true or often true).

Structured Interview for DSM-IV Personality (SIDP-IV). (Pfohl, Blum, & Zimmerman, 1995) The SIDP-IV is a semi-structured clinical interview, assessing personality disorder symptoms, as defined by the DSM-IV traditional model. Clinical interviewers assessed each participant on a list of symptoms, rating the severity for the participant's "usual self" based on a discussion of the participant's experiences over the previous five years. Symptoms were rated on a four point Likert scale from 0 (not present) to 3 (strongly present). Participants who scored a two or higher on more than half of the symptoms of a particular disorder were assigned that diagnosis.

Clinician ratings. (American Psychiatric Association, 2010). This form presents clinicians with a list of the DSM-5 pathological personality traits and brief definitions. They are asked to rate the individual on each trait using a scale of 0-3 where 0 is "very little or not at all descriptive", and 3 is "extremely descriptive". The rating is intended to indicate the individual's normal pattern of behavior. The clinicians completed this

measure after conducting a clinical interview for traditional personality disorder symptoms.

Procedure. Participants came in to the lab and met with a clinician. The clinician then administered a number of structured interviews focused on personality pathology and stressful life events, including the SIDP-IV. The clinician then rated the participant on the DSM-5 Criterion B pathological personality traits. These ratings were made on the basis of what the clinician had observed in their interviews. Participants were also asked to complete a number of self-report measures relating to personality, pathology, and their past experiences. These self-report measures included the PID-5 and the GPP.

Results

Descriptives. The first variable I examined was the GPP (criterion A) score. Participant's average score on general personality pathology was a 2.17 (*s.d.*=.53). As in Study 1 I needed to find a way to decide which participant should be included in the high end group. Because this data was intentionally oversampled for personality pathology, a larger proportion of the sample could be included in the high end group. In this study 37.3% of participants qualified for a current personality disorder diagnosis, suggesting that at least that percentage of the sample had a high level of pathology. LPA requires a decent sized sample, so a 50% cut off was used. The half of the sample who has the highest scores on the GPP (Criterion A) were selected for the high end group. The high end group contained 88 participants who had also completed the PID-5. Their general pathology, criterion A, scores ranged from 2.22 to 3.38 ($M=2.59$, *s.d.*=.29). The low end group contained an equal number of participants whose scores ranged from 1.09 to 2.22 ($M=1.75$, *s.d.*=.35).

I also calculated descriptives for the PID-5 traits (Criterion B of the DSM-5 alternative dimensional model). Overall the trait means ranged from .44 to 1.43 (see Table 9). When separated into groups, the trait means in the low end group ranged from .18 to 1.10. The high end group had means ranging from .69 to 1.92.

Table 9
Study 2: PID-5 Descriptives

Trait	<u>Whole Group</u>			<u>Low End</u>		<u>High End</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>A</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Perceptual Dysregulation	.56	.77	.71	.23	.45	.87	.86
Eccentricity	1.08	.88	.71	.62	.75	1.53	.75
Unusual Beliefs	.62	.78	.76	.30	.56	.94	.83
Withdrawal	1.32	.90	.75	.86	.78	1.75	.77
Anhedonia	.90	.89	.81	.33	.53	1.47	.79
Intimacy Avoidance	.88	.89	.79	.57	.77	1.19	.90
Restricted Affectivity	.91	.70	.41	.86	.65	.97	.75
Depressivity	.91	.75	.92	.38	.40	1.45	.63
Suspiciousness	1.18	.91	.74	.71	.77	1.65	.77
Anxiousness	1.43	.78	.90	.94	.56	1.92	.66
Submissiveness	1.32	.81	.69	.99	.72	1.68	.74
Emotional Lability	1.30	.81	.90	.87	.66	1.72	.72
Separation Insecurity	.95	.77	.89	.63	.59	1.29	.80
Perseveration	.95	.83	.78	.44	.53	1.48	.74
Hostility	1.19	.66	.88	.84	.51	1.55	.60
Deceitfulness	.58	.65	.66	.34	.50	.81	.69
Grandiosity	.60	.66	.52	.47	.62	.73	.68
Callousness	.44	.67	.81	.19	.40	.69	.78
Manipulativeness	1.03	.81	.79	.87	.80	1.21	.77
Attention Seeking	.89	.73	.72	.82	.72	.97	.73
Rigid Perfectionism	1.11	.84	.69	.94	.83	1.29	.82
Risk Taking	1.14	.49	.83	1.10	.46	1.19	.52
Irresponsibility	.50	.68	.50	.18	.35	.78	.75
Impulsivity	.96	.69	.83	.62	.53	1.30	.67
Distractibility	1.23	.96	.80	.74	.82	1.71	.81

The final set of descriptives was for the clinician ratings of the criterion B traits (see Table 10). The trait means in the full sample ranged from .07 to 1.18. When the sample was divided by the participants' level on criterion A. The range for the low end sample is .11 to .94 and for the high end sample it is .31 to 1.05 (see Table 10).

Table 10

Study 2: Clinician Ratings Descriptives

<u>Trait</u>	<u>Whole Group</u>		<u>Low End</u>		<u>High End</u>	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Perceptual Dysregulation	.38	.57	.23	.45	.52	.64
Eccentricity	.07	.28	.01	.11	.14	.38
Unusual Beliefs	.54	.63	.36	.55	.70	.65
Withdrawal	.56	.76	.18	.47	.91	.80
Anhedonia	.44	.67	.21	.49	.64	.75
Intimacy Avoidance	.30	.63	.11	.36	.47	.77
Restricted Affectivity	.24	.51	.18	.45	.27	.54
Depressivity	1.18	1.05	.68	.84	1.66	1.02
Suspiciousness	.55	.71	.33	.69	.76	.66
Anxiousness	.98	.98	.60	.81	1.34	1.00
Submissiveness	.32	.56	.16	.40	.47	.62
Emotional Lability	1.04	.96	.61	.78	1.45	.85
Separation Insecurity	.31	.58	.14	.28	.48	.69
Perseveration	.86	.77	.55	.59	1.18	.81
Hostility	.72	.80	.40	.69	1.03	.79
Deceitfulness	.41	.73	.29	.59	.52	.83
Grandiosity	.41	.58	.41	.54	.41	.62
Callousness	.28	.53	.15	.39	.41	.62
Manipulativeness	.37	.62	.26	.49	.47	.71
Attention Seeking	.42	.57	.31	.49	.53	.62
Rigid Perfectionism	.10	.33	.11	.36	.08	.31
Risk Taking	.57	.74	.37	.65	.76	.76
Irresponsibility	.90	.10	.64	.94	1.15	1.05
Impulsivity	.76	.81	.44	.64	.11	.83
Distractibility	1.06	1.04	.51	.76	1.58	1.00

Latent Profile Analyses. Study 2 uses the same analysis approach as Study 1. LPA was employed to explore potential categorical models for personality pathology based on the DSM-5's criterion B pathological personality traits.

Full group. First, I checked for categories present in the full sample, including individuals with no pathology and those with varying levels of pathology.

PID-5. For the PID-5's self-rated pathological personality traits both the BIC and the ICL suggest that a 3 group model would be the best fit (see Figures 8 and 9). The three profile model showed a pattern of profiles similar to what was found in Study 1 (see Table 11 and Figure 10). There are clearly groups with high, medium, and low levels of personality pathology. In this case, profile 1 shows the highest levels of the pathological personality traits. Profile 2 is slightly lower, and profile 3 lower still. The percent of current personality disorder (SIDP-IV) diagnoses and the mean level of the GPP (criterion A) in each profile follow the same pattern of high medium low as the pathological personality traits (see the bottom of Table 8).

