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THE LATENT STRUCTURE OF OPPOSITIONAL DEFIANT DISORDER AND CONDUCT DISORDER

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By

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ABSTRACT

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CONDUCT DISORDER

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The purpose of this study is to explore the underlying structure of Oppositional Defiant

Disorder and Conduct Disorder -- the Disruptive Behavior Disorders. As the bulk of this

study was conducted in expectation of the imminent fifth edition of the Diagnostic and

Statistical Manual of Mental Disorders, it was deemed prudent to review the construct

development of the Disruptive Behavior Disorders through the previous editions. A

review of the literature was conducted, and the latent structures of Oppositional Defiant

Disorder and Conduct Disorder were studied and contrasted with the accepted constructs.

A theoretical alternative structure was developed based on the results and implications of

the literature about the disorders. Exploratory factor analysis and statistical comparison

were used to process data collected during structured diagnostic interviews with male

youth in a juvenile justice population. The measure used was the Practical Adolescent

Dual Diagnosis Interview (PADDI), and the population consisted of 519 males, mean age

of $M = 16.34$, $SD = 1.02$. The EFA revealed a two-factor solution inconsistent with the

current categorical constructs, yet consistent with the proposed theoretical structure.

Additionally, symptomatic groups were found which, under the limited scrutiny possible

with this data, fit the proposed theoretical restructuring of the Disruptive Behavior Disorders. These results suggest that the present categorical distinction between ODD and CD is incompatible with the actual presentation of the disruptive symptoms among youth in the juvenile justice system. This implies that changes in the way these disorders are categorized and diagnosed would improve accuracy and perhaps even treatment outcomes.

CHAPTER ONE: INTRODUCTION

Oppositional Defiant Disorder (ODD), Conduct Disorder (CD), Attention Deficit Hyperactivity Disorder (ADHD) and Disruptive Behavior Disorder not otherwise specified (DBD NOS) account for more than half of the childhood referrals to mental health clinics (Fergusson & Horwood, 1995). A look at the prevalence of ODD in community samples of youth found up to 15.6% with sufficient symptoms for the diagnosis, and up to 65% in clinical samples (Boylan, Vaillancourt, Boyle, & Szatmari, 2007). The cost of these Disruptive Behavior Disorders (DBD) to the youth, their families, and to society in general is impossible to calculate, but includes tremendous financial burden, family stress, disruption in education, and future engagement in criminal behavior.

Despite decades of research on these critical childhood disorders, a consensus on the true nature of the relationship between them does not exist. The Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2000) takes a categorical approach to understanding mental disorders in general, implying discrete structures (Marcus, Lilienfeld, Edens, & Poythress, 2006). In practice though, diagnosis does not work as cleanly as implied by a categorical structure. In fact, such strictly categorical models fail to include large portions of the symptomatic population whose symptoms do not fully match the designated categories, and which end up in the safety net or catch-all of a 'not otherwise specified' (NOS) diagnosis. It is also possible that a categorical division may overlook sub-threshold symptoms and in doing so lose important information about prevalence and etiology and miss youth in need of treatment;

they fall under the limit of the DSM criteria and go without any diagnosis. It would be difficult to state this argument better than it has already been stated by Hinshaw, Lahey, and Hart (1993, p. 36) when they said, "Dividing children at a selected cut-off point of symptom frequency or severity to define disordered versus non-disordered groups (a) maybe arbitrary and (b) may reduce meaningful variation into binary clusters." What is not clear is whether there are natural breaks between the disorders where no individuals fall to bridge the gap, or if these breaks are being imposed upon the data because of theoretical expectations.

Efforts to clarify subcategories of disorders and develop continua of severity have yet to fully explain the disparity between those children that seem to progress from ODD to CD and beyond to Antisocial Personality Disorder (ASPD) or to Psychopathy, and those children that do not. Commonly proposed subgroups of Conduct Disorder will be explored further in this study, but some examples are socialized and unsocialized, child and adolescent, aggressive and nonaggressive, callous/unemotional and non-callous/unemotional, CD with comorbid mood and without. Additional research is needed in determining the relationship between the subgroups.

A study by Burns et al. (1997) used confirmatory factor analysis to study the internal validity of the DBD symptoms and found support for dimensions of ADD, ADHD, ODD, and CD, and other researchers look to a dimensional model of classifying disorders, even to the point of eliminating the distinction between ODD and CD, but have met with limited success. Rey et al. (1988) found that the main difference between ODD and CD was the detrimental effect of the symptoms on their level of functioning in different aspects of life, supporting the idea that ODD is simply a milder form of CD.

This is a question of classification based on latent structure (Marcus, Lilienfeld, Edens, & Poythress, 2006). The latent structure of a disorder is the term used to describe the natural relationship of symptoms to each other.

It is possible that developing such a continuum which includes symptoms of both disorders has had little support because the categorical definitions of ODD and CD were created for the very purpose of differentiation rather than unification of two symptomatic groups. Whenever there was difficulty in parsing which youth fell into which category due to a natural overlap of symptoms, the tendency was to adjust which symptoms fell into each category, and any adjustments made which enhance the distinction between the disorders has been deemed "successful." It is not surprising then, that a majority of the research being done has supported the distinction between these two disorders. It can be helpful when confronted by a question without a satisfactory answer to rethink initial assumptions.

This study will first attempt to uncover an alternative construct of the disruptive behavior disorders by integrating the DBD literature into a theoretical structure. Then it will attempt to gauge the effectiveness the new construct at describing the presence of DBD symptoms by comparing it to an analysis of a sample population of adjudicated youth.

CHAPTER TWO: LITERATURE REVIEW

Definitions

In the DSM-IV-TR (APA, 2000), Oppositional Defiant Disorder is defined as "a pattern of negativistic, hostile, and defiant behavior" lasting for at least 6 months and manifesting at least four of eight possible symptoms:

1) often loses temper

2) often argues with adults

3) often actively defies or refuses to comply with adults' requests or rules

4) often deliberately annoys people

5) often blames others for his or her mistakes or misbehavior

6) is often touchy or easily annoyed by others

7) is often angry and resentful

8) is often spiteful or vindictive

Conduct Disorder is defined as 'a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated', lasting for at least 12 months and manifesting at least three of 15 possible symptoms:

Aggression to people and animals

1) often bullies, threatens, or intimidates others

2) often initiates physical fights

3) has used a weapon that can cause serious physical harm to others (e.g., a bat, brick, broken bottle, knife, gun)

4) has been physically cruel to people

5) has been physically cruel to animals

6) has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery)

7) has forced someone into sexual activity (is a rapist)

Destruction of property

8) has deliberately engaged in fire setting with the intention of causing serious damage

9) has deliberately destroyed others' property (other than by fire setting)

Deceitfulness or theft

10) has broken into someone else's house, building, or car

11) often lies to obtain goods or favors or to avoid obligations (i.e., "cons" others)

12) has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery)

Serious violations of rules

13) often stays out at night despite parental prohibitions, beginning before age 13 years

14) has run away from home overnight at least twice while living in parental or parental surrogate home (or once without returning for a lengthy period)

15) is often truant from school, beginning before age 13 years

History

The first edition of the DSM, published in 1952, listed no childhood disorders whatsoever. The discretion was simply left up to the therapist what diagnosis, if any, should be given. In 1968, the DSM-II was published, and included a section just for the disorders of childhood and adolescence. Seven diagnoses were included, in which can be found the first nod toward the existence of what are now considered the disruptive behavior disorders. *Hyperkinetic* (analogous to ADHD); and *delinquent, runaway,*

unsocialized aggressive, group delinquent and *other*, which are analogous to the symptoms found under the umbrellas of ODD, CD and DBD-NOS.

In 1980 the next edition was published: the DSM-III. For the first time, the terms attention deficit disorder, Oppositional Disorder (ODD) and Conduct Disorder (CD) were used, though CD was subdivided into four groups; variations of socialized and aggressive (socialized/aggressive, socialized/non-aggressive, unsocialized/aggressive, and unsocialized/non-aggressive). ODD has undergone various changes since its conception in the DSM-III. It had initially undergone public criticism for seeming to make normal adolescent behavior into a disorder, so changes were made in order to better discriminate between clinical and normal presentations of defiant behavior based on severity and duration of the symptoms.

Changes were made to the definition of CD as well, in an attempt to help differentiate it from ODD. *Swearing* didn't serve the purpose of differentiating between the disorders, since it was prevalent in both populations, and was removed. *Lying* was equally prevalent in both disorders and was changed to *lying in order to con someone* (Frick et al, 1994). Since evidence indicated that the two disorders shared some of the same symptoms and the same etiological risk factors, differing only in severity, (Lahey, Loeber, Quay, Frick & Grimm, 1992) it seemed that that a single disorder was being manifested in different stages of development. Rather than exploring that possibility, the differences between the disorders were enhanced by requiring more severe symptoms for both diagnoses in the changes made between the DSM-III and the DSM-III-R.

The DSM-III-R was introduced in 1987, and for the first time ADHD (previously ADD), ODD and CD were grouped under the name disruptive behavior disorders. CD

was rearranged into three subgroups: group aggressive, solitary aggressive, and undifferentiated.

The DSM-IV (1994) introduced the catch-all disorder for those youth with symptoms of both ODD and CD, but without sufficient symptoms to meet criteria for either. The disorder was labeled DBD not otherwise specified (NOS). CD was again reorganized, this time into two groups of childhood onset and adolescent onset. For the DSM-IV, further changes in required symptom duration and presentation were made in hopes of better differentiation. Nevertheless, the preemptive power of CD diagnosis over ODD diagnosis, utilized because CD symptoms were considered more severe but not mutually exclusive to ODD symptoms, was retained by the committee called to oversee the changes being made (Pardini, Frick, & Moffitt, 2010).

The DSM-IV-TR (2000) introduced CD-NOS, but changed little else, including the preemptive power of CD over ODD. This preemption is now being called into question in preparation for the DSM 5 (Pardini, Frick & Moffitt, 2010) on the basis that the symptom overlap is not as substantial as it was thought to be. Such a lessening of the overlap might be expected since the effort has been made to differentiate between the constructs of the two disorders; what might be considered a self-fulfilling prophecy.

For the currently unpublished edition, the DSM V, a few changes have been proposed. For ODD it's been proposed that the current 8 symptoms be divided into three groups: Angry/Irritable Mood, Defiant/Headstrong Behavior, and Vindictiveness. An additional proposal would require that for a child of five years and above the symptoms of ODD should be present on most days of the week for at least six months. These changes do little to counteract the problems identified by this study. The only change

proposed for the current construct of CD is the addition of a specifier of *callous/unemotional* traits which, though of critical importance, fails to completely clarify the differences between the possible presentations of CD.

Correlates and Risk

There is an apparent debate in the literature that is about more than a definition of the disorders; it deals with the opposing views that a disorder is either more heavily influenced by nature or by nurture. Evidence is proposed in support of a theory, and results are interpreted within that theory's framework. Evidence for *nature* tends to focus on genetic interaction, and often assumes that disorders are categorically different. The *nurture* evidence tends to look at correlations between the disorders and environmental factors (such as parenting), with the assumption that among the interplay of factors it is possible to find causation. In order to understand the full scope of the debate, it's helpful to look at the correlates of the disorders, and the risks associated with the behaviors.

