

DETECTING FEIGNING IN ADOLESCENTS  
ON THE PERSONALITY ASSESSMENT INVENTORY – ADOLESCENT FORM

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**Table of Contents**

ACKNOWLEDGEMENTS.....	6
ABSTRACT.....	7
CHAPTER I – INTRODUCTION.....	8
Feigning in Adults.....	10
Detecting adult feigning using objective personality inventories.....	12
Feigning in Adolescents.....	13
Detecting adolescent feigning using objective personality inventories.....	15
The MMPI-A versus the PAI-A.....	16
The Current Study.....	17
Research questions.....	17
Significance and implications of the current study.....	19
CHAPTER II – LITERATURE REVIEW.....	20
Assessment of Personality and Psychopathology.....	20
Dominant objective personality inventories.....	23
Feigning and Deception in Psychological Assessment.....	24
Feigning in Adults.....	26
Detecting feigning and deception in adults.....	26
Clinical interviewing.....	31
Cognitive methods.....	32
Personality Inventories.....	32
The MMPI-2.....	32
The PAI.....	35

Feigning in Adolescents	3
Comparing the MMPI-2 to the PAI	44
Individuals' knowledge and feigning success	49
Feigning in Adolescents	50
Objective personality inventories with adolescents	54
The MMPI-A	54
The PAI-A	55
The detection of feigning in adolescents using objective personality measures	56
MMPI-A	57
PAI-A	59
Major Depressive Disorder	62
The <i>DSM-5</i> definition of major depressive disorder	62
How major depressive disorder manifests in adolescence	63
The assessment of major depressive disorder	63
Possible motivations to feign major depressive disorder	64
Purpose of the Present Study	65
Research questions	65
CHAPTER III – METHODS	67
Participants	67
Measures	69
PAI-A	69
Procedures	70
CHAPTER IV – RESULTS	73
Research Questions	73

Feigning in Adolescents	4
Feigning Success.....	73
Clinical Scales and Subscales.....	74
Validity Scales.....	76
Regression Analysis.....	78
Cut-Scores.....	79
CHAPTER V – DISCUSSION.....	81
General Discussion.....	81
Feigning depression.....	81
Catching the deception.....	82
Effects of coaching.....	84
Implications for Practice.....	86
Strengths and Limitations.....	89
Strengths.....	89
Limitations.....	90
Future Directions.....	91
Summary.....	92
Declaration of Conflicting Interests.....	92
Funding.....	92
REFERENCES.....	93
TABLES.....	100
Table 1: Developmental Progression of Lying and Deception.....	100
Table 2: Recommended Effect-Sizes for Feigning Studies.....	101
Table 3: MMPI-2 and PAI Feigning Comparison Studies.....	102

Table 4: Means, Standard Deviations, and Effect-Sizes for the Depression Scales.....	103
Table 5: Canonical Discriminant Function for Negative Distortion Indices.....	104
Table 6: Means and Effect-Sizes for the Negative Distortion Indices.....	105
Table 7: Multinomial Regression Analysis for Negative Distortion Indices.....	106
Table 8: Cut-Scores, Sensitivity, and Specificity for the PAI-A.....	107
FIGURES.....	108
Figure 1: Consort Diagram for the Current Study.....	108
Figure 2: Depression Scale and Subscales Means.....	109
Figure 3: Receiver Operating Characteristic Curves.....	110
APPENDICES.....	111
Appendix A: Output for Power Analysis.....	111
Appendix B: Subjective Unit of Distress Scale (SUDS).....	112
Appendix C: Instructions to Participants.....	113
Appendix D: Demographics Questionnaire.....	117
Appendix E: Manipulation Check.....	118
Appendix F: Positive Mood Induction.....	119
Appendix G: Crisis Steps and Resources.....	120
Appendix H: Formula for Calculating the RDF.....	121
Appendix I: Sensitivity and Specificity Table for the NIM.....	122
Appendix J: Sensitivity and Specificity Table for the RDF.....	123
Appendix K: Sensitivity and Specificity Table for the MAL.....	124

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### Abstract

**Problem:** Psychological evaluations are susceptible to clients feigning the existence of psychopathological symptoms. Much of the research on identifying feigning in psychological assessment has focused on adults despite the idea that adolescents are also capable of deception. The purpose of the present study is to expand the limited literature base on detecting feigning in adolescents when administered the Personality Assessment Inventory – Adolescent (PAI-A).