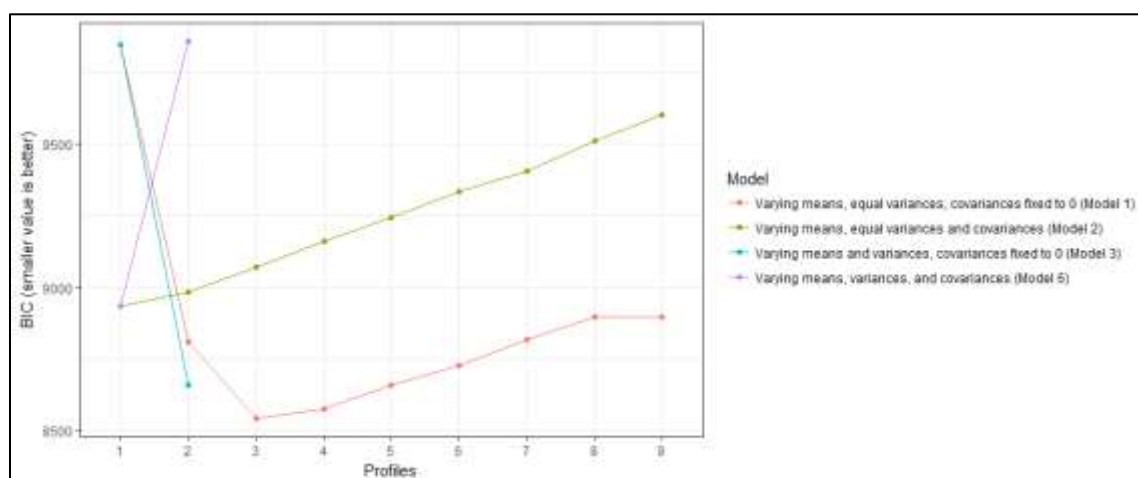


Figure 8: Study 2 BIC for the PID-5

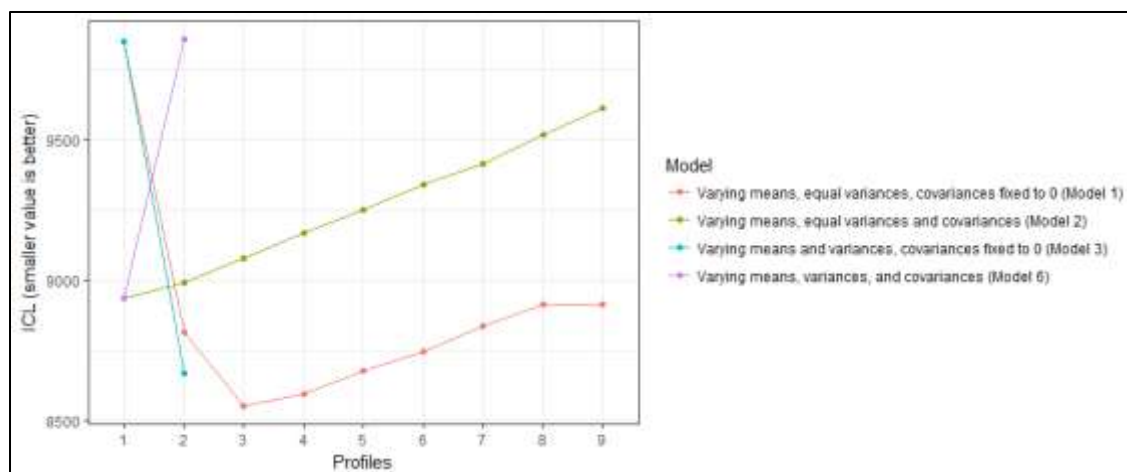


Figure 9: Study 2 BIC for the PID-5

Clinician Ratings. Next I assessed the model for the whole sample using clinician ratings. In this case, both the BIC and the ICL suggested that a 5 factor profile would be the best fit (Figures 11 and 12). However, I chose to run both a 5 profile model and a 3 profile model. The main reason for running a 3 profile model in addition to the 5 profile model indicated by the fit statistics was theoretical. Several of the potential models I hypothesized might emerge had 3 profiles. Since LPA results are evaluated both on model fit and on theoretical meaning, it seemed reasonable to check the models suggested by the hypotheses, especially since its fit statistics are still relatively low. Additionally, three profile models have been run for a number of the other analyses in this paper, so having the same model may allow for some comparisons.

Similar to prior results, the three profile model showed a clear salsa pattern, suggesting that no actual categories exist (see Table 12 and Figure 13). Profile 2 had the highest levels of personality pathology, followed by profile 1 and then profile 3, which had the lowest level of personality pathology. The means of the criterion B traits ranged

Table 11

Study 2: PID-5 Trait Means for the 3 Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>
Perceptual Dysregulation	1.26	.34	.08
Eccentricity	1.91	.97	.23
Unusual Beliefs	1.27	.45	.11
Withdrawal	1.93	1.45	.49
Anhedonia	1.64	.77	.14
Intimacy Avoidance	1.42	.82	.33
Restricted Affectivity	.90	.90	.90
Depressivity	1.66	.81	.15
Suspiciousness	1.80	1.25	.27
Anxiousness	2.09	1.47	.59
Submissiveness	1.65	1.34	.89
Emotional Lability	1.96	1.28	.44
Separation Insecurity	1.43	.92	.32
Perseveration	1.68	.84	.17
Hostility	1.72	1.16	.57
Deceitfulness	1.09	.39	.20
Grandiosity	.81	.61	.29
Callousness	.80	.37	.06
Manipulativeness	1.41	1.04	.59
Attention Seeking	1.16	.95	.50
Rigid Perfectionism	1.42	1.22	.56
Risk Taking	1.33	1.06	1.01
Irresponsibility	1.10	.25	.16
Impulsivity	1.61	.83	.34
Distractibility	2.08	1.09	.36
GPP	2.68	2.14	1.56
Percent PD	70.9%	32.9%	2.3%
n	55	70	44