Thus far, much of the evidence has weighed heavily on the side of *nurture.* Studies concerning the correlates and risk factors of the disruptive behavior disorders found those youth with ADHD, those with ODD and ADHD, and those with CD and ADHD correlated with the same family risk factors, but that the level of severity progressed between them (Biederman & Newcorn, 1991; Faraone, Biederman, Keena & Tsuang, 1991). Examples of environmental risk factors include illness, disability, family functioning, abuse, neglect, poor parenting (such as harsh and overly physical discipline), sub-standard schooling, economic disadvantage, rejection by peers, birth position, and exposure to violence (Barrickman, 2003; Frick et al., 1992). Interestingly enough, maternal smoking has been found to predict childhood onset CD in boys (Wakschlag et

al., 1997). Though children with depressed parents have been found to have not only a higher risk of depression but also of ADHD, ODD, and CD (Klein, Lewinsohn, Rohde, Seeley & Olino, 2005; Fergusson & Lynskey 1993), a 2008 study of etiology of adolescent depression and disruptive behavior disorders in adopted children by Tully, Iacono and McGue found that the risk for adolescent psychopathology was higher for children in families with depressed mothers but not in families with depressed fathers. Interestingly, this risk for developing psychopathology such as ODD and CD was almost the same for adopted children as it was for non-adopted children, seeming to show that the factor of maternal depression is independent of genetics. ODD and CD do in fact share the same parental psychopathology and family adversity though they are more severe for those youth with CD (Loeber, Lahey, & Thomas, 1991).

An interesting finding by Fergusson and Horwood (1993) was that children with externalizing behaviors such as those indicative of CD and ADHD also tend to manifest internalizing traits such as anxiety and fearfulness. Fergusson states that this correlation may be due to a third factor at the root of both the internalizing and externalizing behaviors rather than one being the cause of the other. Results of a study on the sources of the covariation seen in ADHD, ODD and CD by Burt, Krueger, McGue and Iacono (2001) indicated that although there seemed to be some genetic influence, the main source of covariation seemed to be a shared environmental factor. There was no speculation made as to what exactly comprised that factor.

In a recent study by Burke (in press), an interesting difference was found in predictive tendencies of ODD symptoms. Those symptoms that typified negative affect were predictive only of increases in depression and not increases in CD symptoms. On

the other hand, the oppositional symptoms of ODD were predictive of increases in CD symptoms, but not of depression.

A line of research that seeks to mend the break between *nature* and *nurture* is the *diathesis-stress* model of gene-environment interaction. The premise of this theory as it is applied to the disruptive behavior disorders is that there are varying levels of genetic risk that are only activated when environmental factors reach a genetically defined threshold. Moffit, Caspi and Rutter (2006) propose that such an interaction should not be considered uncommon in psychopathology. Pivotal research by Caspi et al. in 2002 identified polymorphism in a gene that seems to control the release of monoamine oxidase A (MAOA), which would vary the ability of an individual's brain to regulate the amount of serotonin, dopamine and norepinephrine in circulation. Upon experiencing a threatening stimulus, the MAOA is released in order to temper the aggressive response. Caspi found that the individuals in the study with the low production of MAOA were more affected by environmental factors such as abuse or perceived mistreatment in that they were less able to temper their aggressive response. Those with the gene that coded for normal production of MAOA required more severe environmental stimuli in order to act out.

In summary, a number of environmental risk factors seem to influence the development of disruptive behavior, and though the same factors predate both ODD and CD, the *severity* of the risk factors is predictive of the severity of the symptom presentation. The severity of the behavior in turn may affected by the interaction of genetic predisposition and environmental pressures.

Callous/Unemotional Traits

There is evidence indicating that psychopathic features (euphemistically termed *callous and unemotional traits* (C/U)) that present during childhood and adolescence are predictive of adult psychopathy (Burke, Loeber, & Lahey 2007). The traits include *lack of remorse or guilt, callous-lack of empathy, unconcerned about performance*, and *shallow or deficient affect*. As only a portion of the population presents with these C/U traits, it's reasonable to expect differences in the correlates as well. A 1998 study by Loney, Frick, Ellis and McCoy demonstrated that those youth with a diagnosis of ODD or CD who did not show any callous or unemotional traits demonstrated a verbal reasoning deficit on the WISC-R when compared to a clinic control group. Those ODD and CD youth who did also demonstrate callous and unemotional traits had weaker *non-verbal* abilities instead. This clarifies past research that linked all antisocial behavior with a verbal deficit (Moffitt, 1993), and offers evidence of a genuine difference between those with C/U traits and those without.

This continuity of psychopathic or C/U symptoms through different stages of life is termed homotypic continuity and differs from the heterotypic continuity demonstrated by the addition of symptoms and severity in the progress from ODD to CD to antisocial personality disorder. Other results by Loney, Frick, Ellis and McCoy (1998) support the conclusion that the behavior of those children with callous and unemotional traits may have a different etiology than the behavior of those youth without the C/U traits, and their findings seem to suggest that interventions designed to teach social skills may be of more benefit toward the disruptive children who do not show C/U traits (Loney, Frick, Ellis &

McCoy, 1998). Additional research into the disparate etiology of these two groups is needed.

Gender Differences

Research has shown that boys are more likely to meet DSM criteria for CD than are girls, and even to demonstrate a higher frequency of CD symptoms when they do qualify (Lahey et al., 1999). In point of fact, some research has shown boys to be as much as four times as likely to qualify for a diagnosis of CD (Lahey et al., 2000). Frick et al. (1994) used cross-sectional analyses to study which symptoms are predictive of later behavior. It was found that for boys the symptoms of *cruelty to others, running away*, and *breaking into a building* were the most predictive of CD. For girls the most predictive symptoms were *fighting* and *cruelty*, though these symptoms were not typically manifested by symptomatic girls. Research has shown that sex differences in the symptoms of antisocial behavior do not appear until after the age of six (Loeber & Hay, 1997).

Evidence has also been put forth that although boys and girls may differ in the overall levels of conduct problems, the consequences are similar for both genders (Moffitt, Caspi, Rutter, & Silva, 2001). Possible outcomes associated with CD in girls are ASPD, finding antisocial partners (Robins, Tripp & Pryzbeck, 1991) and early pregnancy (Kovacs, Krol & Voti, 1994). A study by Cairns, Peterson and Neckerman (1988) also showed that the attempted suicide rate among aggressive youth was more than four times the rate of the general population, and specifically the aggressive females that was three times the rate of the aggressive males.

Structure

A focus of research has been identifying useful subdivisions within the disorders themselves. A study by Lahey, Loeber, Quay, Frick and Grimm in 1992 supported the idea of ODD and CD as being hierarchical developmental stages of one disorder, meaning that the symptoms progress in severity as the child ages by changing in the type of symptoms. A cause of wonder is the fact that, of the 15 possible symptoms considered part of the CD construct, only three are needed to be manifest in order for there to be a diagnosis. Due to the heterogeneity of the behaviors included, the same diagnosis could be given to vastly different groupings of symptoms. For example, *making threats, telling lies* and *staying out all night* would merit a child the diagnosis of Conduct Disorder, but also *cruelty to animals, using a weapon* and *forcing sex on someone*: two obviously different profiles falling under the same diagnosis. This has led many to speculate also that CD is in fact made up of various subtypes or sub-syndromes (Tackett, Krueger, Sawyer, & Graetz, 2003).

Using the symptoms and definitions provided by the DSM III, a quarter of those children who are diagnosed with ODD progressed to a diagnosis of CD, a quarter had diminished behavior by adolescence to the point of not qualifying anymore, and the other half of the population retained a consistent level of severity. Very telling is the fact that 90% of those diagnosed with CD having either previously received the ODD diagnosis or demonstrated the pertinent symptoms despite never being diagnosed (Lahey, Loeber, Quay, Frick & Grimm, 1992). A strictly progression-based explanation would leave that remaining 10% unexplained. Using the definitions provided by the DSM IV, youth developed ODD symptoms before or at the same time as CD symptoms in nearly all

cases studied from one sample by Burke, Hipwell, and Loeber (2010). This suggests that ODD is still a robust predictor of at least childhood CD. According to a longitudinal, rather large sampled study by Loeber, Tremblay, Gagnon & Charlebois in 1989, it appears that nonaggressive ODD children have a better chance of outgrowing their behaviors whereas those who engage in aggressive acts such as fighting are much more likely to continue to develop other CD symptoms.

Studies have shown that oppositional behavior in younger children i.e. preschool through elementary school predicts CD symptoms in later years, indicating a certain level of stability (Janes, Hesselbrock, Myers, & Penniman, 1979; Moffitt & Henry, 1989). A 2004 study by Greene et al. found that children who qualified for a diagnosis of Oppositional Defiant Disorder, whether or not it was comorbid with Conduct Disorder, had much lower scores on the Global Assessment of Functioning Scale. They also came from families characterized by poorer cohesion and higher conflict than those without the diagnosis. The impairment of social interactions was present in all areas of social functioning, such as school, peers, parents, and siblings. These symptoms persisted and remained significant even when other comorbid conditions were taken into account and controlled for. Their findings show that ODD is a substantial contributor to impairment that cannot be explained by other psychiatric disorders. Children with ODD showed much higher rates of comorbidity and greater impairment in functioning than children without ODD regardless or other characteristics. Interestingly, ODD may or may not be a step in the development of CD for girls, since the proportion of adolescent onset to childhood onset is higher for girls, and those with adolescent onset show no history of ODD (Silverthorn & Frick, 1999).

The CD population can be usefully split according to the age of onset, and those groups differ in critical ways. An argument leveled against dissolving the distinction between ODD and CD is that adolescent CD appears to develop without a period of previous ODD symptoms. According to Lahey et al. (1998) males who meet the DSM criteria for CD earlier than 10 years of age are 8.7 times more likely to manifest aggressive symptoms than those who qualify at a later age. From a developmental perspective, CD that shows up in adolescence (i.e. after the age of 10), is not only independent of ODD, it seems to be different in many other ways from the rest of the CD population. Rather than confusing what seems to be valid progression from ODD to CD by including adolescent-onset CD, a more sensible approach would be preferable: differentiating between the childhood and adolescent subgroups in CD research. Such an approach would eliminate confusing patterns of non-progression, and might add support to the theory that ODD and childhood-onset CD are indeed developmentally connected.

The diagnostic manual used in many countries in Europe is the International Classification of Diseases 10 (ICD 10) which was completed in 1992 by the World Health Organization (WHO). The ICD 10 treats ODD and CD as developmentally linked disorders and when a child does not qualify for a diagnosis of ODD, any existing symptom of CD may be used to "achieve" the ODD diagnosis. It is apparent from some studies that the DSM IV TR definition of ODD and the ICD 10 definition differ in their ability to identify children with impairment, and that the DSM IV TR identifies far fewer of those with pertinent symptoms (Burke et al., 2010). Such an oversight leaves a portion of the population underserved – a possible 'hole' in the DSM IV. Since the DSM-IV-TR serves a dual purpose, and is not only meant to differentiate between disorders but to be

inclusive of all those in need of treatment, one would rightly expect a coordinated effort to be made to correct this oversight in the upcoming editions of the DSM.