**Participants:** The current study included 114 nonclinical adolescents (ages 15 to 18) recruited from high schools in central Illinois and Indiana as well as 50 randomly-selected individuals with a depression diagnosis from the clinical standardization set of the PAI-A. Sample demographics included a mean age of 16.64 years; 51.2% young men, 48.2% young women; 85.4% Caucasian, 6.7% African American, 5.5% Hispanic, and 2.4% Asian. **Design:** Participants were randomly assigned to experimental groups: honest nonclinical, uncoached feigning, and coached feigning. The clinical individuals made up the honest clinical group. Participants completed the PAI-A under their respective experimental condition. **Results:** 87% of feigning profiles were able to show clinical levels of depression on the PAI-A. MANOVA and multinomial regression showed strong support for the Rogers Discriminant Function (RDF;  $d$  range = 1.85 - 2.05). The Negative Impression Management (NIM) scale also showed some promise ( $d$  range = 0.77 – 1.08) but was less useful than the RDF. Finally, little support was found for the MAL ( $d$  range = 0.58 – 0.70). **Conclusion:** The negative distortion indices, particularly the RDF and NIM, showed good utility in differentiating between groups. Cut-scores and implications for practice – such as the need to calculate the RDF when feigning is a risk and how to proceed once feigning is discovered - are discussed.

## Detecting Feigning in Adolescents on the Personality Assessment Inventory – Adolescent Form

**Chapter I – Introduction**

*A high school Junior is exhibiting behavior problems in class related to passive defiance and low homework completion. In truth, he simply does not want to do the schoolwork. The student's parents request to have him evaluated by the school psychologist due to his academic problems. The student heard from a friend that if he can convince the school psychologist he is depressed, he may be able to get out of doing some of his schoolwork, so he does a little research online about depression – what it involves and what it looks like. When meeting with the school psychologist, the student endorses depressive symptoms and even appears to be visibly morose; leading the school psychologist to believe the student's behavior may be due to a mood disorder and not an overall lack of engagement with school. Even if the school psychologist expects deception, he/she now has to try to tease apart the feigned information from the truth.*

In psychological practice, the threat of feigning psychological symptoms has become a major issue, much in the same way as the issue of patient faking physical health symptoms in medical settings (Rogers, 2008a). This problem may be particularly difficult to address in the field of psychology compared to medicine since psychology has fewer biological markers and tests to validate the client's claims. As the above vignette describes, clinicians often need to rely on the reports of clients and clients may hide or overreport symptoms depending on his/her motives. This is a particularly salient problem, as some estimates of feigning have reached as high as 40% of patients seen in compensation-seeking cases (Larrabee, 2003) and 60% in Social Security Disability evaluations (Chafetz, Abrahams, & Kohlmaier, 2007; Chafetz, 2008). Though the estimated prevalence rates in traditional psychological or psychoeducational evaluations are less than 5% (Kirkwood, 2015a), it is important to realize that feigning does occur and psychologists must be equipped to identify it.



One major way many psychologists gather data during evaluations is through objective personality measures. They may take the form of extensive self-report questionnaires that address a variety of areas related to psychological health and interpersonal functioning. Two examples of popular objective personality inventories for adults are the Minnesota Multiphasic Personality Inventory, 2<sup>nd</sup> Edition (MMPI-2; Butcher, Graham, Ben-Porath, Tellegen, Dahlstrom, & Kraemmer, 2001) and the Personality Assessment Inventory (PAI; Morey, 2007b). Both have adolescent versions. When taking these inventories, clients are given a series of items and told to indicate whether the statement applies to them. It is entirely plausible that a client intent on feigning would be able to try to tailor his/her responses on these objective personality inventories to present as having a certain condition.