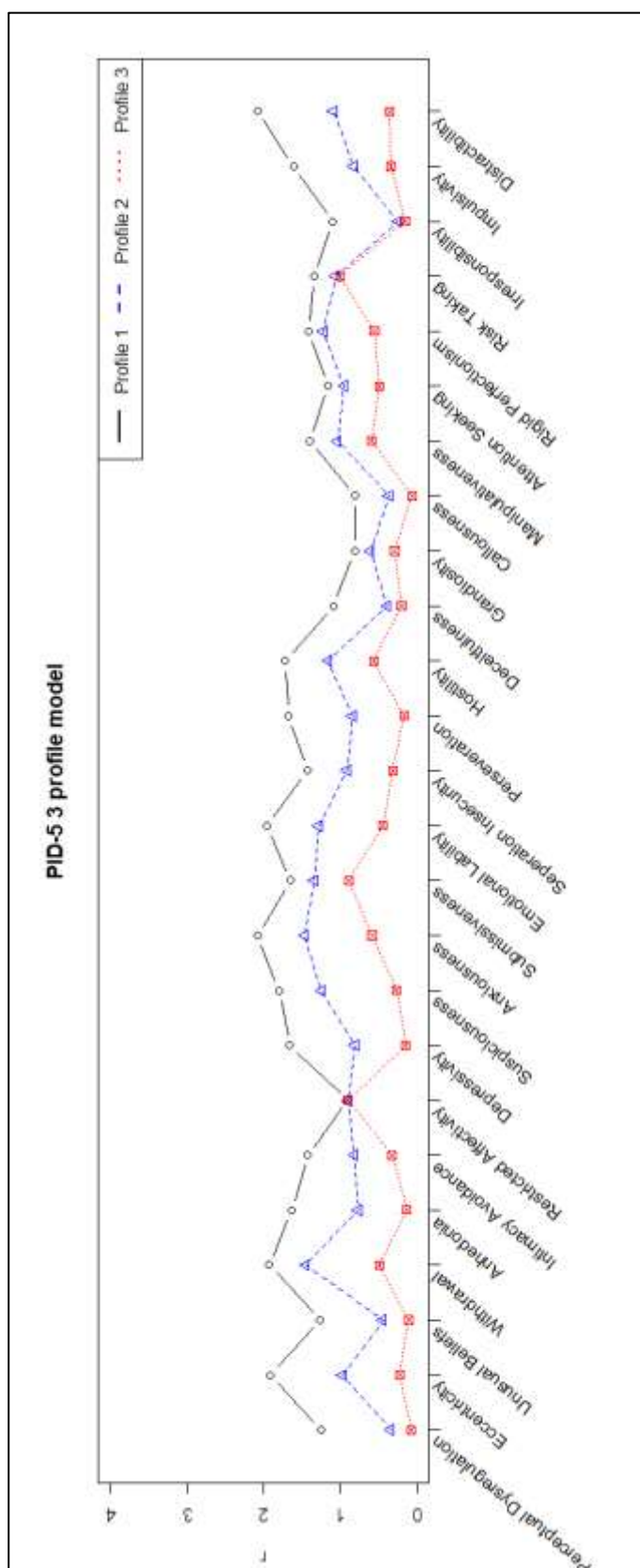


Figure 10: Study 2 PID-5 Three Profile Model

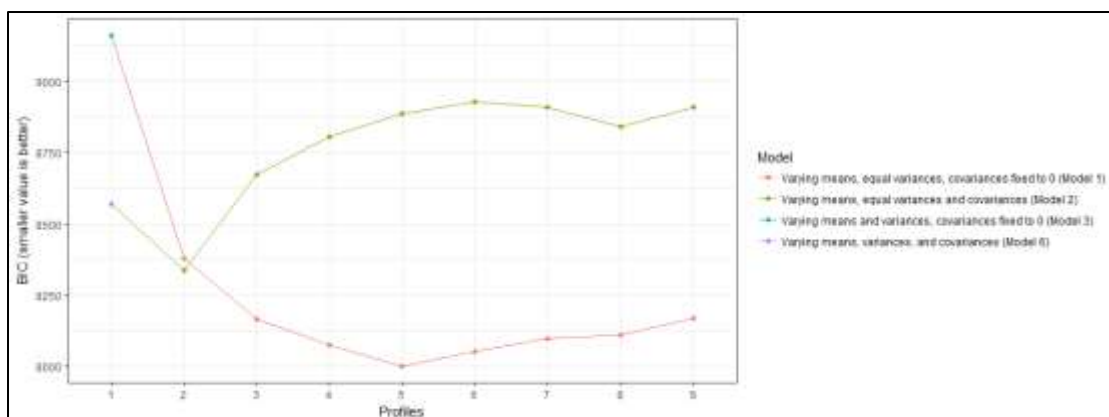


Figure 11: Study 2 BIC Clinician Rated

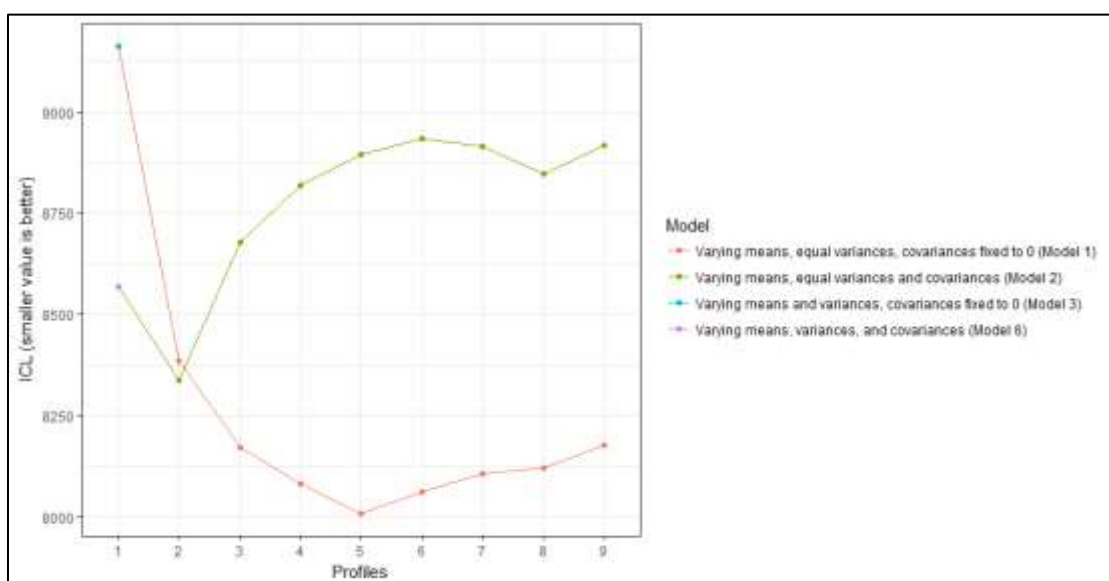


Figure 12: Study 2 ICL Clinician Rated

from .14 to 2.24 for profile 2. They were between .10 and 1.58 for profile 1, and profile 3 had means between .01 and .46. This pattern is matched by the other indicators of personality pathology. The mean level of Criterion A (GPP) and the percent of traditional PD diagnoses are both highest in profile 2, the lowest in profile 3 and in the middle for profile 1.

Table 12
Study 2: Clinician Rating Means for 3 Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>
Perceptual Dysregulation	.34	1.18	.12
Eccentricity	.11	.14	.01
Unusual Beliefs	.67	1.18	.18
Withdrawal	.76	1.07	.19
Anhedonia	.62	.77	.14
Intimacy Avoidance	.41	.48	.12
Restricted Affectivity	.37	.18	.13
Depressivity	1.57	2.21	.42
Suspiciousness	.72	1.18	.16
Anxiousness	1.18	2.04	.37
Submissiveness	.35	.9	.09
Emotional Lability	1.38	2.28	.24
Separation Insecurity	.26	1.19	.04
Perseveration	1.15	1.16	.46
Hostility	.86	1.88	.16
Deceitfulness	.42	1.37	.03
Grandiosity	.46	.74	.24
Callousness	.27	.88	.06
Manipulativeness	.4	.87	.16
Attention Seeking	.5	.9	.17
Rigid Perfectionism	.09	.26	.04
Risk Taking	.74	1.48	.05
Irresponsibility	1.23	1.69	.26
Impulsivity	.96	1.85	.15
Distractibility	1.46	2.	.32
GPP	2.36	2.61	1.83
Percent PD	49.3%	96.3%	4.1%
n	75	27	74

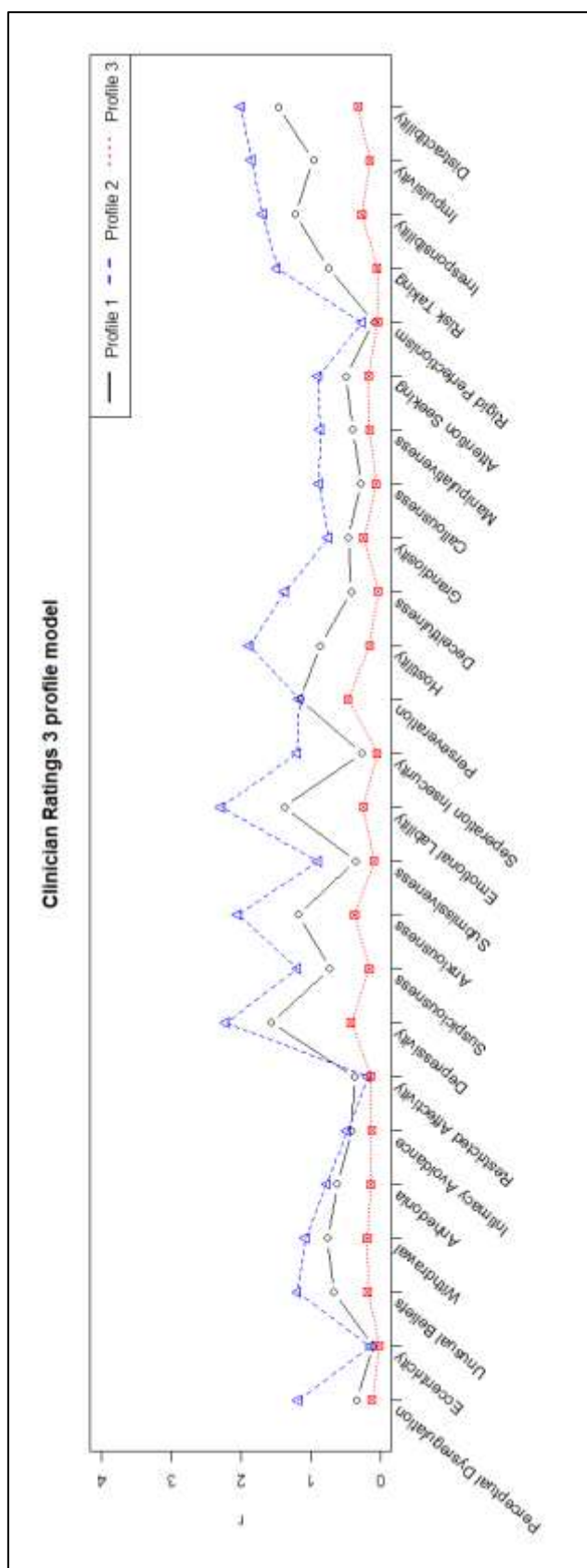


Figure 13: Study 2 Clinician Ratings Three Profile Model

The five profile model proved to be a little more complicated to interpret (see Table 13 and Figure 14). In some sections, this model looks very much like the salsa pattern. In particular, all of the profiles follow roughly the same pattern at slightly different elevations in the Psychoticism and Negative Affect domains, suggesting an underlying dimensional structure. However, the other domains have a bit more variety. To try and interpret this variety I compared the profiles to my hypothesized models to see if any of the profiles from the current looked meaningful.

I already mentioned the salsa profile, which appears to have some support in these results. The second type of profile I hypothesized was based on an internalizing, externalizing, and thought disorders framework. However, none of the profiles recovered from the 5-profile LPA analysis fit with this framework. For example, Negative Affect is the only internalizing domain so it would need to be high when the other trait domains were low and low when the others are high in order for this framework to fit. However in this model, Negative Affect appears to be consistently high no matter what level the other domains are at.