Comorbidity

It has been asserted that the general understanding of the relationship between ODD and CD during the DSM-III and DSM-III-R editions was that ODD could be considered a subsyndrome: a less severe form of CD (Biederman & Newcorn, 1991). In a different study undertaken by Biederman et al., 260 children were studied in order to determine the relationship between ODD and CD in children diagnosed with ADHD. It was found that the majority of children with ODD did not have comorbid CD. On the other hand, CD was almost always found concurrently with ODD, and in those cases its onset preceded CD by several years. Biederman inferred that this was evidence of two subtypes of ODD, only one of which was prodromal, or likely to progress in severity to CD. In layman's terms, some children who engage in oppositional or defiant behaviors progress to more serious activities, while others do not. Fergusson and Horwood (1993) found a strong correlation between attention deficit and ODD/CD type behavior ($r = .80$-85). And it is suggested that only those ODD children with comorbid ADHD make that progression from ODD to CD. Almost as a corollary, it is also suggested that those children who develop early onset CD do so because they also have ADHD, and are also the ones that progress from CD to ASPD (1996). According to Biederman et al. (1996) in 92% of boys referred with ADHD who developed CD, the onset of the CD symptoms occurred before age 12.

Biederman et al. (1996) suggest that, based on their research, CD is often accompanied by Bipolar disorder, and that this may account for the sub-syndromal split

of CD into a dysphoric type, and a predatory type, with only the former showing response to mood stabilizers. It seems likely that the presence of anxiety in children with CD may decrease the level of aggressive behaviors, acting as a form of protective factor (Walker et al., 1991). Other evidence has explained the link seemingly found between CD and mood disorders by linking them instead with ODD, with ODD acting as a precursor to CD (Boylan, Vaillancourt, Boyle, & Szatmari, 2007). Considerable overlap was also found between Oppositional Defiant Disorder and adjustment disorder by Rey et al. (1988).

Treatment

A number of methods have been proposed and supported for reducing Conduct problems in childhood such as problem solving skills training, programs that are based in the school, home, and clinic, programs designed to improve family economic situation, and multi-systemic therapy. Findings indicate that in order to be the most effective, treatment and prevention approaches cannot neglect social and family factors when addressing conduct problems. Such factors as family adversity and SES may exacerbate the negative outcomes or conduct problems (Fergusson, Horwood, & Ridder, 2005).

Therapeutic approaches that have shown success in treatment of ADHD, ODD, and CD are CBT-type therapies (Eyberg, Nelson, & Boggs, 2008), as well as Alan E. Kazdin's Parent Management Training (PMT) (Cautilli & Tillman, 2004). Research has shown that stimulant medication improved both ADHD and ODD related behaviors in youth with comorbid ADHD and ODD. Research has also shown evidence of improvement in oppositional behaviors associated with irritability and obsessiveness by

the introduction of mood enhancing medication, and symptoms of CD comorbid with bipolar disorder improving with treatment by mood stabilizers (Biederman et al., 1996).

In evaluating the usefulness of changing from a categorical model to a dimensional model, an important issue to consider is whether the treatment approach for ODD is distinct from that of CD. According to Loeber, Lahey, and Thomas (1991), interventions for children with ODD have had more success than interventions for CD (Patterson, 1983; Loeber & Le Blanc, 1990). Rather than this being evidence in favor of a categorical distinction between the two disorders, this finding is more consistent with evidence found by Cohen et al. (1993), that the stability of the symptoms is influenced by the severity of those symptoms.

In summary, a regimen of pharmaceutical treatment and behavior-centered therapy can be effective for both ODD and CD, though the likelihood of real progress is decreased once a child has progressed in age and severity of symptoms from ODD to CD. No differences in treatment recommendations were found that would distinguish ODD from CD in a categorical way.

Methods of Analysis

Various approaches (some with more success than others) have been taken to tackle the task of analyzing the latent structures of ODD and CD, and using statistical methods to distinguish between categorical and dimensional models remains a difficult problem (Haslam, 2003). It has been proposed that bimodal distributions of scores on a scale measuring a single symptom, with a gap in between, a 'point of rarity,' may indicate latent categories. This has yet to be seen as useful in practice (Kendell, 1975). This present study will not be utilizing this method because of that.

Cluster analysis has been used to study the latent structure of ODD and CD as well, and revealed three distinct clusters that were termed the *socialized cooperative delinquents*, the *unsocialized aggressive delinquents*, and the *unsocialized runaway delinquents* (Jenkins & Boyer 1967), a configuration that is not in use today. Cluster analysis, designed to form discrete groups of related data from a larger pool, has been rather unsuccessful in discriminating between categorical and dimensional structures (Grove, 1991). By design it favors a categorical structure even when none exists (Haslam, 2003).

Paul Meehl developed a set of analyses that he termed 'taxometrics' designed for the precise purpose of exploring the latent structure of diagnostic constructs (Meehl, 1996). As of 2003, taxometric research into child psychopathology had been mostly ignored (Beauchaine, 2003) and a recent review of the literature has also failed to find such an approach being used to study the disruptive behavior disorders. Some criticisms of taxometrics are the need for visual inspection during the analysis of the data, and for a subjective judgment to be made by the researcher on how flat or peaked a line seems to be (Miller, 1996). Miller further cautions that the use of taxometrics on analysis of dichotomous items may promote type II errors. Since the data being explored by the current study take a dichotomous form, the use of taxometrics has been deemed unwise.

The structure of ODD and CD has also been studied through exploratory and confirmatory factor analysis with varying conclusions (Achenbach, Conners, Quay, Verhulst, & Howell, 1989; Frick et al., 1993; Hommerson et al., 2006; Lahey et al., 2008; Lahey & Loeber, 1994; Pelham, Gnagy, Greenslade & Milich, 1992; Farmer, Seeley, Kosty & Lewinsohn, 2009). Frick et al. (1991) used factor analysis of data based on

DSM-III and DSM-III-R criteria sets and found that when symptoms of ODD and CD were grouped together, the aggressive CD symptoms loaded with the ODD symptoms on a separate dimension from the non-aggressive symptoms, a model which also successfully describes the symptoms of CD when studied apart (Moffit & Caspi, 2001), especially since the symptoms of ODD have been found to fall under a single factor when analyzed alone (Hommersen, Murray, Ohan, & Johnston, 2006). A factor analysis by Quay and Peterson in 1992 extracted two factors as well, with one consisting of ODD symptoms plus fighting, cruelty and bullying, and with the remainder of the CD symptoms falling on the second factor. On the other hand, the symptom of lying showed an almost equal loading on both factors.

It is likely that factor analyses which find a single factor rather than two, such as those studies which utilize teacher ratings of behavior, do so because many of the CD symptoms were not included due to the low frequency of their appearance in the population (Neeper, Lahey, & Frick, 1990). In another study by Frick et al. in 1991, a factor analysis based on parent rating alone extracted only one strong factor. Their explanation is similar in that many of the more severe CD symptoms had a low prevalence. Frick explains that such a result is common when dealing with childhood conduct problems.

Though the most common finding in the literature is a two-factor solution, there has been some disagreement on the best labels for the two factors with some arguing that the labels *overt* and *covert* are somewhat obscure or misleading, and argue that the labels should be more descriptive of the behaviors exemplified in the two CD factors (Tackett, Krueger, Sawyer & Graetz, 2003).

In increasingly common use by researchers performing factor analyses is *parallel analysis* (O'Connor, 2000). Parallel analysis is a method for determining the number of factors to retain from a factor analysis. The two most common methods of determining this are Kaiser's criterion, and Catell's scree test. The Kaiser criterion uses the eigenvalue standard of 1.0 as the rule of thumb for selecting which principal components or factors to retain from those generated. All those above are kept, and all those below are eliminated. Because of inherent sampling error, the Kaiser criterion tends to overestimate the number of factors (Horn, 1965), which would be critical error in this study. Catell's scree test is a subjective measure of which factors lie along the vertical part of a line graph (factors to keep), and those that fall along the horizontal line of the graph (the scree to be eliminated. This logical method leaves open the possibility of ambiguity and poor interrater reliability in making the selection (Crawford & Koopman, 1979).

On the other hand, parallel analysis generates random sets of data and compares the mean eigenvalues of the randomly generated factors with the eigenvalues of the genuine data. Those genuine factors which demonstrate eigenvalues higher than the mean of those generated randomly are kept and the rest are discarded. The level of confidence can be set as desired to ensure a significant elevation above the mean of the randomly generated values, decreasing the likelihood of type I errors. An even more robust form of parallel analysis generates permutations of the genuine raw data itself, and then compares the eigenvalues generated from the permutations with the genuine eigenvalues in order to select which principle components to retain. Using this method ensures that the factors retained are likely to be accurate representations of the latent structure of the data rather than noise or scree (Velicer, Eaton & Fava, 2000).

If the adolescent Disruptive Behavior Disorders are most accurately viewed as dimensional constructs, then it would be expected that their natural terminus, Antisocial Personality Disorder (ASPD), would be dimensional as well, and in fact, evidence suggests that this is true. Research into the latent structure of ASPD suggests that it is also best understood and conceptualized using continuous measures, a dimensional approach (Marcus, Lilienfeld, Edens, & Poythress, 2006).

Research that has previously found ASPD to be categorical in nature has utilized the terms ASPD and psychopathy as interchangeable descriptions for the same disorder (Harris, Rice, & Quinsey, 1994; Skilling, Harris & Rice, 2001; Skilling, Quinsey, & Craig, 2001). ASPD has often been used synonymously with psychopathy in research and curriculum. Such a definition is based on implications made in the DSM-IV-TR, but recent evidence has indicated that the two constructs only share 40% of their variance, rather like the relationship between depression and anxiety (Marcus, Lilienfeld, Edens, & Poythress, 2006). As evidence of this, the majority of prison inmates with ASPD don't meet psychopathy checklist criteria (Hart & Hare, 1989). Considering ASPD to be a dimensional construct fits quite well with the proposed developmental model of ADHD, ODD and CD, completing a continuum of disorder that progresses in age and severity from one pole to the other.

In a meta-analysis of various factor analyses, Frick et al. (1993) again found that a two-factor solution best explained the data, and they labeled the collective ODD and aggressive CD symptoms *overt*, and the nonaggressive CD symptoms were labeled *covert*. Using multidimensional scaling (MDS), they accomplished the addition of another axis labeled *destructive* and *non-destructive* clarified the relationship further.

Four quadrants were created, one containing the oppositional symptoms, a second the aggressive symptoms, a third quadrant the property violations, and the fourth containing the status violations. When this approach was applied to a clinical sample, it corresponded well to the DSM-III-R categorizations. Interestingly, it was found that the median age of onset of these symptom quadrants supports a developmental progression of misbehavior; with the *oppositional* quadrant having a median age of 6 years, the *aggression* having a median of 6.75 years, the *property* with a median of 7.25, and the *status* quadrant having a median age of 9 years. This seems to indicate that an unnecessary categorization has been made in splitting ODD symptoms from CD symptoms. It is possible that a better construct might be a single disruptive behavior disorder with four stages of severity.

Theoretical Alternative

A comprehensive theoretical structure is indicated by the above literature that is comprised of three possible developmental pathways or continua. The first, designated DBD Type I, would be childhood onset CD which develops before the age of 10, characterized by heightened aggression and callous and unemotional traits, and may be explained by genetic factors or perhaps severe neglect in a manner similar to the development of an attachment disorder. This pathway seems to have the worst prognosis, with the developmental terminus, in all likelihood, being psychopathy.

The second pathway, DBD Type II, would be ODD (especially if complicated further by ADHD) that develops into adolescent CD. Probable mood disorders compound the severity of the symptoms, and the developmental terminus of this pathway seems to be ASPD.

The third pathway, DBD Type III, would be disruptive behavior that develops after the age of 10, and may be diagnosed as either ODD or CD. This pathway seems to have the best prognosis, often resolving itself after the passage of puberty. The stereotypical misbehaving teenager would best be described by this trajectory. This last pathway also seems to be the one most characteristic of disruptive behavior found in females.