The psychological literature has increasingly focused on the detection of feigned responding in psychological evaluations and how to detect when feigning has occurred (See Rogers, 2008). The vast majority of research on detecting feigning has focused on adults. There was extremely limited attention given to validity assessment in child and adolescent evaluations until the early 2000s, and the use of validity tests with adolescents has been slow to take hold in the field (Kirkwood, 2015a). This is in part due to a belief that children are not cognitively sophisticated enough to feign (Slick, Tan, Sherman, & Strauss, 2011; Kirkwood, 2015a).

Young children (age 3) may not have the effortful control abilities to hide a negative reaction to an undesired gift. As age and effortful control abilities increase, children become increasingly more capable of showing positive affect to both desired and undesired gifts. In other words, as children develop effortful control, they are able to engage in socially acceptable forms of deception such as pretending to like something they do not (Kieras, Tobin, Graziano, & Rothbart, 2005). Table 1 describes how children develop cognitively over time and are

theoretically capable of initiating and sustaining deception on a level required to feign in a psychological evaluation by the time they reach adolescence (Peterson & Peterson, 2015). It is appropriate to study the degree to which adolescents can feign in psychological assessments. Of the few studies that could be found on detecting feigning in adolescents using objective personality inventories, nearly all focused on the Minnesota Multiphasic Personality Inventory – Adolescent form (MMPI-A; Butcher, Williams, Graham, Archer, Tellegan, Ben-Porath, Kaemmer, 1992). Only two studies on feigning in adolescents could be found for both the Personality Assessment Inventory – Adolescent (PAI-A; Morey, 2007a).

The purpose of the present study is investigate whether the PAI-A is capable of detecting feigned responding in older adolescents (ages 15-18) and whether prior knowledge of a disorder effects participants' ability to successfully feign a clinical disorder.

### **Feigning in Adults**

The majority of the extant literature on detecting feigned responding has been conducted on adult populations. This may have been due to the idea that adults may have clearer motivations to feign symptoms, such as compensation, obtaining social security/disability benefits, or access to medication. This idea brings up the point that much of feigning involves trying to appear as if a condition is present when it is, in reality, not. It should be noted that there is a type of feigning that involves minimizing symptoms in order to avoid a diagnosis, known as *defensiveness*. This study is focused on the type of feigning which involves overreporting.

Clinically speaking, there are two major categories of overreporting feigning: factitious disorder and malingering. *Factitious disorder* is a condition recognized by the *Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> Edition* (DSM-5) as the “falsification of physical or psychological signs or symptoms...in the absence of external rewards” (APA, 2013, pp. 324).

Due to the deceptive nature of factitious disorder, accurate prevalence rates are difficult to established, but it is estimated that roughly 1% of individuals in hospital settings would meet criteria for this condition (APA, 2013). This is in contrast to *malingering*, which is defined as “the intentional production of false or grossly exaggerated physical or psychological symptoms, motivated by external incentives” (APA, 2000). Lying in order to obtain a reward or manipulate others is a key symptom of some psychiatric conditions such as Conduct Disorder and Antisocial Personality Disorder (APA, 2013), suggesting the threat of malingering may be increased when working with pediatric populations. This also suggests feigning in the form of malingering may not preclude the possibility of the existence of a psychiatric condition like Conduct Disorder (Salekin, Kubak, & Lee, 2008). A meta-analysis of 11 studies estimated that roughly 40% of compensation-seeking participants were believed to be malingering (Larrabee, 2003). Larrabee concluded that malingering is a major threat to valid findings during evaluations where financial compensation or other incentives may be dependent on the outcome. Because feigning studies often deal with incentivizing fake responding, feigning and malingering are often used interchangeably in the literature. In this paper, the term “feigning” will be preferred as it is more inclusive of clients attempting to present as having a disorder.