Next, I hypothesized two different models. These two models were both based on profile models found in prior research with normal range personality traits. These hypothetical profiles were discussed at the domain level. At a domain level, profile 1 of the current LPA model appears to be high on Detachment and Negative Affect, but relatively low on the other domains. Profile 2 is high on Negative Affect, Antagonism, and Disinhibition. Next, profile 3 is fairly low in all of the domains. Finally, profiles 5 and 4 follow roughly the same pattern as each other. They are higher on Negative Affect and Disinhibition than they are on the other domains. However, neither profile is higher

than profile 2 in these trait domains. For the most part, none of these profiles fit with the hypothesized models. An argument could be made that profile 2 fits the resilient profile because it contains individuals who are low on all the pathological personality traits. However, it could just as easily be interpreted in as the low pathology level of the salsa pattern. So these hypotheses are probably not the best fit for the data.

The final set of hypotheses to be considered revolved around traditional PD diagnoses. First, I examined pathological personality traits that were assigned to each traditional personality disorder by the hybrid version of the alternative model of the DSM-5 (see Table 2). Since these traits were considered hallmarks of the traditional disorders, profiles characterized by high levels of these traits might suggest the presence of that disorder. While there are profiles that are high on the majority of the traits for each disorder, there are usually a number of other traits that are also high in each of these profiles. Additionally, several relevant traits are relatively high or low in all the profiles, suggesting a mean level difference rather than a qualitative difference between profiles. So the the hybrid model version of the traditional PD hypothesis does not help make the profiles meaningful. I also assessed this hypotheses by looking at the distribution of SIDP-IV diagnoses in each profile. Table 14 shows the frequency with which the traditional PDs appear in each profile. There does not appear to be any particular pattern aside from the fact that there is only one individual with a personality disorder in profile 3, the low pathology category. Therefore, the hypothesis that recovered categories might correspond to traditional PDs does not appear to be supported.

This five profile model looked complex, but there do not appear to be any particularly meaningful patterns outside of the salsa pattern. While it is not as clean as the

three profile version model, the pattern remains more or less the same. This suggests an underlying dimensional framework for personality pathology

Table 13

Study 2: Clinician Rating Means for the 5 Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>	<u>Profile 4</u>	<u>Profile 5</u>
Perceptual Dysregulation	1.00	1.11	.13	.30	.28
Eccentricity	.37	.06	.01	.08	.06
Unusual Beliefs	1.19	1.17	.17	.60	.58
Withdrawal	1.49	.89	.15	1.00	.34
Anhedonia	1.44	.61	.11	.74	.21
Intimacy Avoidance	1.37	.11	.11	.49	.08
Restricted Affectivity	.37	.11	.13	.43	.28
Depressivity	2.62	2.06	.37	1.47	1.38
Suspiciousness	1.00	1.17	.16	.84	.53
Anxiousness	2.31	1.83	.34	1.11	1.03
Submissiveness	.69	.89	.09	.50	.15
Emotional Lability	2.12	2.22	.23	1.18	1.40
Separation Insecurity	.94	1.11	.03	.22	.28
Perseveration	1.56	1.11	.45	1.21	.87
Hostility	1.31	1.94	.14	.70	1.01
Deceitfulness	.37	1.78	.01	.21	.70
Grandiosity	.32	.95	.22	.42	.53
Callousness	.62	.94	.06	.16	.35
Manipulativeness	.37	1.11	.15	.36	.43
Attention Seeking	.56	1.00	.16	.45	.54
Rigid Perfectionism	.13	.28	.04	.08	.12
Risk Taking	.81	1.83	.03	.26	1.20
Irresponsibility	.69	2.33	.22	.48	2.06
Impulsivity	1.25	2.11	.13	.52	1.35
Distractibility	2.18	2.00	.32	1.42	1.17
GPP	2.72	2.59	1.81	2.43	2.18
Percent PD	81.3%	100%	1.4%	51.4%	42.9%
n	16	18	70	37	35

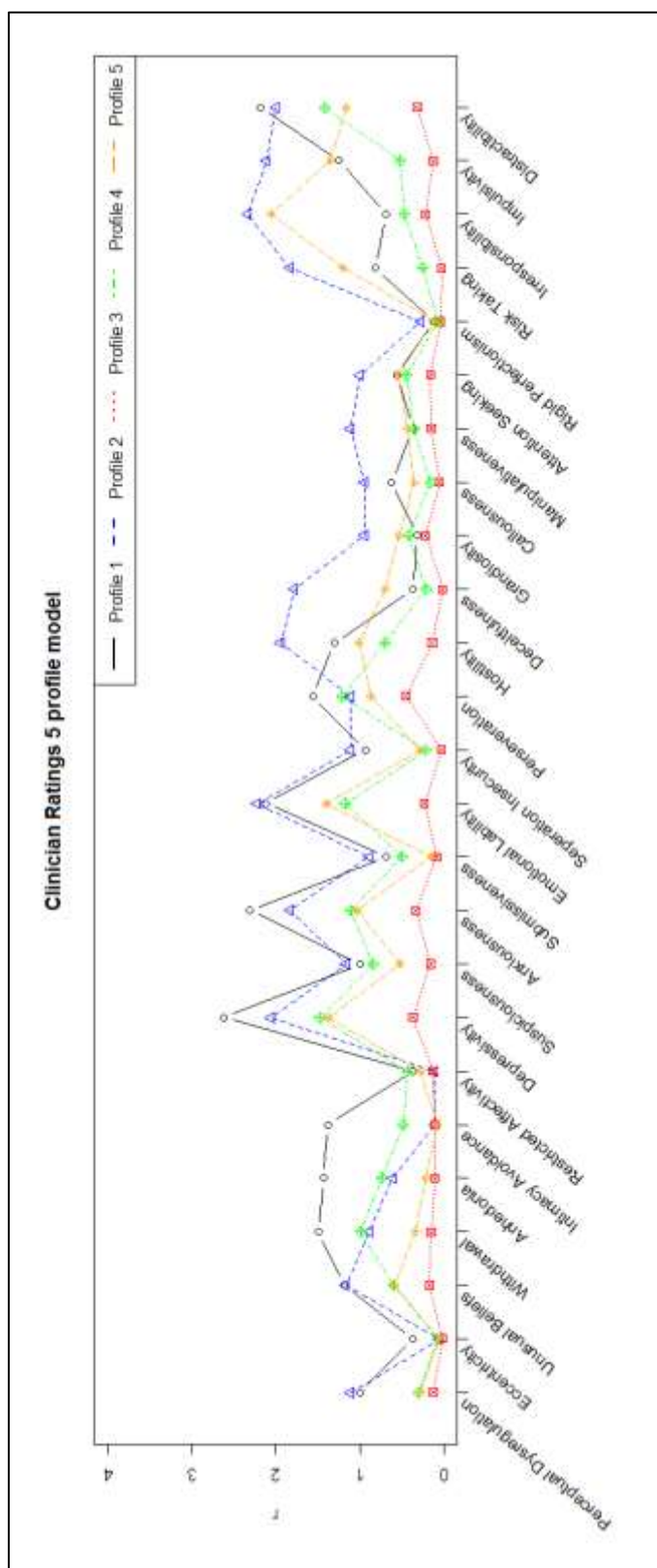


Figure 14: Study 2 Clinician Ratings Five Profile Model

Table 14

Study 2: Frequency of SIDP-IV Diagnoses for each profile

<u>PD</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>	<u>Profile 4</u>	<u>Profile 5</u>
Schizoid	2			1	
Paranoid		4	1	2	2
Schizotypal				1	
Anti-social	3	13			7
Borderline	6	14		3	5
Histrionic		1			
Narcissistic		3			1
Avoidant	7	6		4	2
Dependent	2				
OCPD	4	4		9	1
Mixed	2	5		5	
Total PDs	26	50	1	25	18

High End Group. Consistent with the approach taken in Study 1, LPAs were also run in the high end group of participants.

PID-5. First I examined the number of categories that seemed to be present in the high end group based on the self-reported PID-5 scores on Criterion B. Both the BIC and the ICL indicated that a 3 profile models would be the best fit for the data (see Figures 15 and 16). The results of the 3 profile analysis showed two profiles that followed the salsa pattern and a third profile that looked unique (see Table 15 and Figure 16). However, the unique profile (profile 2) turned out to only contain one participant. Therefore, I focused my attention on profiles 1 and 3. Profile 1 is slightly lower on personality pathology with the criterion B means a ranging from .25 to .99. Profile 3 is a little higher with a range of .79 to 1.51. Participants in profile 3 also have a slightly higher average level on the GPP (Criterion A) and a higher percentage of SIDP-IV personality disorder diagnoses.