Presupposing the validity of these three pathways, any study of CD that did not attempt to make delineation between the three types of CD would be confounded by mixing these three trajectory groups. Future research into verifying this theoretical construct is necessary and potentially quite informative.

Purpose and Hypotheses

The purpose of this study is to determine the nature of the relationship between Oppositional Defiant Disorder and Conduct Disorder in a juvenile justice population. Exploratory factor analysis will be used, as well as reliability analyses, and correlations with risk factors.

It is hypothesized that the exploratory factor analysis will reveal a two-factor solution, consistent with the *oppositional/aggressive* and *property/status* symptom groups.

It is hypothesized that the group which qualifies for a diagnosis of Conduct Disorder, but not for a diagnosis of Oppositional Defiant Disorder, will report fewer aggressive behaviors than those that qualify for both disorders.

It is hypothesized that groups of youth will be found which match the groups predicted by the theory of the three developmental continua of the disruptive behavior

disorders: Nonviolent youth with CD only, violent youth with CD only, and violent youth with both CD and ODD.

CHAPTER THREE: METHOD

Participants

The participants are a convenience sampling from a population of juvenile

offenders in the state of Maine, specifically those youth that were entered into the

juvenile justice system and were assessed with the PADDI. Though the charges were not

recorded for the youth, the results of the semi-structured interview were collected by the

individuals who were tasked with the assessment of adjudicated youth, stripped of

identifying information, and then sent to the creator of the PADDI instrument to be used

for research purposes.

Only the 519 males of the sample will be used, since the prevalence of the

disorders and possibly the prevalence of symptoms differ between males and females.

Such an approach is likely to limit any confounding of the results. The sample is

predominantly Caucasian (87.9%), with Native Americans forming the next most

represented ethnicity at 4.2 %, and the participants fall within the ages of 13 and 18 with

a mean age of $M = 16.34$, and $SD = 1.02$.

Instrument and Procedure

The measure being used is the Practical Adolescent Dual Diagnosis Interview

(PADDI), a diagnostic instrument which assesses the presence of clinical symptoms in

adolescents as well as collecting demographic information (though no identifying

information was used or even made available to the researchers). Internal consistency of

the PADDI measure diagnostic scales was performed in 2004, revealing a Cronbach's

alpha of .624 for the CD scale, and an alpha of .792 for the ODD scale (Abrantes,

Hoffmann, Anton, & Estroff). As is noted by the researchers, ODD and CD represent heterogeneous groupings of symptoms, and alphas in this range are not unexpected. Alphas for similar ODD and CD scales from the Child Behavior Checklist (Achenbach, & Edelbrock, 1981) achieved similar scores: ODD was $0.70 \leq \alpha \leq 0.74$, and CD was $0.55 \leq \alpha \leq 0.80$ (Diamantopoulou, Verhulst, & van der Ende, 2011).

A score of 3 or higher on the CD section of questions indicates that the diagnosis of CD should be considered. A score of 4 or higher on the ODD section of questions indicates that the diagnosis of ODD should be considered. Sample questions from the instrument include: *"Have you started physical fights with others more than two times"* and *"Have you ever deliberately destroyed someone else's things for no reason?"* After each question a choice is given of *Yes (1)* or *No (0)*. This instrument has been used in order to assess the need for treatment of the juvenile justice population upon being arrested and charged. Some symptoms were not included in the PADDI interview, and some symptoms were consolidated into one item. The following symptoms were not included in the PADDI:

1. often blames others for his or her mistakes or misbehavior (ODD)
2. often bullies, threatens or intimidates others (CD)
3. has been physically cruel to people (CD)
4. often stays out at night despite parental prohibitions, beginning before age 13 years (CD)

The CD symptoms relating to stealing were consolidated into stealing in general, and breaking in to steal.

Analyses

The data were analyzed using SPSS to run an exploratory factor analysis of the collective symptoms of ODD and CD in order to observe their latent factor structure.   A parallel analysis was performed in order to decide which factors to retain. The data were reviewed for comparisons of symptomatic and diagnostic groups using SPSS as well.

CHAPTER FOUR: RESULTS

Factor Analysis

A maximum likelihood exploratory factor analysis (EFA) was performed to determine the factor structure of the combined diagnostic symptoms of ODD and CD as measured by the PADDI results. An inspection of the correlation matrix disclosed a number of correlations of .3 and above. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was .859, indicating that a factor analysis is appropriate. Bartlett's test of sphericity was significant at $\alpha = .001$, which means that there was a significant level of correlation between the variables.

EFA revealed 5 factors that met Kaiser's criterion with eigenvalues greater than 1.0, explaining 25.535%, 7.95%, 6.73%, 6.40% and 5.98% respectively of the variance. These five factors are represented in table 1.   Catell's scree test eliminated all but the first 2 of the factors. Additional analysis was conducted in order to determine which factors to retain, and to avoid the possible pitfalls of the Kaiser and Catell methods.

Parallel analysis was used to select the factors with eigenvalues significantly higher than would be found randomly with an α of .05. The results of the parallel analysis can be found in table 2. The number of permutations used was 1000.

The results of the parallel analysis as seen in table 2 indicate that only the first two factors of the original five factors that were found had eigenvalues within the 95th percentile, with the first of the factors explaining the greatest portion of variability. The items, or symptoms, that comprise each of those factors can be seen in tables 1 and 3, along with their respective factor loadings.

Table 1

Factor loadings based on a maximum likelihood exploratory factor analysis with promax rotation for the 18 disruptive symptoms included in the Practical Adolescent Dual Diagnosis Interview (PADDI) (N = 519)

Item	1	2	3	4	5
Broke in to steal	.999				
Stole	.345				
Often argues		.724	-.401		
Refuse requests		.644			
Lose temper		.611			.213
Vengeful		.588			-.303
Annoy on purpose		.495		.225	
Angry / resentful	.205	.489			
Easily annoyed		.470	.254		.294
Hold grudge		.460	.248	-.201	
Beat someone up		.439		.270	
Vandalism		.427	.237	.287	
Used weapon in fight		.414			
Started fights		.413			
Lied to get things		.338		.274	
Set fires		.256	.248		
Ran away	.224	.235			
Times skipped school					
Animal cruelty					

Note. Factor loadings < .2 are suppressed

Repeating the EFA, while limiting the number of generated factors to 2 (as deemed appropriate by the parallel analysis and as would be expected from the 2 disorders from which the symptoms were drawn), returned the following results seen in table 3.

Though the first factor contains the *oppositional* symptoms that are included within the diagnosis of ODD, the CD symptoms that could be termed *aggressive* are included as well. The second factor seems to be made up mostly of nonaggressive CD

symptoms, specifically the symptoms that would be considered either *property* or *status*.

An exception to this dichotomization was *Beat someone up*, which fell almost equally

within the two factors. This exception contrasts with the other aggressive symptoms that

fall within the first factor, but is not necessarily surprising considering the proposed

existence of the aggressive CD subgroup and the more aggressive comorbid ODD and

CD subgroup.

Table 2

Results of parallel analysis showing raw data eigenvalues, mean random eigenvalues and 95th percentile random data eigenvalues

Root	Raw Data	Means	95th Percentile
1	4.674408	1.363871	1.425575
2	1.424325	1.298240	1.344768
3	1.233578	1.248330	1.289353
4	1.156758	1.206026	1.238111
5	1.060938	1.166491	1.197131
6	.963547	1.132038	1.161651
7	.941526	1.097475	1.125335
8	.898047	1.065930	1.091489
9	.878543	1.034111	1.061458
10	.828683	1.003506	1.028255
11	.797314	.937609	.997538
12	.743922	.944863	.970615
13	.677892	.915708	.942944
14	.633635	.886826	.911669
15	.602418	.857876	.881813
16	.575155	.827923	.853638
17	.558245	.796945	.824187
18	.501085	.764350	.794161
19	.459879	.729438	.761090
20	.390103	.686444	.722242

Table 3

Factor loadings based on a maximum likelihood exploratory factor analysis
with promax rotation for the 18 disruptive symptoms with 2 factors extracted

	1	2
Often argues	.760	
Refuse requests	.756	
Lose temper	.675	
Vengeful	.572	
Angry / resentful	.448	
Easily annoyed	.435	
Annoy on purpose	.424	
Hold grudge	.401	
Started fights	.368	
Used weapon in fight	.307	
Times skipped school		
Broke in to steal		.537
Stole		.471
Ran away		.406
Vandalism	.233	.364
Beat someone up	.284	.285
Lied to get things		.254
Set fires		.224
Animal cruelty		
Often argues	.760	

Note. Factor loadings < .2 are suppressed

These results support the first hypothesis: that the exploratory factor analysis will reveal a two-factor solution, consistent with the *oppositional/aggressive* and *property/status* symptom groups. Conversely, the results of the EFA stand in contrast to the present categorical constructs of ODD and CD.

Comparison of Violence

A comparison of groups was conducted using the crosstabs function of SPSS. The purpose was to compare the level of aggression between two groups, those that qualified for diagnoses of both ODD and CD, and those that only qualified for CD. Table 4

Comparison of Violence Between Disorder Groups

	Oppositional Defiant			Conduct		
				No DX	DX	
No DX	Aggr.	.00	Count	74	75	149
			% Within Aggr	49.7%	50.3%	100.0%
			% Within Conduct	84.1%	41.2%	55.2%
			% Of Total	27.4%	27.8%	55.2%
		1.00	Count	13	80	93
			% Within Aggr	14.0%	86.0%	100.0%
			% Within Conduct	14.8%	44.0%	34.4%
			% Of Total	4.8%	29.6%	34.4%
		2.00	Count	1	24	25
			% Within Aggr	4.0%	96.0%	100.0%
			% Within Conduct	1.1%	13.2%	9.3%
			% Of Total	.4%	8.9%	9.3%
		3.00	Count	0	3	3
			% Within Aggr	.0%	100.0%	100.0%
			% Within Conduct	.0%	1.6%	1.1%
			% Of Total	.0%	1.1%	1.1%
	Total		Count	88	182	270
			% Within Aggr	32.6%	67.4%	100.0%
			% Within Conduct	100.0%	100.0%	100.0%
			% Of Total	32.6%	67.4%	100.0%
DX	AGGR	.00	Count	7	33	40
			% Within Aggr	17.5%	82.5%	100.0%
			% Within Conduct	50.0%	14.0%	16.1%
			% Of Total	2.8%	13.3%	16.1%
		1.00	Count	7	101	108
			% Within Aggr	6.5%	93.5%	100.0%
			% Within Conduct	50.0%	43.0%	43.4%
			% Of Total	2.8%	40.6%	43.4%
		2.00	Count	0	62	62
			% Within Aggr	.0%	100.0%	100.0%
			% Within Conduct	.0%	26.4%	24.9%

	% Of Total	.0%	24.9%	24.9%
3.00	Count	0	39	39
	% Within Aggr	.0%	100.0%	100.0%
	% Within Conduct	.0%	16.6%	15.7%
	% Of Total	.0%	15.7%	15.7%
Total	Count	14	235	249
	% Within Aggr	5.6%	94.4%	100.0%
	% Within Conduct	100.0%	100.0%	100.0%
	% Of Total	5.6%	94.4%	100.0%

Of the 182 cases in which a youth qualified for a diagnosis of CD alone, 107 (58.8 %) reported aggressive symptoms, only 3 (1.6%) reported all three measured aggressive symptoms, and 75 (41.2%) of them reported no aggressive symptoms whatsoever. Of the 235 cases in which a youth qualified for a diagnosis of both CD and ODD, 202 (86%) reported aggressive symptoms, 39 (16.6%) reported all three aggressive symptoms; only 33 (14%) of them reported no aggressive symptoms at all.