The findings that feigning may occur in up to 40% of compensation seeking demonstrates the importance of clinicians being able to detect when feigning is occurring. A number of specific strategies, such as investigating the endorsement of symptoms that are very rarely endorsed by legitimate clinical populations, have been developed and implemented into measures to assist in detection (Rogers, 2008b). One of the most comprehensive tools available is the Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby, & Dickens, 1992), which is a structured clinical interview with 172 questions that load onto eight different scales

that each align with a different feigning-detection strategy. The SIRS is relatively time-consuming and would not be feasible to administer to all clients. Other research has gone into utilizing measures (such as objective personality inventories) clinicians already use to detect feigning (Rogers, 2008b).

**Detecting adult feigning using objective personality inventories.** The MMPI-2 and the PAI are recognized as common diagnostic tools in psychological evaluations (Archer, Buffington-Vollum, Stredny, and Handle, 2006; Smith, Gorske, Wiggins, and Little, 2010). Some research has gone into assessing profile validity (the degree to which clients responded honestly) using these measures. The most well-known validity scales on the MMPI-2 are *F* family of scales (*F*, *F<sub>B</sub>*, *F<sub>p</sub>*, etc.), which generally detect when clients are reporting symptoms that are very rarely endorsed by nonclinical (*F*) and clinical (*F<sub>p</sub>*) populations. Researchers have typically focused on the *F* family when determining whether overreporting has occurred (Rogers, Sewell, Martin, & Vitacco, 2003). A considerable amount of research has gone into investigating the effectiveness of the MMPI-2's validity scales to detect feigning and support has been found across a several meta-analyses for the *F* and *F-K* scales (Rogers, Sewell, & Salekin, 1994) and *F<sub>p</sub>* (Rogers et al., 2003).

As a newer instrument in the field of objective personality assessment, the PAI has received comparatively less attention than the MMPI-2. The PAI utilizes a number of scales to detect feigned responding, particularly the Negative Impression Management (NIM; Morey, 1991), Rogers Discriminant Function (RDF; Rogers, Sewell, Morey, & Ustad, 1996), and Malingering Index (MAL; Morey, 1996). The NIM, like the *F* scale, identifies when clients may be exaggerating or overreporting symptoms. The RDF is derived from information across 20 different scales and subscales on the PAI to determine if the profile as a whole is consistent with

valid or feigned responding. The MAL index looks across the whole scale and identifies eight features that are frequently associated with malingering. In terms of the research on these scales, the prospects are relatively positive, with support being found for all three of these indicators, with particularly strong support for the RDF (Edens, Poythress, & Watkins-Clay, 2007; Sullivan & King, 2010). When comparing the effectiveness of the PAI to the MMPI-2, however, the results are somewhat mixed. Generally, the *F* family for the MMPI-2 was found to be more accurate than the MAL and NIM on the PAI, though the RDF was found to outperform the *F* scales (see Bagby, Nicholson, Bacchiochi, Ryder, & Bury, 2002). Although the MMPI-2 may be a stronger predictor than the PAI, both scales have been found to have clinically-acceptable levels of accuracy and some researchers even recommend administering both (Blanchard, McGrath, Pogge, & Khadivi, 2003) to better detect feigning.

While good, the current validity scales are not perfect. They are not always accurate in detecting feigning. There may be some characteristics in the client that would make detecting feigning using these instruments more difficult. One study discovered clients with higher measured intelligence as well as those with prior knowledge of the MMPI-2 were better able to feign on the MMPI-2 without detection (Pelfrey, 2004), suggesting coaching can have a major impact on the effectiveness of these scales. Clinicians need to know what other factors need to be taken into account when determining the validity of the scales. Objective personality inventories may be used primarily as screeners for feigning and followed up by additional methods of detecting feigning such as the SIRS (Rogers et al., 2003).