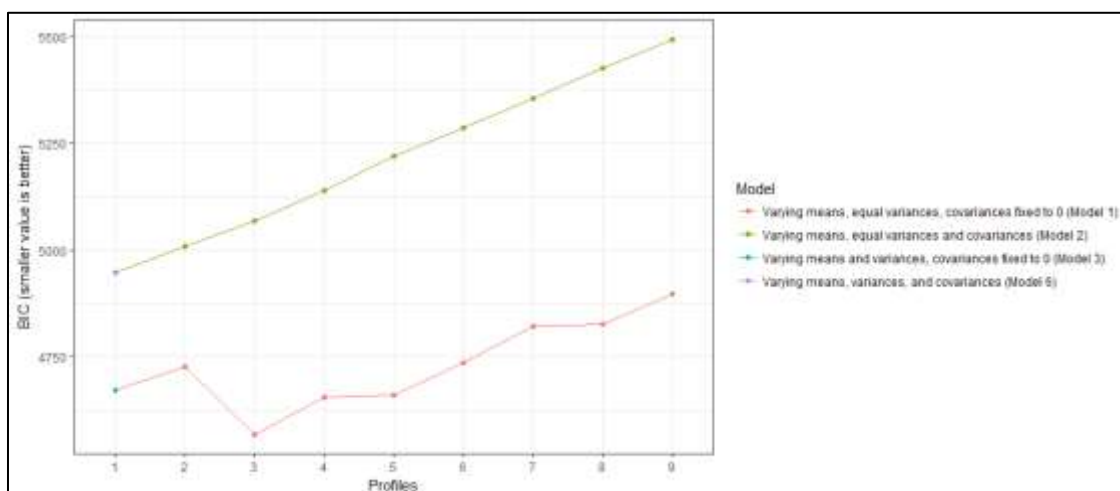


Figure 15: Study 2 High End BIC for thePID-5

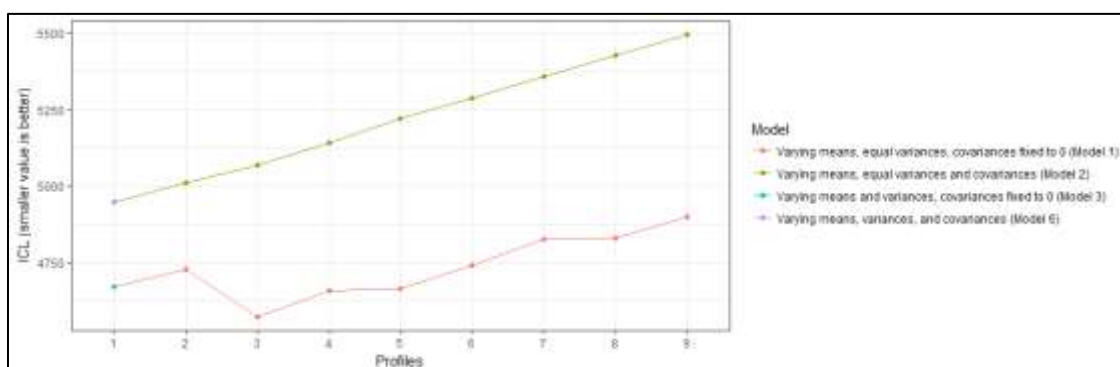


Figure 16: Study 2 – High End ICL for the PID-5

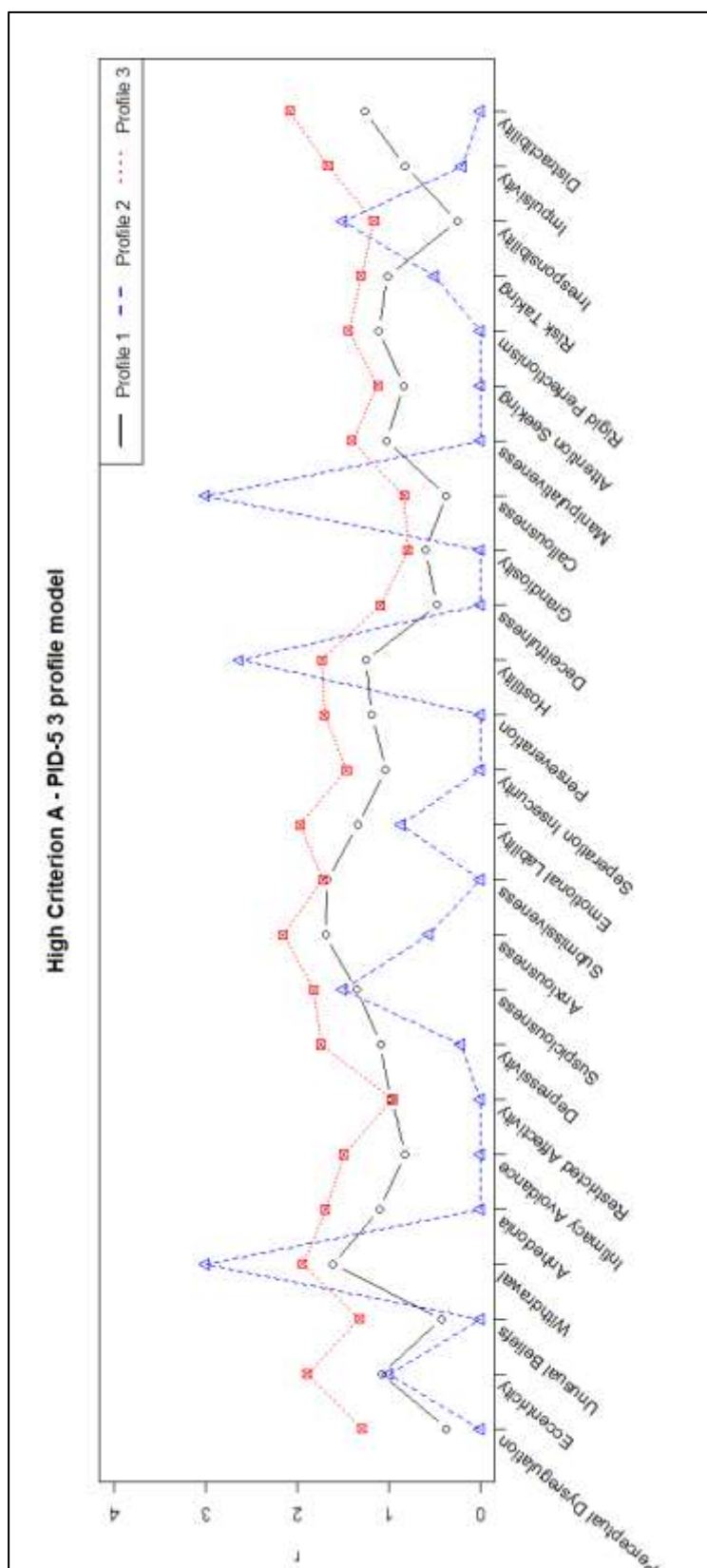


Figure 17: Study 2 High End PID-5 Models

Table 15
High End PID-5 Trait Means for the 3 Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>	<u>Profile 3</u>
Perceptual Dysregulation	.37	.00	1.29
Eccentricity	1.07	1.00	1.89
Unusual Beliefs	.42	.00	1.32
Withdrawal	1.61	3.00	1.94
Anhedonia	1.10	.00	1.69
Intimacy Avoidance	.82	.00	1.49
Restricted Affectivity	.97	.00	.96
Depressivity	1.09	.21	1.74
Suspiciousness	1.35	1.50	1.82
Anxiousness	1.69	.56	2.15
Submissiveness	1.67	.00	1.72
Emotional Lability	1.34	.86	1.97
Separation Insecurity	1.03	.00	1.46
Perseveration	1.18	.00	1.70
Hostility	1.25	2.63	1.73
Deceitfulness	.47	.00	1.09
Grandiosity	.60	.00	.79
Callousness	.37	3.00	.83
Manipulativeness	1.02	.00	1.40
Attention Seeking	.83	.00	1.12
Rigid Perfectionism	1.11	.00	1.44
Risk Taking	1.01	.50	1.30
Irresponsibility	.25	1.50	1.16
Impulsivity	.82	.20	1.66
Distractibility	1.26	.00	2.08
GPP	2.41	2.41	2.72
Percent PD	48.5%	100%	70.8%
n	33	1	48