These results support the second hypothesis: that the group which qualifies for a diagnosis of Conduct Disorder, but not for a diagnosis of Oppositional Defiant Disorder will report fewer aggressive behaviors than those that qualify for both disorders.

Alternative Structure

Additionally these last results support the third hypothesis, the groups predicted by the theory of the 3 developmental continua are apparent: there is indeed a group of youth who refrain from the violent and aggressive symptoms of CD but would still qualify for a diagnosis, there is a group of youth without the angry and overtly oppositional symptoms of ODD that nevertheless resort to violence for other reasons and who qualify for a diagnosis of CD only, and then there are the angry and violent youth that qualify for both diagnoses. As there was no age of onset recorded for the symptoms,

no additional analysis could be done to compare the groups that were found with the

developmental continua proposed by this paper.

CHAPTER FIVE: DISCUSSION

Factor Analysis

The results of the factor analysis indicate that the symptoms indicative of the disruptive behavior disorders tend to naturally be grouped in a manner that isn't well represented by the accepted DSM-IV-TR definitions. Rather than ODD being a milder or more benign form of CD, the oppositional and defiant symptoms are actually more likely to be associated with violent symptoms. It appears that among the youth in this study's population, the construct of CD is an unwieldy amalgamation of symptom groups that could be better represented separately or in a more inductively formulated construct. The five-factor formulation of the DBD symptoms does indicate some at-times significant overlap between factors, lending support to the theory that the symptoms fall along a developmental continuum rather than being manifested independently.

Comparison of Violence

The comparison between the group of youth that qualified for CD and the group that qualified for both CD and ODD clarifies further the relationship between the two disorders. There are distinct groups of youth within the construct of CD that can be divided by their proneness to violence, and ODD is involved in some way with making some youth more prone to it. Of those youth that qualified for CD only, 41% was entirely nonviolent. This significant portion of the juvenile justice population studied would receive the seemingly more severe diagnosis of CD without having committed acts of violent aggression.

Alternative Structure

This subgroup of youth with nonviolent symptoms of CD would be stigmatized with the same diagnosis as the violent subgroup despite having only committed status offenses, theft or dishonesty. This group would not be interested in inflicting physical pain; they would simply be otherwise unconstrained in seeking to satisfy their own wants or needs. They would be typified by an attitude of taking what they need when it's available, because they feel that no one will give it to them otherwise.

The aggressive portion of the group that would qualify for CD but not ODD will commit, with varying degrees of severity, acts of aggressive violence that are not motivated by the angry bitterness typical of ODD. This group would present with a cold or *callous and unemotional* demeanor, and would be entirely unconstrained in pleasure-seeking or need-satisfaction behaviors that could include inflicting pain, but the purpose would be for their own gratification or compulsion rather than for an emotional drive.

A third (and substantial) group would engage in violence while acting out emotionally, demonstrating the defiance and bitterness typical of ODD as well as showing disregard for propriety and for the rights and property of others that is typical of CD. The youth in this group, like those in the other three, will vary among themselves in the severity of their actions, but will otherwise follow the general pattern.

All three groups are present in this current sample, and additional research would likely find such groups in other populations of youth diagnosed with disruptive behavior disorders.

Implications

The implications of these results are clear. The first is that, even if no significant overhaul of the categorical structure is completed any time soon, the aggressive behaviors should have a place in our construct of Oppositional Defiant Disorder. They are not merely evidence of burgeoning Conduct Disorder. The second is that our construct of Conduct Disorder is too broad; broad enough that it lacks meaning as a diagnostic identifier and its use can do more to misinform than to accurately communicate. The introduction of the C/U specifier is a step in the correct direction, but again, more needs to be done in order to assist in differentiating between violent and non-violent youth. It would be preferable that a system be in place for a differential diagnosis between those youth with CD that will tend toward psychopathy, those that will tend toward ASPD, and those that will tend to recover. Research indicates that there are differences in the correlates between these groups, and additional research can clarify those differences. An overhaul of our constructs seems to be in order that takes into account the latent structure of disruptive behavior as well as the variations in developmental progression.

Limitations of the Present Study

An inherent weakness in this study is the reliance on a self-report measure as a means of obtaining data since it has been indicated in research that children are not very reliable informants on their own oppositional behavior (Loeber, Green & Lahey, 1990). Additionally, the nature of the sample limits its generalizability; it is predominantly Caucasian, and composed entirely of youth that have been adjudicated. Similar studies using youth that have not had interaction with law enforcement or the legal system might, of necessity, give different results. Future research might include data drawn from

observers of the youth as well, such as family members, caregivers, probation officers, or arresting officers. These additional sources would be helpful in pinpointing the age of onset for the symptoms of interest, and that would clarify the type of symptom development that was occurring. Additionally, a future update of the diagnostic interview form that was used, the PADDI, might split the symptom questions that had been combined and ask about other symptoms more specifically, bringing it closer to a verbatim measure of current or future DSM criteria. Questions pertaining to age of onset might be introduced to the PADDI itself in the future. These changes would facilitate its use in future research.

Future Prospects and Conclusion

Additional research in a few different directions would be beneficial. Once these same three symptom groups are identified in a sample, detailed catalogs could be created of family and personal histories, possibly identifying risk factors and correlates that differentiate between the groups such as a diagnosis or presentation of ADHD. Another direction of study would be to begin with adult populations who present with three different profiles, one with psychopathy, one with antisocial personality disorder, and one without current psychopathology, but with a history of adolescent disruptive behavior. Detailed personal and treatment histories of these adults would be informative, and might either support the theory of the 3 developmental continua or contradict it. Either would be important to note.

As much study as possible is needed to clarify the current understanding of the disruptive behavior disorders in order to facilitate approximation of symptom progression, discrimination between symptomatic groups, diagnostic accuracy and

effective treatment. Perhaps this alternative theoretical structure would be useful in guiding that research.

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APPENDIX A

PADDI™

Practical Adolescent Dual Diagnosis Interview

Todd W. Estroff, M.D. and Norman G. Hoffmann, Ph.D.

Name: _____   Interviewer: _____

ID #: _____   Parent or Legal Guardian: _____

Date of Birth: ___ /___ /___   Current Date: ___ /___ /___
   month day year   month day year

1. Gender:
___ (1) Male
___ (2) Female

2. How old are you?
_____ years

3. What is your racial or ethnic background?
___ (1) Hispanic / Latino
___ (2) African-American
___ (3) Native American
___ (4) Native Hawaiian / Pacific Islander
___ (5) Asian
___ (6) Middle Eastern
___ (7) Caucasian / White
___ (8) Multiracial / Biracial / Other (specify)
_____

4. Who do you live with? (check all that apply)
___ (a) Both parents in the same household
___ (b) Mother
___ (c) Father
___ (d) Grandparents
___ (e) Older brothers or sisters
___ (f) Younger brothers or sisters
___ (g) Other relative (specify) _____
___ (h) Foster parents
___ (i) Other _____

5. Why are you here? (presenting complaint)
___ (a) Don't know
___ (b) Parent/family insistence
___ (c) School problems
___ (d) Legal—nonviolent
___ (e) Legal—violent
___ (f) Aggressive behavior
___ (g) Suicide attempt/gesture
___ (h) Substance use
___ (i) Other or comments

6. Has this been a problem before?
___ (0) No   ___ (1) Yes

6. A. If yes, what happened?
_____
_____

7. Are you in school now?
___ (1) Yes, attending or will attend in fall
___ (2) Suspended
___ (3) Expelled
___ (4) Dropped out—no longer in school
___ (5) Working on GED
___ (6) Graduated from high school / earned GED
___ (7) Incarcerated
___ (8) Other _____

8. What is the last grade you passed? ___ ___

9. Did you ever have so much trouble reading that you were behind the rest of the class?
___ (0) No   ___ (1) Yes

10. Can you read well?
___ (0) No   ___ (1) Yes

11. Have you ever been in any special classes?
___ (0) No   ___ (1) Yes

12. Have you ever taken prescribed medication regularly for more than two weeks?
___ (1) No
___ (2) Yes, but not in the past two weeks.
___ (3) Yes, taking medication during past 2 weeks.

12.A. If yes, what medications are you taking?
_____
_____
_____
_____

PADDI SCORING SUMMARY

Problem Category	Relevant Items *	Score	Normal Range	Indications
Intellectual Function Screen	Total of Items 13 – 16		2 – 4	If Score is less than 2, discontinue interview and consider IQ testing.
Major Depressive Episode	Total of Items 17 and 18 plus 20 – 25		0 – 4	Major depressive episode indicated by score of 5+. Note: Items 17 and/or 18 must be positive.
Depression Qualifier	Item 26		0	If positive, possible psychotic depression.
Depression Qualifier	Item 27		0	If 1+, possible substance induced depression.
Dangerousness	Items 28 plus 29 – 33		0	Any positive response indicates need for immediate psychiatric consultation.
Manic Episode	Total of Items 34 – 38 plus 40 – 44		0 – 2	Manic episode indicated by a score of 3+ if Item 34 is positive; 4+ if it is not.
Mania Qualifier	Item 45		0	If 1 or 2, rule out substance induced mania.
Mixed Episode	Total of Items 46 and 47		0	If 1 or 2, possible mixed states.
Mixed Episode Qualifier	Item 48		0	If 0, consider hypomanic episode; if 1, consider manic episode.
Psychotic Symptoms	Total of Items 49 –		0	If 1+, psychiatric consultation should be requested as soon as possible.
Child Abuse Victim—Physical, Sexual or Emotional	Total of Items 55 – 60		0	If 1+ and current, reporting to child abuse authorities may be required.
Panic Screen	Items 61 –		0	Score of 1+ warrants further inquiry.
Panic Attacks Number = Item 63	Total of Items 64 – 68		0 – 4	Score of 5+, consider panic attack/disorder.
Anxiety and Phobias	Total of Items 69 – 75		0	Any positive responses should be investigated.
Posttraumatic Stress	Item 76 = 1; Total of Items 77 – 79 > 0; Total of Items 80 – 82 > 0; Item = 1		0 0 0 0	If all 4 categories are 1+, PTSD is indicated.
Obsessions / Compulsions	Total of Items 84 – 87		0	Any positive response warrants OCD eval. **
Conduct Disorder	Total of Items 88 – 99		0 – 2	Score of 3+ indicates possible diagnosis. **
Oppositional Defiant Disorder	Total of Items 100 – 107		0 – 3	Score of 4+ indicates possible diagnosis. **
Paranoid Personality Traits	Total of Items 108 – 112		0 – 3	Score of 4+ indicates possible diagnosis. **
Dependent Personality Traits	Total of Items 113 – 118		0 – 4	Score of 5+ indicates possible diagnosis. **
Substance Use Disorders				
Tolerance	Total of Items 138 & 139		0	If 1+, meets criteria.
Withdrawal	Total of Items 140 & 141		0	If 1+, meets criteria.
Unplanned or greater use	Total of Items 12 & 142		0	If 1+, meets criteria.
Desire/inability to cut down	Total of Items 12 , 143, 144		0	If 1+, meets criteria.
Excessive time spent using	Total of Items 14 &		0	If 1+, meets criteria.
Sacrifice activities to use	Total of Items 14 & 148		0	If 1+, meets criteria.
Continue despite contraindications	Total of Items 131, 134, 14 – 15		0	If 1+, meets criteria.
Dependence	# of Positive Categories		0 – 2	3+ of 7 criteria indicate dependence.
Role fulfillment failure	Total of Items 121 & 147		0	If 1+, meets criteria.
Dangerous situations	Total of Items 152, 153, 155 Plus a positive for Item 137		0	If 1+, meets criteria.
Legal problems	Item 15		0	If 1, meets criteria.
Interpersonal problems	Total of Items 123, 156, 157		0	If 1+, meets criteria.
Abuse	# of Positive Categories		0	1+ of 4 criteria indicates abuse.