### **Feigning in Adolescents**

Though much of the research on feigning has focused on adults, adolescents would be expected to be developmentally capable of initiating and sustaining deception starting around the

age of 12 (Slick et al., 2011). Clinicians have found it difficult to detect feigning in adolescent clients without assistance. When asked to differentiate between honest and feigned evaluation protocols, psychologists were only able to achieve a 13% accuracy rate (Faust, Hart, Guilmette, & Arkes, 1988). Some research has shown adults are no better at detecting lying in children than they are in adults (Crossman & Lewis, 2006). A recent book chapter concluded, “Although there are factors associated with better detection...adults are, on average, poor detectors, and their feelings of confidence are unrelated to accuracy in knowing when children are telling the truth,” (Peterson & Peterson, 2015, p. 56-57). It is clear that the literature on detecting feigning in adolescents needs to be expanded to aid clinicians when working with adolescent clients.

An initial investigation of the prevalence of malingering in adolescents found that roughly 15% of adolescent offenders were believed to be feigning (Rogers, Hinds, & Sewell, 1996). Other studies found that there is a believed incidence of at least some level of feigning in up to 60% of Social Security Disability evaluations with children (Chafetz, 2008; Chafetz, Abrahams, & Kehlmaier, 2007). In recent years, more attention has been given to adolescents’ motivations behind feigning (Baker & Kirkwood, 2015). Some motivations may mirror those of adults (Conti, 2004), including seeking financial compensation, trying to obtain medications, or avoiding culpability for wrongdoing. It is also possible adolescents would feign in order to try to gain academic accommodations or to avoid school entirely (Peebles, Sabella, Franco, & Goldfarb, 2005). Adolescents may feign a disorder in order to acquire social gain. Feigning a diagnosis may also result in increased positive attention from others. In some instances a feigned disorder may provide an excuse to avoid social obligations (Baker & Kirkwood, 2015) Another motivation may be due to pressure from a parent or another adult (known as *malingering by proxy*), in which the client feigns a condition as instructed by and in order to gain acceptance

from an important adult (Slick et al., 2011), which is believed to be mostly responsible for the rates of malingering seen in Social Security Disability evaluations (Kirkwood, 2015a).

**Detecting adolescent feigning using objective personality inventories.** Both the MMPI-2 and PAI have been adapted for use with adolescent populations. The resulting MMPI-A and PAI-A were shorter in length with reduced reading-level requirements while maintaining the theoretical structure of the adult forms (Butcher et al., 1992; Morey, 2007a). Many of the psychometric properties and uses of the adolescent versions have been assumed from the research on the adult versions. This is not always appropriate and certainly is not ideal. The assumption should be independently verified before the effectiveness of these scales for detecting feigning in adolescents can be determined (Salekin, Kubak, & Lee, 2008).

Across the three studies that could be found on the MMPI-A, the results suggest the *F* and *F-K* scales show promise in detecting feigning in adolescents, though the cut points used for adults were not found to be appropriate in adolescent populations (Rogers, Hinds, & Sewell, 1996; Baer, Kroll, Rinaldo, & Ballenger, 1999; Salekin, Kubak, & Lee, 2008).

With regards to the PAI-A, two studies could be found that investigated detecting feigned responding. In the initial investigation, Rios and Morey (2013) aimed to determine whether the validity indices on the PAI-A were capable detecting feigned ADHD in older adolescents. Their study involved coached and noncoached feigning conditions compared to individuals diagnosed with ADHD who took part in the clinical standardization sample of the PAI-A. The results found that the NIM and RDF were significant predictors of feigning. This study also found that the MAL operated differently by condition and was much more likely to detect uncoached rather than coached participants. Like with the MMPI-A, the cut scores used with adult populations were found to be inappropriate for use with adolescent populations (Rios & Morey, 2013). It

should be noted the PAI-A does not specifically address ADHD and no research could be found on feigning a condition directly assessed by the PAI-A, such as Major Depressive Disorder.