Clinician Ratings. The final model was based on the clinician rated levels of the criterion B traits in the high end group. In this case, both the BIC and the ICL suggested that a two profile model would be most appropriate (see Figures 18 and 19). I examined the results of a two profile model and found the salsa pattern again

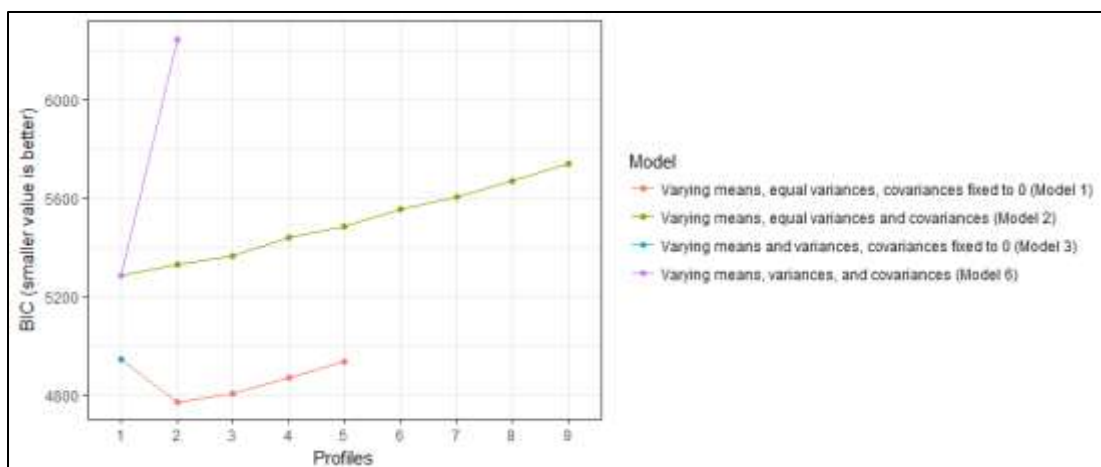


Figure 18: Study 2 High End BIC for Clinician Ratings

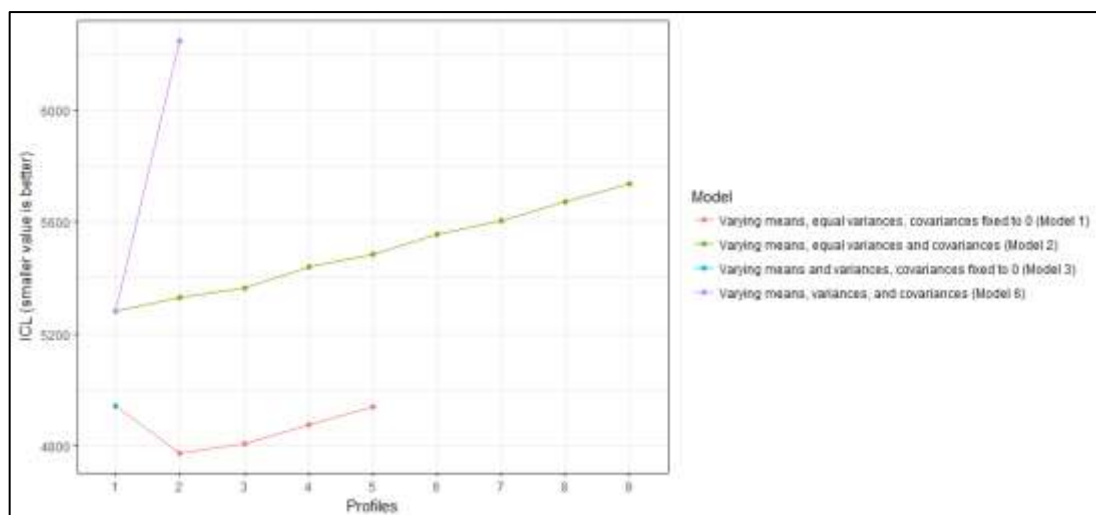


Figure 19: Study 2 – High End ICL for Clinical Ratings

(see Figure 20 and Table 16). Profile 1 was slightly higher on personality pathology than profile 2, with mean levels of the criterion B traits ranging from .14 to 2.20 for profile 1. Profile 2 a slightly lower range from .02 to 1.30. This pattern held for other indicators of pathology. The participants in profile 1 had a slightly higher level of Criterion A and a higher percentage of SIDP-IV traditional PD diagnoses. I also tested a 3 profile model with data for the theoretical reasons discussed above. However, the additional profile contained only one participant, so I concluded that the 3rd profile was not meaningful and I did not pursue that model further.

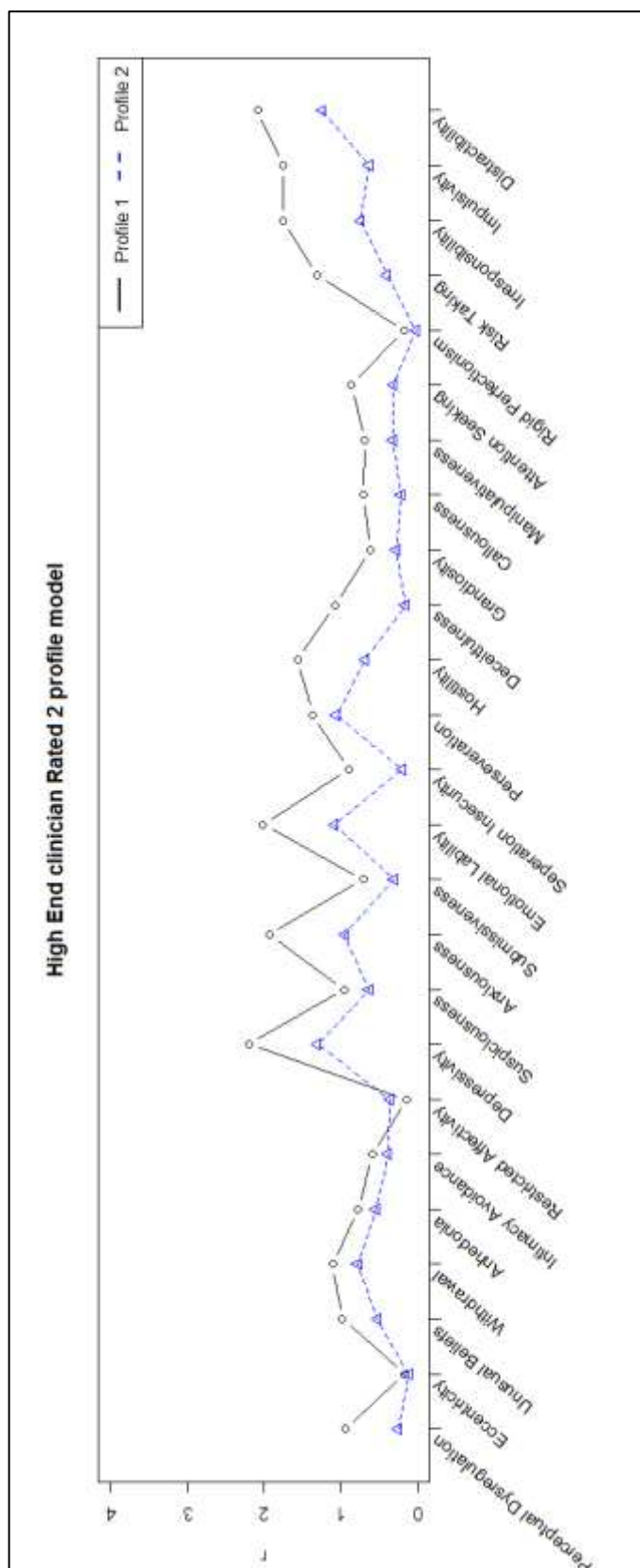


Figure 20: Study 2 High End Clinician Ratings Model

Table 16

Study 2: High End Clinician Rating Means for the 2 Profile Model

<u>Trait</u>	<u>Profile 1</u>	<u>Profile 2</u>
Perceptual Dysregulation	.93	.25
Eccentricity	.17	.11
Unusual Beliefs	.98	.52
Withdrawal	1.11	.78
Anhedonia	.77	.55
Intimacy Avoidance	.59	.38
Restricted Affectivity	.14	.36
Depressivity	2.20	1.30
Suspiciousness	.95	.63
Anxiousness	1.93	.95
Submissiveness	.71	.31
Emotional Lability	2.02	1.09
Separation Insecurity	.90	.20
Perseveration	1.37	1.06
Hostility	1.57	.68
Deceitfulness	1.08	.16
Grandiosity	.61	.28
Callousness	.70	.22
Manipulativeness	.69	.32
Attention Seeking	.86	.32
Rigid Perfectionism	.17	.02
Risk Taking	1.31	.40
Irresponsibility	1.76	.75
Impulsivity	1.76	.63
Distractibility	2.09	1.25
GPP	2.71	2.50
Percent PD	91.4%	39.6%
n	35	53

Discussion

The results of Study 2 to are consistent with the results of Study 1. Latent profile analyses on both self-reports and clinician ratings of the criterion B pathological personality traits, resulted in a “salsa pattern”(Hallquist & Wright, 2014). Generally

speaking, this pattern consisted of a category where the participants were high on the pathological personality traits, one where they were low, and a varying number of categories where the participants were in between. This pattern is the type of result that would be expected if the underlying structure of the data is purely dimensional. The pattern of results supports the conclusions of Study 1, which suggested that differences in personality pathology are quantitative not qualitative and that a dimensional model is needed to represent it.