Substances used (check all that apply)

Alcohol		Sedatives / Tranquilizers		Inhalants	
Marijuana		Heroin / Opioids		Other or unknown	
Cocaine (crack or powder)		PCP		Polysubstance	
Meth and Other Stimulants		Other Hallucinogens			

ADHD observations	Item 163 a – f		NA	Observations only; not diagnostic

* Note: Some PADDI items are not scored for diagnostic purposes. ** Not all criteria for this disorder are covered by the PADDI.

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MENTAL HEALTH CONDITIONS

Intellectual Functioning Screen   ___ (0) No   ___ (1) Yes

13. Who is the president of the United States?
   ___ (0) Wrong: _____
   ___ (1) Correct answer

14. Who was the president before that?
   ___ (0) Wrong: _____
   ___ (1) Correct answer

15. What is today's date? (month, day, and year)
   ___ (0) Wrong: _____
   ___ (1) Correct answer

16. What day of the week is it?
   ___ (0) Wrong: _____
   ___ (1) Correct answer

If the respondent has less than two correct answers for Questions 13-16, **DISCONTINUE THE INTERVIEW** and request intelligence testing before proceeding further.

Major Depressive Episode

17. Have you ever felt sad, blue, depressed, or cranky almost every day for at least two-weeks?
   ___ (0) No   ___ (1) Yes

18. Have you ever lost interest in almost everything in your life or were unable to feel pleasure for at least two-weeks?
   ___ (0) No   ___ (1) Yes

If both items 17 and 18 are "no," skip to Item 28.

19. When was the last time you were depressed, cranky, or lost interest in things for two weeks or more?
   ___ (1) In the past 2 months
   ___ (2) 3 to 6 months ago
   ___ (3) 7 to 12 months ago
   ___ (4) Over a year ago

The next eight questions are only about the periods when you were depressed, cranky, or low interest.

20. Did you have trouble getting to sleep or staying asleep?
   ___ (0) No   ___ (1) Yes

21. Did you lose your appetite or lose weight without dieting?
   ___ (0) No   ___ (1) Yes

22. When you felt depressed, did you have slowed thinking or trouble concentrating?

23. Did you have less energy or did you tire more easily?
   ___ (0) No   ___ (1) Yes

24. When you felt depressed, did you feel more worthless or guilty?
   ___ (0) No   ___ (1) Yes

25. Were you unusually nervous, or were your movements unusually slowed?
   ___ (0) No   ___ (1) Yes

26. Were you ever so depressed that you started to hear voices but there was no one there?
   ___ (0) No   ___ (1) Yes

27. When have these periods of depression or loss of interest occurred?
   ___ (0) Only when not using alcohol or other drugs
   ___ (1) Only when using alcohol or other drugs
   ___ (2) Both when using and not using

Dangerousness to Self or Others

28. Have you ever had any thoughts of death, dying, or suicide?
   ___ (0) No   ___ (1) Yes

29. How many times have you tried to kill yourself?
   ___ (0) Never   Number of times _____

30. Do you feel like killing yourself now or do you wish you could die or disappear?
   ___ (0) No   ___ (1) Yes

31. Have you thought about how you would kill yourself?
   ___ (0) No   ___ (1) Yes

31.A. If yes, do you have a plan?
   ___ (a) Overdose
   ___ (b) Hanging
   ___ (c) Shooting
   ___ (d) Using a knife
   ___ (e) Crashing a car
   ___ (f) Carbon monoxide with a car
   ___ (g) Jumping off a building, bridge, etc.
   ___ (h) Other: _____

MENTAL HEALTH CONDITIONS

32. How many times have you seriously thought about killing someone else?

___ (0) Never   Number of times ___

33. Are you thinking about killing someone else now?

___ (0) No   ___ (1) Yes

33. A. If yes, explain: ___

Manic Episode

34. Have you ever felt too happy or "on top of the world" for no reason and it lasted one week or longer?

___ (0) No   ___ (1) Yes

35. Have you ever been unusually cranky for little or no reason and it lasted a week or longer?

___ (0) No   ___ (1) Yes

If both Items 34 and 35 are "no," skip to Item 46.

36. Have there ever been times when you needed little or no sleep for several days in a row?

___ (0) No   ___ (1) Yes

37. Has there ever been a time when you felt high for a day or more and you were not using any drugs?

___ (0) No   ___ (1) Yes

38. Was there ever a week or more when your thoughts were so speeded up that you could not keep up with them or your thoughts were jumbled?

___ (0) No   ___ (1) Yes

39. When did you last have one of these experiences?

___ (1) Happening now
___ (2) In the past 3 months
___ (3) 3 to 6 months ago
___ (4) 7 to 12 months ago
___ (5) More than a year ago

The following six questions refer to your experiences during those times when you were too happy or cranky for little or no reason.

40. Were you more distractible? Was it harder to keep your mind focused on a topic or task?

___ (0) No   ___ (1) Yes

41. Were you able to do a lot more things than usual?

___ (0) No   ___ (1) Yes

42. Were you more talkative than usual, or did other people tell you that you were talking too much or too quickly?

___ (0) No   ___ (1) Yes

43. Did you feel so important that you thought you could do almost anything or that you were a very important person?

___ (0) No   ___ (1) Yes

44. During any time when you were too happy or speeded up, did you do something you regretted later?

___ (0) No   ___ (1) Yes

45. Did the feelings of being too happy, needing little sleep or being speeded up happen:

___ (0) Only when not using alcohol or other drugs?
___ (1) Only when using alcohol or other drugs?
___ (2) Both when using and not using?

Mixed Episode

46. Have you ever felt very speeded up and very unhappy at the same time for a week or more?

___ (0) No   ___ (1) Yes

47. Have you found your feelings rapidly changing from very good to very bad and back again in a matter of minutes or a few hours?

___ (0) No | Skip next item | ___ (1) Yes

48. Did these rapid changes in your feelings go on for a week or more?

___ (0) No   ___ (1) Yes

Psychotic Symptoms

49. Have you ever heard voices when no one was there?

___ (0) No   ___ (1) Yes

50. Have you ever smelled, tasted, or felt something touching you and there was nothing around to cause it?

___ (0) No   ___ (1) Yes

51. Have you ever seen things others could not see?

___ (0) No   ___ (1) Yes

If no positive response to Items 49 - 51, skip to Item 54.

MENTAL HEALTH CONDITIONS

52. Have you ever had these experiences when you were not using alcohol or drugs?

___ (0) No   ___ (1) Yes

53. Have you ever heard voices or seen things at a time when you were not drifting off to sleep or just waking up?

___ (0) No   ___ (1) Yes

54. Have you ever thought you had special powers, such as being able to read people's minds, predict the future, or move objects with your mind?

___ (0) No   ___ (1) Yes

Child Abuse Victim

55. Has anyone ever hit you so hard or so often that it left marks or broke a bone?

___ (0) No   ___ (1) Yes

56. Has anyone ever hurt you so badly that you had to go to the emergency room?

___ (0) No   ___ (1) Yes

If yes, how many times? _____

57. Did the person who hurt you tell the truth about how you were hurt?

___ (0) Yes   ___ (1) No

58. Has anyone ever touched you in a sexual way that was unwanted?

___ (0) No   ___ (1) Yes

59. Has anyone ever made you do something sexual against your will?

___ (0) No   ___ (1) Yes

60. Has anyone ever repeatedly ridiculed you, humiliated you, or just made you feel bad?

___ (0) No   ___ (1) Yes

Panic

61. Have you ever had any scary or panicky feelings that came on all of a sudden for no special reason?

___ (0) No   ___ (1) Yes

62. Have you ever felt terrible fear, panic, or discomfort when there was no danger?

___ (0) No   ___ (1) Yes

If Items 61 and 62 are "no," skip to Item 69.

63. How many scary or panicky periods have you felt in the past 12 months?

___ ___ ___ panicky periods

64. During these scary or panicky periods, did you have the feeling of choking, shortness of breath, or smothering sensation?

____ (0) Neither
____ (1) Choking
____ (1) Shortness of breath / smothering
____ (2) Both

65. Did you feel dizzy, lightheaded, or faint?

___ (0) No   ___ (1) Yes

66. During these scary or panicky periods, did you experience sweating, shaking, or trembling?

____ (0) Neither
____ (1) Sweating
____ (1) Shaking / trembling
____ (2) Both

67. Did you have nausea, stomach distress, or chest pains?

____ (0) Neither
____ (1) Nausea / stomach distress
____ (1) Chest pain
____ (2) Both

68. During these scary or panicky periods, were you afraid that you were going to go crazy, lose control, or die?

____ (0) Neither
____ (1) Going crazy / losing control
____ (1) Dying
____ (2) Both

Anxiety and Phobias

69. Do you worry too much about things that might happen?

___ (0) No   ___ (1) Yes

70. Are you often nervous or anxious about things even though other people say there is nothing to worry about?

___ (0) No   ___ (1) Yes

71. Have you often had problems concentrating or you forgot things because you were too nervous?

___ (0) No   ___ (1) Yes

MENTAL HEALTH CONDITIONS

72. Do you often feel worried, nervous, keyed up, or on edge?

___ (0) No　　　　　　___ (1) Yes

73. Have you ever been afraid of going into open areas, public places, or away from home even when there was no real physical danger?

___ (0) No　　　　　　___ (1) Yes

74. When you were in open areas or out in public, did you ever feel very scared when there was nothing to fear?

___ (0) No　　　　　　___ (1) Yes

75. Does the fear that something bad will happen keep you from doing things you want to do?

___ (0) No　　　　　　___ (1) Yes

Post-traumatic Stress

76. Has anything happened to you that bothered you so much that you could not get it out of your mind or forget it?

___ (0) No Skip to Item 84　___ (1) Yes

77. Do the memories of that experience keep coming back into your mind?

___ (0) No　　　　　　___ (1) Yes

78. Have you ever had frequent scary dreams about that bad experience?

___ (0) No　　　　　　___ (1) Yes

79. Have you ever become so upset or fearful that you felt as if that bad experience was happening all over again?

___ (0) No　　　　　　___ (1) Yes

80. Since it happened, have you wanted to be alone more often, or are you less interested in the things that you used to enjoy?

___ (0) No　　　　　　___ (1) Yes

81. Do you try not to think about what happened?

___ (0) No　　　　　　___ (1) Yes

82. Since it happened, are you unable to remember some parts of what happened?

___ (0) No　　　　　　___ (1) Yes

83. Since that bad experience, have you had trouble sleeping, concentrating, or dealing with anger, or are you more easily startled?