The second study using the PAI-A took a slightly different approach. Participants were split into two groups (underreporting and overreporting). Participants were asked to complete the PAI-A. Those in the overreporting group were told to feign “severe mental illness.” A clinical comparison group from the standardization data was also used in this study. The results of this study found that all indicators showed utility in distinguishing between the clinical and feigned responding (Meyer, Hong, & Morey, 2015). Taken together, the small amount of literature on the MMPI-A and PAI-A offers somewhat promising initial support for their use with adolescents. In order to make more accurate conclusions about the effectiveness of these measures and establish appropriate cut scores for adolescents more research is needed.

### **The PAI-A Versus the MMPI-A**

The current study focuses on the use of the PAI-A in detecting feigned responding in adolescents. The decision to use the PAI-A over the MMPI-A was made for a number of reasons. The first reason was due to the response format across these scales. The MMPI-A uses a true/false format while the PAI-A employs a four-point scale from “false” to “almost always true,” which theoretically allows for the report of both symptom presence and symptom severity (Morey, 2007a). Due to the theoretical advantages of the PAI-A it may be preferred for exploring newer research questions. Another reason for using the PAI-A is in the relative lengths of the scales, with the PAI-A being shorter at 264 items (Morey, 2007a) compared to the MMPI-A’s 478 items (Butcher et al., 1992). The shorter scale may be more acceptable to adolescent clients, which in itself may warrant the investigation of the PAI-A. The PAI-A was also selected for its lower reading-level requirement compared to the MMPI-A (fourth grade vs. sixth grade), as



indicated in their respective manuals, suggesting the PAI-A is appropriate for a wider range of adolescents. Finally, as already discussed, the MMPI-A currently has more research investigating its use; therefore, the PAI-A has a greater need for additional research. An increased understanding of how the phenomenon of feigning occurs on different measures will allow for an increased understanding of how the phenomenon occurs in general.

One particular concern with the PAI-A compared to the MMPI-A should be noted. Some items on the PAI-A may have a higher face validity than those found on the MMPI-A. As a result, respondents may more easily be able to ascertain when feigning is being assessed on the PAI-A and be more capable of escaping detection when feigning (Eakin, Weathers, Benson, Anderson, & Funderburk, 2006). Therefore, it is critical the PAI-A's ability to detect feigning be established in its own right before making assumptions from the adult version.

### **The Current Study**

The current study aimed to expand the literature on detecting feigning in adolescents using the PAI-A using methods adapted from those used by Rios and Morey (2013). Specifically, the current study involved administering the PAI-A to adolescents under uncoached (simply told to feign) and coached (told to feign and given information on the target disorder) conditions as well as using data from the clinical standardization sample to act as a clinical comparison group. The current study included a control condition in which adolescents are asked to respond to the PAI-A honestly. Participants (adolescents between the ages of 15 and 18) in the feigning conditions were asked to respond as if they were trying to feign having major depressive disorder, a disorder that is specifically targeted by the PAI-A.

**Research questions.** The current study addressed a number of important research questions. The first question was: can adolescents successfully feign major depressive disorder?

This was determined through their scores on the PAI scale and subscales related to depression, with a score of greater than *70T* providing evidence of feigning depressive symptoms. The *70T* cut-off represents two standard deviations above the mean and is typically designated start of the “clinically significant” range. This question merely sought to ensure that adolescents are capable of feigning.

The second question addressed by the current study was: can the PAI-A accurately differentiate between non-clinical, clinical, and feigned profiles? This study addressed this question by collecting PAI-A data from all three groups to create a single data-set and then statistically investigating how the NIM, MAL, and RDF scales differ between. Regression was used determine the degree to which levels of these indices predict groups.

Third, the current study aimed to investigate which validity scale on the PAI-A is the strongest predictor of feigning. The answer to this question would help guide clinicians towards which scales warrant the most attention when making decisions regarding the validity of the profile. This was accomplished through an investigation of the previously mentioned regression analysis and identifying which of the indices explained the most variance.