MAIN DISCUSSION

The purpose of this project was to explore ways of conceptualizing personality pathology. Specifically, it investigated whether there was a way to integrate the empirically derived dimensions of the DSM-5's alternative model into a categorical framework (American Psychiatric Association, 2013a). Personality pathology has traditionally been conceptualized categorically, however a number of problems with this traditional framework has led researchers to advocate for a dimensional framework (Widiger & Trull, 2007). The tension between the traditional categories and proposed use of dimensions led to the creation of two different personality pathology models in the DSM-5 (American Psychiatric Association, 2013b). The DSM-5 alternative dimensional model contains a number of underlying dimensions that can be used to describe personality pathology. While a purely dimensional framework might solve some of the problems with the traditional categorical conceptualizations, there are both practical and theoretical reasons why categorical representations are useful. This project sought a way to integrate the two conceptualizations.

Pursuant to this goal, a number of LPA models were used to explore whether there were categories that could be recovered based on the pathological personality traits of the DSM-5. All the models assessed in this study clearly showed "salsa pattern" (Hallquist & Wright, 2014). There were participants who showed high levels of personality pathology, participants who showed low levels of personality pathology, and participants who were in the middle. This suggest that individual differences on personality pathology are truly quantitative. So a dimensional framework may be the best

to represent personality pathology and any categorize which appear meaningful are simply the result of chance.

Implications

These findings have a number of implications that affect both the theoretical framework within which personality pathology is studied and the implementation of that theory in practice and in assessment.

For theory. This project supports the theoretical perspective put forth by many researchers that personality pathology should be represented dimensionally (Al-Dajani et al., 2016; Widiger & Trull, 2007). However, this conclusion does not answer the question of how to accurately represent personality pathology. One remaining question is what dimensions should be used to describe personality pathology. The criterion B pathological personality traits used in this study are certainly a good candidate, especially since these traits were empirically derived and have been endorsed in the DSM-5 alternative model. However, there have been a large number of alternative dimensional models proposed over the years (Widiger & Trull, 2007). Many of these proposed models are related (e.g. the PID-5, the FFM/the Big-5, and the PSY-5) and other proposed models can be re-expressed as forms of these models (Anderson et al., 2014; DeYoung et al., 2016; Widiger & Trull, 2007). With all of these overlapping models, figuring out the version of the dimensional model that most accurately describes personality pathology may be a challenge. However, the true structure of personality pathology is slowly becoming clearer.

For practice. Some of the strongest arguments for retaining a categorical model came from a practical clinical implementation perspective. So the conclusion that personality pathology is really dimensional presents a problem for clinical practice. Researchers and clinicians must work together figure out how a dimensional model of personality pathology works in a practice setting. This task is complex, but not impossible. The conceptualization of intelligence disorders in the DSM suggests that a purely dimensional model can be implemented in a clinical setting (Widiger & Trull, 2007). Both intelligence and personality are generally conceptualized dimensionally. While personality disorder definitions have long been categorical, the DSM-IV conceptualized intelligence disorders dimensionally. IQ is a completely dimensional construct, but a threshold of 70 has been established. An individual with an IQ below this cut point would be diagnosed with mental retardation. The DSM-5's alternative model of personality disorders could be implemented in a similar way.

The "trait specified approach" spells out what implementing a completely dimensional personality pathology model in a clinical practice setting might entail (Clark et al., 2015). In this approach, anyone who is high on criterion A of the DSM-5's alternative dimensional model would be diagnosed with a personality disorder. As with mental retardation, a cutoff point would have to be established. Anyone above that cut off would qualify for the diagnosis of personality disorder. Instead of having ten separate personality disorders, there would be one personality disorder diagnosis. Each individual's unique pattern on the criterion B pathological personality traits would be used to describe of what that person is experiencing, but everyone would have the same diagnosis. These unique pattern of the criterion B pathological personality traits could

facilitate more nuanced clinical decision making for each individual. Additionally, everyone would have a diagnosis, which means that some of the practical advantages of a categorical model (e.g. insurance coverage) would apply. There are still some details to figure out before this model can be implemented. These details include what qualifies as a high level of criterion A, how to concisely describe the unique criterion B pattern containing 25 traits in order to communicate about a patient, and how to organized research on a model when each individual has his/her own unique pattern of traits. However, none of these problems are insurmountable. So the trait-specified model seems like a place to start when thinking about how to implement a dimensional approach to personality pathology.

For assessment. The implications for assessment follow from the implications for theory and practice. As the dimensions that form the theoretical framework become clearer, there needs to be reliable and valid ways to asses these dimensional traits in both research and practice settings. As the model keeps shifting, assessments much be developed in order to assess how well each version works. Another challenge is that the same construct may need to be assessed differently in different settings. While a researcher may prefer a self-report measure that can be sent out over the internet, a clinician may want to base their assessment on their observations of the individual. Integrating these various demands may prove difficult. However, Study 2 used both self-report and clinician reports, and they revealed the same general profile. So these two methods of assessing personality pathology do agree, at least to some extent.

Limitations

This project does have some limitations. In particular, Study 2 was not designed to address the specific question of PD diagnosis. It was designed to learn more about individuals with the traditional PD diagnosis of Borderline Personality disorder, and BPD is the primary type of personality pathology in this data. This is important because LPA can only find groups if they exist in the data, so our failure to find groups in Study 2 could be in part due to a lack of variety in the pathology of this sample. However, I found the same results in Study 1 where there were no limitations on the type of personality pathology present. So it seems unlikely that the focus on Borderline personality disorder is the reason why the LPA did not recover qualitatively different groups in Study 2.

Another potential limitation is how I defined personality pathology. I investigated whether personality pathology types could be recovered from the Criterion B traits of the alternative dimensional model. It is possible that using a different types of indicator variables would reveal qualitative groups differences that the Criterion B traits simply were not sensitive to. However, while a number of frameworks have been proposed to describe personality pathology, many of them are simply different version of the same dimensions (e.g. the PID-5, the FFM, and the PSY-5) and other proposed models can be re-expressed along these (Anderson et al., 2014; Widiger & Trull, 2007). Since all of these models fit together, it seems unlikely that using one of the other well-known models would produce drastically different results. However, it may be a direction worth exploring if simply to rule out alternative approaches to conceptualizing personality pathology.

Finally, it may be interesting to note that, in Study 2, the clinicians assessed individuals for the traditional personality disorders before they rated them on the criterion B pathological personality traits. It is possible that the clinicians' perceptions of particular disorders could have influenced their trait ratings for individuals with these disorders. However, if this were the case, then I would have expected to find more clearly interpretable profiles when the LPA was run on the clinician ratings. I might even have expected to find that these profiles match the DSM-5 hybrid profiles, since clinicians might have used this to get a sense of which traits fit with which disorders. However, this was not the case. The results of the clinician rated analyses were a little more complex than the self-report data, but the same pattern still emerged. This pattern suggests that the personality disorder framework is dimensional and not categorical, which is the opposite result from what I would expect if the traditional disorder were having a strong effect on the clinicians' ratings of the pathological personality traits.

Conclusion

This project attempted to connect dimensional and categorical approaches to defining personality pathology. However, the evidence I found clearly points to an underlying dimensional structure of personality pathology. While there are a lot of reasons categories can be useful, there is no clear evidence that meaningful personality pathology categories exist. Therefore, future research should focus on the exact dimensions that make up the underlying dimensional structure of personality pathology, and how to implement and assess these dimensions in clinical practice and in research.

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- Zimmerman, M. (2012). Is there adequate empirical justification for radically revising the personality disorders section for DSM-5? *Personality Disorders: Theory, Research, and Treatment, 3*(4), 444–457. <https://doi.org/10.1037/a0022108>

CURRICULUM VITAE

Sarah Heuckeroth

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RESEARCH INTERESTS

I am interested in the conceptualization and measurement of personality and personality pathology. I am also intrigued by the influence of personality and personality pathology on interpersonal interactions, perception, and relationships.