___ (0) No　　　　　　___ (1) Yes

Obsessions / Compulsions

84. Are you frequently bothered by ideas, thoughts, or feelings that seem to pop into your mind from nowhere?

___ (0) No Skip to Item 88　___ (1) Yes

85. Do you have to do something to control these thoughts or make these feelings go away?

___ (0) No　　　　　　___ (1) Yes

86. Do you spend a lot of time doing things so that you won't have these thoughts or feelings?

___ (0) No　　　　　　___ (1) Yes

87. Do any of these bad thoughts or feelings—or the things you do to control them—interfere with your daily life?

___ (0) No　　　　　　___ (1) Yes

Conduct Disorder

88. Before the age of 13, did you skip school on purpose more than two times?

___ (0) No　　　　　　___ (1) Yes

89. If yes, how many times ___

___ Have you run away from home at night more than once?

___ (0) No　　　　　　___ (1) Yes

90. Have you started physical fights with others more than two times?

___ (0) No　　　　　　___ (1) Yes

91. Have you ever beaten someone up for no good reason, or just because he or she was different?

___ (0) No　　　　　　___ (1) Yes

92. Have you used a knife, gun, club, or other weapon in more than one fight?

___ (0) No　　　　　　___ (1) Yes

93. Have you ever deliberately destroyed someone else's things for no reason?

___ (0) No　　　　　　___ (1) Yes

94. Have you ever set fires because you wanted to burn something down or cause damage?

___ (0) No　　　　　　___ (1) Yes

95. Have you ever hurt animals or done cruel things to them?

___ (0) No　　　　　　___ (1) Yes

MENTAL HEALTH CONDITIONS

96. Have you often lied to get things you wanted?

   ___ (0) No   ___ (1) Yes

97. Have you ever forced someone to do something sexual with you or to go farther than they wanted?

   ___ (0) No   ___ (1) Yes

98. Have you ever stolen things or forced others to give you things that belonged to them?

   ___ (0) No   ___ (1) Yes

99. Have you ever broken into a house, building, or car to steal something?

   ___ (0) No   ___ (1) Yes

100. Have you ever been arrested or placed in an juvenile detention center?

   ___ (0) No   ___ (1) Yes

      If yes, how many times _____

Oppositional Defiant Disorder

101. Do you often argue with adults or people in authority?

   ___ (0) No   ___ (1) Yes

102. Do you often refuse to do what an adult asks you to do?

   ___ (0) No   ___ (1) Yes

103. Have you repeatedly annoyed people on purpose?

   ___ (0) No   ___ (1) Yes

104. Do you often lose your temper?

   ___ (0) No   ___ (1) Yes

105. Are you easily annoyed by other people?

   ___ (0) No   ___ (1) Yes

106. Do you often feel angry or resentful?

   ___ (0) No   ___ (1) Yes

107. When people do something you don't like, do you try to get back at them?

   ___ (0) No   ___ (1) Yes

Paranoid Personality

108. Do you tend to hold a grudge?

   ___ (0) No   ___ (1) Yes

109. Do you worry almost all the time that someone may be trying to hurt or control you?

   ___ (0) No   ___ (1) Yes

110. Do you have problems trusting others because you are afraid that they will use what you say against you?

   ___ (0) No   ___ (1) Yes

111. Have you ever doubted the loyalty or trustworthiness of your family or friends?

   ___ (0) No   ___ (1) Yes

112. Have others ever suggested that you are too easily offended?

   ___ (0) No   ___ (1) Yes

Dependent Personality

113. Have you ever had problems in making decisions without getting advice or support from other people?

   ___ (0) No   ___ (1) Yes

114. Are you more comfortable when you let other people make important decisions for you?

   ___ (0) No   ___ (1) Yes

115. Do you agree with people even when you think they are wrong just to avoid disagreeing with them?

   ___ (0) No   ___ (1) Yes

116. Do you feel uncomfortable or helpless when you are alone?

   ___ (0) No   ___ (1) Yes

117. Do you have trouble starting or finishing things by yourself?

   ___ (0) No   ___ (1) Yes

118. Are you willing to do almost anything to be accepted by people you care about?

   ___ (0) No   ___ (1) Yes

Sexual Orientation

119. Romantically do you like boys, girls, both, or neither?

   ___ (1)   Girls

   ___ (2)   Boys

   ___ (3)   Both

   ___ (4)   Neither

119. A. Have you had sexual intercourse?

   ___ (0) No   ___ (1) Yes

SUBSTANCE USE DISORDERS

If during the course of asking the following questions, the respondent spontaneously denies ever using any alcohol, drugs, or inhalants, end the interview and then complete Items 158 through 164.

120. Have you ever spent more time drinking or using drugs than you intended?
___ (0) No ___ (1) Yes

121. Have you ever **neglected** some of your usual responsibilities because of using alcohol or drugs?
___ (0) No ___ (1) Yes

122. Have you ever wanted to cut down on your drinking or drug use?
___ (0) No ___ (1) Yes

123. Has anyone ever objected to your drinking or drug use?
___ (0) No ___ (1) Yes

124. Have you ever been preoccupied with drinking or using drugs? That is, have you ever found yourself thinking a lot about drinking or using?
___ (0) No ___ (1) Yes

125. Have you ever used alcohol or drugs to relieve emotional discomfort, such as sadness, anger, or boredom?
___ (0) No ___ (1) Yes

126. How old were you when you first started using any substance to get high? This would include alcohol, drugs, or breathing things like glue, paint, gasoline, or aerosol sprays.
(Note: code "00" if use denied) ___ ___ years old

127. How old were you when you had any problem or got into trouble because of using alcohol or other drugs?
(Note: code "00" if denied) ___ ___ years old

128. How old were you when someone else started to believe that your use of alcohol or other drugs was getting out of control?
(Note: code "00" if denied) ___ ___ years old

129. How old were you when you first thought that your use of alcohol or other drugs was getting out of control?
(Note: code "00" if denied) ___ ___ years old

130. When did you last use [name substance]?
Code according to the most recent use:
0 = Never used
1 = Not used for more than a year
2 = Used within the past year
3 = Used within the past 6 months
4 = Used in past 30 days
5 = Used within the past 7 days
6 = Used within the past 24 hours

Record number of days the substance was used in the past 30 days.

Tobacco
0 1 2 3 4 5 6 ___ ___ days

Alcohol
0 1 2 3 4 5 6 ___ ___ days

Marijuana
0 1 2 3 4 5 6 ___ ___ days

Cocaine (powder or crack)
0 1 2 3 4 5 6 ___ ___ days

Amphetamines / stimulants (e.g., speed, uppers)
0 1 2 3 4 5 6 ___ ___ days

Sedatives / tranquilizers (e.g., downers)
0 1 2 3 4 5 6 ___ ___ days

Heroin / opioids (e.g., morphine, codeine)
0 1 2 3 4 5 6 ___ ___ days

PCP (e.g., angel dust, dust)
0 1 2 3 4 5 6 ___ ___ days

Hallucinogens (e.g., LSD, mescaline, peyote)
0 1 2 3 4 5 6 ___ ___ days

Inhalants (e.g., glue, gasoline, paint, aerosol sprays)
0 1 2 3 4 5 6 ___ ___ days

Any other substance (specify)
0 1 2 3 4 5 6 ___ ___ days

If no use of alcohol or drugs, end interview.
If alcohol was never used, skip to Item 134.

131. When you drink, how many drinks do you usually have?
___ (1) 7 or more
___ (2) 5 or 6
___ (3) 3 or 4
___ (4) 1 or 2

132. Do you drink alcohol with the intention of getting drunk?
no yes If yes, ask, How many times in past 12 mo.
0 1 -------------------------------- 0 1 2 3+

SUBSTANCE USE DISORDERS

133. Have you ever not remembered things that you said or did while drinking or after drinking?
no yes   If yes, ask, How many times in past 12 mo.
0   1   --------------------------------------- 0 1 2

134. Have you ever not remembered things you said or did when using drugs?
no yes   If yes, ask, How many times in past 12 mo.
0   1   --------------------------------------- 0 1 2 3+

135. Do you enjoy how alcohol or drugs make you feel, or do you use just to fit in?
___ (1) Uses because of the effect
___ (2) Uses only to fit in [Skip next question]
___ (3) Both—for the effects and to fit in
___ (4) Neither—for other reasons

136. Which substances make you feel good?
no yes—feel good   favorite
0   1   Alcohol --------------------------------- 2
0   1   Marijuana ------------------------------- 2
0   1   Cocaine --------------------------------- 2
0   1   Amphetamine / stimulant ----------------- 2
0   1   Sedatives / tranquilizers --------------- 2
0   1   Heroin / opioid ------------------------- 2
0   1   Hallucinogens / PCP --------------------- 2
0   1   Inhalants ------------------------------- 2
0   1   Other drug _____ 2

136.A. Do you have any favorites? (Circle one or more.)

137. Have you ever injected a drug to get high?
If the response is yes, ask,
Did you inject [name substance] ?
no yes   If yes, ask, How many times in past 12 mo.
0   1   Cocaine --------------------- 0 1 2 3+
0   1   Heroin or other opioids ----- 0 1 2 3+
0   1   Amphetamines / stimulants --- 0 1 2 3+
0   1   Other drugs _____ 0 1 2 3+

138. Have you ever found that it takes more alcohol or drugs to get you high or drunk?
___ (0) No   ___ (1) Yes

139. Have you ever found that you couldn't get as high from the same amount of alcohol or drug as you used to?
___ (0) No   ___ (1) Yes

140. Have you ever had the shakes, sweating, nausea, fatigue, trouble going to sleep or staying asleep, or any other bad effects while stopping or cutting down your drinking or drug use?
___ (0) No   ___ (1) Yes

141. Have you ever taken a drink or used drugs to ease a hangover or to reduce other bad effects?
___ (0) No   ___ (1) Yes

142. Have you ever drunk more alcohol or used more drugs than you had intended?
___ (0) No   ___ (1) Yes

143. Has the desire to drink or use a drug ever been so strong that you couldn't stop yourself from drinking or using the drug?
___ (0) No   ___ (1) Yes

144. Have you ever set rules to control your drinking or drug use?
___ (0) No   ___ (1) Yes

145. Have you ever found yourself planning your activities around being able to drink or use drugs?
___ (0) No   ___ (1) Yes

146. Have you ever stayed drunk or high from drugs for more than a day at a time?
___ (0) No   ___ (1) Yes

147. Have you ever missed any school or work because of your drinking or drug use?
___ (0) No   ___ (1) Yes

148. Have you ever given up or reduced any activities so that you could drink or use drugs?
___ (0) No   ___ (1) Yes

149. Have you ever had any physical problems that might have been caused by drinking or drug use?
___ (0) No   ___ (1) Yes

150. Have you ever continued to drink or use drugs when you had a physical problem or illness that might be made worse by continued use?
___ (0) No   ___ (1) Yes

151. Have you ever had any emotional or psychological problems that your drinking or drug use might have caused or made worse?
___ (0) No   ___ (1) Yes

152. Have you ever driven any type of motor vehicle when you might have been intoxicated or under the influence of other drugs?

   ___ (0) No   ___ (1) Yes

153. Have you ever done risky things while drinking or using drugs that you normally would not have done?

   ___ (0) No   ___ (1) Yes

154. Have you ever been arrested or detained by any law officers because of problems related to your alcohol or drug use? [This includes DUI offenses.]

   ___ (0) No   ___ (1) Yes

155. Have you ever been violent or got into arguing while drinking or using drugs?

   ___ (0) No   ___ (1) Yes

156. Has your drinking or drug use ever harmed a relationship with someone you cared about?

   ___ (0) No   ___ (1) Yes

157. Have you ever had conflicts with anyone over matters that might have been related to your drinking or drug use?

   ___ (0) No   ___ (1) Yes

END OF INTERVIEW

THANK THE RESPONDENT AND TERMINATE THE INTERVIEW.