The fourth research question addressed whether knowledge of the disorder (in the form of a list of symptoms) aided in successful feigning. It would be expected clients who are intent on feigning would likely conduct some extent of background research on the condition being feigned. The current study aimed to determine if prior knowledge of a disorder may help adolescents feign Major Depressive Disorder while avoiding detection from the validity indices. This was explored by testing whether there were differences between the noncoached and coached feigning conditions.

### **Significance and Implications of the Current Study**

The current study is expected to be of importance to any practicing psychologist in both the school and clinical settings who typically uses objective personality measures in evaluations. Practicing psychologists have historically been highly inaccurate in determining whether a client is feigning without the help of specialized instruments. There are ways in which measures they currently use can be utilized to improve this accuracy. The current study is important in helping guide practitioners in how to use the PAI-A as a screening instrument for feigned responding.

It was hypothesized the validity indices on the PAI-A would be capable of differentiating between the experimental groups. This would suggest the PAI-A is a strong screening instrument for feigning in adolescents, which means clinicians could be confident in drawing conclusions from evaluation data.

A number of steps were taken to prevent the detection of a small effect size and avoid the detection of spurious results. First, a power analysis using recommendations from previous research was used to establish the optimal sample size for the detection of a medium effect. The sample size did not considerably deviate from that amount in order to avoid spurious findings. Second, all participants completed a manipulation check at the conclusion of the study to ensure they understood and complied with the instructions.

## **Chapter II – Literature Review**

Feigning symptoms in psychological evaluations is believed to be a growing concern in the field of professional psychology, particularly when the case involves clients seeking compensation. This is an especially salient problem for measures of objective personality inventories which often use data on client self-report of symptoms, perceptions, and activities. Feigning occurs in adolescents and adults, alike, despite the fact that most of the extant literature on feigning detection has focused on adults. The relative dearth of literature on feigning in adolescents warrants scientific attention. In the current chapter, the extant literature on detecting feigning in adults and adolescents will be highlighted and investigated. First, it may be important to present information on broader perspectives on the assessment of personality and psychopathology. Following that background information, literature with adult populations will be presented, followed by the literature with adolescents. Finally, information regarding Major Depressive Disorder, the condition of interest in the current study, will be provided.

### **Assessment of Personality and Psychopathology**

Understanding the link between personality and psychopathology has long been an area of interest for psychologists interested in personality (Widiger, Verheul, & van den Brink, 1999). The earliest example of this perspective can be traced to the 4<sup>th</sup> century, B.C., with the work of Hippocrates, who believed that what he called the four humors (an early theory of temperament) predisposed individuals to a variety of physical and mental problems. In the latter half of the 19<sup>th</sup> century, mental illness was believed to be a reflection of an individual's degeneracy. Character deficiencies such as dishonesty, sexual promiscuity, laziness, and other traits were believed to be predictive of individuals with psychopathology. In other words, proponents of the degeneracy theory believed psychopathology was related to an individual's inherent moral compass (Maher

& Maher, 1994). Over time, theories of how personality and psychopathology relate have evolved (see Maher & Maher, 1994). Currently, it is believed that personality and psychopathology influence the presentation or appearance of one another in a variety of ways and may share a common etiology (Widiger et al., 1999).

A number of models have been proposed to explain the nature of the link between personality and psychopathology and are reviewed by Krueger and Tackett (2003). The predisposition/vulnerability model, asserts that the presence of pathological personality characteristics predisposes an individual to clinical disorders. The complication/scar model instead believes that mental disorders occur and then have an adverse effect on the individual's personality. The pathoplasia/exacerbation model posits personality and psychopathology influence each other's appearance, expression, and course. Finally, the spectrum model suggests that personality and psychopathology exist along a common spectrum of functioning; or, that psychopathology is personality in an extreme case (Krueger & Tackett, 2003). For instance, clinical depression is an exaggeration of normal depression and mania is an exaggeration of optimism and energy (Maher & Maher, 1994). This latter model has recently gained a considerable amount of attention and influence, particularly with regards to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5, APA, 2013).