EDUCATION

Wake Forest University

Masters in Psychology (Expected thesis completion and graduation May 2018)

GPA: 3.86/4.00

Relevant Coursework:

Research Design and Analysis I & II
Psychometrics and R

Personality Psychology
Social Psychology

Washington University in St. Louis

Bachelors of Arts in Psychology with a minor in legal studies (May 2014)

GPA: 3.49/4.00 (Psychology GPA: 3.73/4.00)

Relevant Coursework:

Experimental Psychology
Elementary Probability and Statistics
Personality Psychology
Human Learning and Memory

Social Psychology
Psychology of Close Relationships
Introduction to Clinical Psychology

PUBLICATIONS

Furr, R. M., & **Heuckeroth, S. A.** (In preparation). *Advancing the Interpretation and Computation of the "Quantifying Construct Validity" Procedure.*

Furr, R. M., & **Heuckeroth, S.** (2018). qcv: *Quantifying Construct Validity*. R package version 1.0. Wake Forest University, Winston-Salem, NC.

HONORS AND AWARDS

- Wake Forest Alumni Student Travel Award (2017)
- Wake Forest Summer Research Support (2017)
- Washington University Dean's List (4 semesters)
- Psi Chi - National Honor Society in Psychology, Washington University (2012-2014)
 - *Social Chair* (2013-2014)

RESEARCH EXPERIENCE

Wake Forest University, Department of Psychology

Mentor: Dr. Michael Furr

Graduate Student (Fall 2016-Present)

- Completed a 60-page major area paper titled *Integrating Conceptualization of Borderline Personality Disorder: Areas of Continuity and Confusion in the DSM-5 Traditional and*

Alternative Models of Personality Pathology. This paper contained an extended literature review (39 references) and a set of empirical results.

- Wrote a function in R to carry out Westen & Rosenthal's (2003) Quantifying Construct Validity Procedure. Currently refining variations for a package where the function has customizable inputs and outputs. The package will be submitted to the Comprehensive R Archive Network (CRAN) for review in early 2018.
- Current project examines self-clinician agreement on the DSM-5's Alternative Personality Disorder Model's Criterion B (pathological personality traits). Accepted poster presentation at Society for Personality and Social Psychology conference 2018.
- Proposed Thesis project: Will use a person-centered analysis approach to determine if the DSM-5's Alternative Personality Disorder Model's Criterion B (pathological personality traits) define personality pathology types. Will specifically empirically explore whether sets of DSM-5 traits co-segregate to define either traditional or novel personality types. Expected completion April 2018.

Washington University in St. Louis, Department of Psychology, Personality and Self-Knowledge Lab,

Mentor: Dr. Simine Vazire

Study Manager (August 2012 – Feb 2014)

- Supported development and implementation of a two-year longitudinal study of 400 participants analyzing how personality perception influences intimate relationships. Created scripts, email templates, and protocols for the study. Served as a point of contact to solve problems for research assistants running participant sessions. Contributed to regular meetings where study implementation was discussed and plans for new stages were made.
- Facilitated training for 10-20 new and returning research assistants for five semesters and coordinated research assistant schedules to run participant schedules for 3 semesters.
- Committed to 7.5 hours/week as a research assistant. Worked up to 30 hours/week as study manager while in school. Worked more than 1200 hours during my three years as a research assistant.

Research Assistant (May 2011- Feb 2014): In addition to supervisory roles as Study Manager:

- Managed two participant sessions each week, with up to 3 participants per session, during 2 semesters.
- Piloted coding schemes for EAR (Electronically Activated Recorder) data and coded 30 sets of EAR data containing an average of 300 thirty-second audio files each.
- Reviewed data for accuracy. Supervised 5 other students in data checking projects and organized data.

POSTER PRESENTATIONS

Heuckeroth, S. A., Fleeson, W., Arnold, E. M., & Furr, R. M. (expected 2018, March)

Consensus in Personality Pathology: Examining the Agreement Between Self-Report and Clinician's Judgments. Presented at the annual meeting of the Society for Personality and Social Psychology, Atlanta, GA.

Heuckeroth, S. A., Fleeson, W., Arnold, E. M., & Furr, R. M. (2017, June) *Integrating Models of Personality Pathology: The Example of BPD*. Presented at the bi-annual meeting of the Association for Research in Personality, Sacramento, CA.

Heuckeroth, S. A., Bollich, K. L., & Vazire, S. (2013, January) *The Effects of Individual Difference on Friend Nomination and Response Rate for Informant Surveys*. Presented at the annual meeting of the Society for Personality and Social Psychology, New Orleans, LA.

Heuckeroth, S. A., Carlson, E., & Oltmanns, T. (2013, June) *Personality Disorders and Meta-Accuracy: Do People with Personality Pathology Know How Close Others Perceive Them*. Presented at the bi-annual meeting of Association for Research in Personality, Charlotte, NC.

WORK EXPERIENCE

Wake Forest University

Teaching Assistant for Research Methods in Psychology I (August 2017-Present)

- Plan and teach a weekly 90-minute lab section with 16 undergraduate students. Revise lecture content and give students opportunities to implement and practice information to deepen their understanding.
- Teach and lead activities with the whole class of 60 students 2-3 times each semester.
- Grade and provide feedback on class assignments and tests throughout the semester.
- Enrolled in the Teaching & Learning Collaborative's College Teaching Preparation Program for Graduate Students. Expected Completion Spring 2018.

Graduate Assistant for Assessment in Campus life (Feb 2017-Present)

- Plan, coordinate, and analyze results for 3-4 overarching assessment projects for the division of campus life each year, including assessment of co-curricular outcomes and effect of pre-orientation programming on the freshman experience.
- Supporting individual departments in assessment planning, survey design, and data analysis.
- Support the Campus Life Assessment subcommittee for storytelling in developing a new 2016-2017 annual report by collecting and summarizing data, and scheduling and contributing to committee meetings.
- Coordinate all logistics for the annual Campus Life Assessment Expo where 26 posters were presented on assessment projects from across campus life.
- Ran three poster design help sessions in preparation for the Expo. Assessed the effectiveness of the Expo.

City Year, Kansas City Start-Up

City Year Senior AmeriCorps Team Leader (July 2015-June 2016)

- Completed 1,700 hours of Service as a team leader helping to establish a new City Year program in the Kansas City School District.
- Led and supported a team of 8 diverse AmeriCorps members at Central Middle School, a Title I school where 100% of students receive free or reduced-cost lunch. We worked in partnership with teachers and administrators to support students. AmeriCorps members served as tutors and mentors in 10 classrooms, provided individualized instruction for approximately 60 students, and coordinated 10 whole school events and incentive activities each semester.
- Prepared and taught training sessions and team building activities for our group of 15 City Year AmeriCorps members during bi-monthly Leadership and Development sessions.

City Year, San Antonio

City Year Diplomas Now AmeriCorps Member (August 2014-June 2015)

- Completed 1,700 hours of service as a tutor, mentor, and coach. I partnered with an Algebra I teacher to provide individualized support for 5 classes of 20-30 students.
- One of four people selected to serve on the logistics and programming committee for the corps' Martin Luther King service day. Approximately 100 corps members worked in partnership with the Youth Leadership Summit.
- Selected to serve as my team's evaluations coordinator facilitating data entry and utilization by our team of 15 AmeriCorps members.

- Team's "PT crew" representative, helping lead the full a corps of approximately 120 people in physical training exercises at Unity Rally once a month.

SKILLS

- Proficient in R, SPSS, Qualtrics and Campus Labs

MEMBERSHIPS

Association for Research in Personality – Student Member (May 2013- May 2015, March 2017-Present)

Society for Social and Personality Psychology –Student Member (December 2012-December 2014, July 2017-Present)

Society for the improvement of Psychological Science – Student Member (November 2017 – Present)

Association for Psychological Science – Student Member (November 2017 –Present)

American Psychological Association – Undergraduate Student Affiliate (July 2012-2013)

ADDITIONAL EXPERIENCE

Wake Forest Graduate Student Association Member (January 2017-Present)

Psychology Department Representative (September 2017-Present)

Wake Forest Psychology Department Student Representative for the Honor Code Panel (September 2017-Present)

Attended Safe Zone Workshop (2017)

Mariner Girl Scout Program Volunteer (2010-Present) (Secretary 2012-2013)

Washington University Crew Team (Fall 2010-Fall 2013)