AFTER THE RESPONDENT HAS LEFT FILL OUT ITEMS 158 - 164.

Observational Data

158. Predominant attitude during interview:
___ (1) Normal and appropriate
___ (2) Depressed
___ (3) Hyperactive
___ (4) Rapidly changing
___ (5) Hostile
___ (6) Apathetic, disinterested
___ (7) Other _____

159. Mood:
___ (1) Normal
___ (2) Depressed
___ (3) Irritable
___ (4) Happy
___ (5) Extremely happy

160. Range of mood (affect):
___ (1) Normal
___ (2) Blunted
___ (3) Flat
___ (4) Inappropriate
___ (5) Labile
___ (6) Constricted

161. Anhedonia – inability to enjoy anything
___ (1) No indication
___ (2) Some inability to enjoy activities/things
___ (3) General inability to enjoy life
___ (4) Profound inability for enjoyment

162. Speech
___ (1) Normal
___ (2) Fast
___ (3) Hard to interrupt when talking
___ (4) Slowed down
___ (5) Unusual or does not make sense

163. ADHD signs (check all that apply)
___ a) No indication of inattention or hyperactivity
___ b) Occasionally inattentive
___ c) Hard to keep focused
___ d) Some elevated activity
___ e) Quite active and restless
___ f) Very active; opens doors, turns lights on and off, etc.

164. How did you, the interviewer, feel about this interview? *(check all that apply)*
___ a) Felt good
___ b) Liked the individual
___ c) Disliked the individual
___ d) Disliked the individual intensely
___ e) The responses were confusing

SUMMARY COMMENTS:

APPENDIX B

Appended below is the syntax for running a parallel analysis in SPSS as authored

by Brian O'Connor (2000). The syntax provided has been prepared for use with the data

of this particular study.

* Parallel Analysis Program For Raw Data and Data Permutations.

* To run this program you need to first specify the data
  for analysis and then RUN, all at once, the commands
  from the MATRIX statement to the END MATRIX statement.

* This program conducts parallel analyses on data files in which
  the rows of the data matrix are cases/individuals and the
  columns are variables; Data are read/entered into the program
  using the GET command (see the GET command below); The GET
  command reads an SPSS data file, which can be either the
  current, active SPSS data file or a previously saved data file;
  A valid filename/location must be specified on the GET command;
  A subset of variables for the analyses can be specified by using
  the "/ VAR =" subcommand with the GET statement; There can be
  no missing values.

* You must also specify:
  -- the # of parallel data sets for the analyses;
  -- the desired percentile of the distribution and random
     data eigenvalues;
  -- whether principal components analyses or principal axis/common
     factor analysis are to be Conducted, and
  -- whether normally distributed random data generation or
     permutations of the raw data set are to be used in the
     parallel analyses.

* Permutations of the raw data set can be time consuming;
  Each parallel data set is based on column-wise random shufflings
  of the values in the raw data matrix using Castellan's (1992,
  BRMIC, 24, 72-77) algorithm; The distributions of the original
  raw variables are exactly preserved in the shuffled versions used
  in the parallel analyses; Permutations of the raw data set are
  thus highly accurate and most relevant, especially in cases where
  the raw data are not normally distributed or when they do not meet
  the assumption of multivariate normality (see Longman & Holden,
  1992, BRMIC, 24, 493, for a Fortran version); If you would
  like to go this route, it is perhaps best to (1) first run a

normally distributed random data generation parallel analysis to
familiarize yourself with the program and to get a ballpark
reference point for the number of factors/components;
(2) then run a permutations of the raw data parallel analysis
using a small number of datasets (e.g., 100), just to see how long
the program takes to run; then (3) run a permutations of the raw
data parallel analysis using the number of parallel data sets that
you would like use for your final analyses; 1000 datasets are
usually sufficient, although more datasets should be used if
there are close calls.

* These next commands generate artificial raw data
 (500 cases) that can be used for a trial-run of
 the program, instead of using your own raw data;
 Just select and run this whole file; However, make sure to
 delete the artificial data commands before attempting to
 run your own data.

set mxloops=9000 printback=off width=80 seed = 1953125.
matrix.

* Enter the name/location of the data file for analyses after "FILE = *";
 If you specify "FILE = *", then the program will read the current,
 active SPSS data file; Alternatively, enter the name/location
 of a previously saved SPSS data file instead of "*";
 you can use the "/ VAR =" subcommand after "/ missing=omit"
 subcommand to select variables for the analyses.
GET raw / FILE = * / missing=omit / VAR = p88 to p108.

* Enter the desired number of parallel data sets here.
compute ndatsets = 1000.

* Enter the desired percentile here.
compute percent = 95.

* Enter either
  1 for principal components analysis, or
  2 for principal axis/common factor analysis.
compute kind = 1 .

* Enter either
  1 for normally distributed random data generation parallel analysis, or

    2 for permutations of the raw data set.
compute randtype = 2.

***************** End of user specifications. ******************

compute ncases   = nrow(raw).
compute nvars   = ncol(raw).

* principal components analysis & random normal data generation.
do if (kind = 1 and randtype = 1).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute realeval = eval(d * vcv * d).
compute evals = make(nvars,ndatsets,-9999).
loop #nds = 1 to ndatsets.
compute x = sqrt(2 * (ln(uniform(ncases,nvars)) * -1)) &*
        cos(6.283185 * uniform(ncases,nvars)).
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute evals(:,#nds) = eval(d * vcv * d).
end loop.
end if.

* principal components analysis & raw data permutation.
do if (kind = 1 and randtype = 2).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute realeval = eval(d * vcv * d).
compute evals = make(nvars,ndatsets,-9999).
loop #nds = 1 to ndatsets.
compute x = raw.
loop #c = 1 to nvars.
loop #r = 1 to (ncases -1).
compute k = trunc((ncases - #r + 1) * uniform(1,1) + 1) + #r - 1.
compute d = x(#r,#c).
compute x(#r,#c) = x(k,#c).
compute x(k,#c) = d.
end loop.
end loop.
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute evals(:,#nds) = eval(d * vcv * d).
end loop.

```
end if.

* PAF/common factor analysis & random normal data generation.
do if (kind = 2 and randtype = 1).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute cr = (d * vcv * d).
compute smc = 1 - (1 &/ diag(inv(cr)) ).
call setdiag(cr,smc).
compute realeval = eval(cr).
compute evals = make(nvars,ndatsets,-9999).
compute nm1 = 1 / (ncases-1).
loop #nds = 1 to ndatsets.
compute x = sqrt(2 * (ln(uniform(ncases,nvars)) * -1) ) &*
        cos(6.283185 * uniform(ncases,nvars) ).
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute r = d * vcv * d.
compute smc = 1 - (1 &/ diag(inv(r)) ).
call setdiag(r,smc).
compute evals(:,#nds) = eval(r).
end loop.
end if.

* PAF/common factor analysis & raw data permutation.
do if (kind = 2 and randtype = 2).
compute nm1 = 1 / (ncases-1).
compute vcv = nm1 * (sscp(raw) - ((t(csum(raw))*csum(raw))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute cr = (d * vcv * d).
compute smc = 1 - (1 &/ diag(inv(cr)) ).
call setdiag(cr,smc).
compute realeval = eval(cr).
compute evals = make(nvars,ndatsets,-9999).
compute nm1 = 1 / (ncases-1).
loop #nds = 1 to ndatsets.
compute x = raw.
loop #c = 1 to nvars.
loop #r = 1 to (ncases -1).
compute k = trunc( (ncases - #r + 1) * uniform(1,1) + 1 )  + #r - 1.
compute d = x(#r,#c).
compute x(#r,#c) = x(k,#c).
compute x(k,#c) = d.
end loop.
end loop.
```

```
compute vcv = nm1 * (sscp(x) - ((t(csum(x))*csum(x))/ncases)).
compute d = inv(mdiag(sqrt(diag(vcv)))).
compute r = d * vcv * d.
compute smc = 1 - (1 &/ diag(inv(r)) ).
call setdiag(r,smc).
compute evals(:,#nds) = eval(r).
end loop.
end if.


* identifying the eigenvalues corresponding to the desired percentile.
compute num = rnd((percent*ndatsets)/100).
compute results = { t(1:nvars), realeval, t(1:nvars), t(1:nvars) }.
loop #root = 1 to nvars.
compute ranks = rnkorder(evals(#root,:)).
loop #col = 1 to ndatsets.
do if (ranks(1,#col) = num).
compute results(#root,4) = evals(#root,#col).
break.
end if.
end loop.
end loop.
compute results(:,3) = rsum(evals) / ndatsets.


print /title="PARALLEL ANALYSIS:".
do if (kind = 1 and randtype = 1).
print /title="Principal Components & Random Normal Data Generation".
else if (kind = 1 and randtype = 2).
print /title="Principal Components & Raw Data Permutation".
else if (kind = 2 and randtype = 1).
print /title="PAF/Common Factor Analysis & Random Normal Data Generation".
else if (kind = 2 and randtype = 2).
print /title="PAF/Common Factor Analysis & Raw Data Permutation".
end if.
compute specifs = {ncases; nvars; ndatsets; percent}.
print specifs /title="Specifications for this Run:"
 /rlabels="Ncases" "Nvars" "Ndatsets" "Percent".
print results
 /title="Raw Data Eigenvalues, & Mean & Percentile Random Data Eigenvalues"
 /clabels="Root" "Raw Data" "Means" "Prcntyle"  /format "f12.6".


do if   (kind = 2).
print / space = 1.
print /title="Warning: Parallel analyses of adjusted correlation matrices".
print /title="eg, with SMCs on the diagonal, tend to indicate more factors".
print /title="than warranted (Buja, A., & Eyuboglu, N., 1992, Remarks on parallel".
print /title="analysis. Multivariate Behavioral Research, 27, 509-540.).".
```

```
print /title="The eigenvalues for trivial, negligible factors in the real".
print /title="data commonly surpass corresponding random data eigenvalues".
print /title="for the same roots. The eigenvalues from parallel analyses".
print /title="can be used to determine the real data eigenvalues that are".
print /title="beyond chance, but additional procedures should then be used".
print /title="to trim trivial factors.".
print / space = 2.
print /title="Principal components eigenvalues are often used to determine".
print /title="the number of common factors. This is the default in most".
print /title="statistical software packages, and it is the primary practice".
print /title="in the literature. It is also the method used by many factor".
print /title="analysis experts, including Cattell, who often examined".
print /title="principal components eigenvalues in his scree plots to determine".
print /title="the number of common factors. But others believe this common".
print /title="practice is wrong. Principal components eigenvalues are based".
print /title="on all of the variance in correlation matrices, including both".
print /title="the variance that is shared among variables and the variances".
print /title="that are unique to the variables. In contrast, principal".
print /title="axis eigenvalues are based solely on the shared variance".
print /title="among the variables. The two procedures are qualitatively".
print /title="different. Some therefore claim that the eigenvalues from one".
print /title="extraction method should not be used to determine".
print /title="the number of factors for the other extraction method.".
print /title="The issue remains neglected and unsettled.".
end if.


compute root     = results(:,1).
compute rawdata = results(:,2).
compute percntyl = results(:,4).


save results /outfile= 'screedata.sav' / var=root rawdata means percntyl .


end matrix.


* plots the eigenvalues, by root, for the real/raw data and for the random data;
  This command works in SPSS 12, but not in all earlier versions.
GET file= 'screedata.sav'.
TSPLOT VARIABLES= rawdata means percntyl /ID= root /NOLOG.
```