From the spectrum model, personality and psychopathology are not two separate constructs, but rather different levels of the same construct. A number of assessment measures have been developed that incorporate psychopathological symptoms into an assessment of individuals' personality. These measures are known as *objective personality inventories* and are typically self-report or third party report, using true/false or rating scale formats for items to establish the presence and/or severity of symptoms and behaviors (Sattler, 2016). This is in

contrast to *projective personality inventories*, or performance-based personality measures - such as the Rorschach Ink Blot Test - which posit that an individual's response to open-ended, ambiguous items will provide information about his/her implicit personality style (Sewell, 2008). Unlike projective measures, which require a great deal of subjectivity and interpretation on the part of the clinician, objective measures typically compare individuals' responses to that of large normative samples, providing a more quantitative and objective comparison of personality traits and psychopathological symptoms to typical people. The idea is that when a factor is significantly elevated compared to a normative sample, it is indicative of substantial and even pathological issues within that factor (Sattler, 2016).

One of the oldest objective personality inventories still widely used in clinical practice is the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway & McKinley, 1967), which was originally released in 1943, with an updated second edition being published in 1989 (Butcher, Dahlstrom, Graham, Tellegen, & Kaemmer, 1989; Butcher, Graham, Ben-Porath, Dahlstrom, Tellegen, & Kaemmer, 2001). The MMPI-2 includes a wide range of clinical scales, including conditions such as depression, schizophrenia, and mania. Individuals' responses to a series of true/false questions about the presence of certain symptoms and behaviors load onto these scales to provide levels of each scale compared to a normative sample. Elevations and depressions on the scales are then interpreted to determine the personality of the individual, as well as what relevant psychopathology may be impairing their functioning. The MMPI-2 has an enormous literature base from which relatively reliable conclusions can be made about an individual's personality from their scale profile (see Graham, 2012).

Because the MMPI-2 assesses a wide array of psychopathology, it is known as a *broad-band* measure of personality. Many other broad-band measures have been developed over the

years, including the Millon Clinical Multiaxial Inventory, 3<sup>rd</sup> Edition (MCMI-III; Millon, 1994), the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) and the Personality Assessment Inventory (Morey, 1991; 2007b). Furthermore, a number of instruments that measure specific conditions – known as *narrow-band* measures – have been developed, such as the Beck Depression Inventory, 2<sup>nd</sup> Edition (BDI-II; Beck, Steer, & Brown, 1996), which focuses exclusively on depression, and the Beck Anxiety Inventory (Beck, Epstein, Brown & Steer, 1988), which focuses on anxiety. Over the years, a large number of personality and psychopathology measures have been developed and published.

**Dominant objective personality inventories.** There are numerous options open to psychologists when selecting objective personality inventories to use in clinical assessments. Two studies were found that investigate which objective personality measures were most dominant in the field. Archer, Buffington-Vollum, Stredny, and Handle (2006) surveyed 152 psychologists who conducted forensic assessments about their selection of personality inventories. The authors calculated the number of the responders who reported using each instrument as well as calculated a weighted score that took into account the frequency with which the responders use the instrument in forensic assessments. Their survey found that the most frequently-used measure in forensic assessments was the MMPI-2 with 129 responders reporting its use frequently, yielding a weighted score of 492. The second most commonly used personality assessment was the PAI with 70 responders reporting they used it frequently and a weighted score of 240. Though the MCMI-III was reportedly used by 72 of the responders, it was generally not used as frequently as the PAI, which resulted in a lower weighted score of 169 (Archer et al., 2006).

Smith, Gorske, Wiggins, and Little (2010) investigated which inventories were most commonly used by clinical neuropsychologists. Their survey consisted of 404 clinical neuropsychologists recruited through the National Academy of Neuropsychology (NAN) and the International Neuropsychological Society (INS). The authors calculated the percentage of respondents who reported use of each measure as well as calculating a weighted score (WS) to take into account the reported frequency of the measures' use reported by each psychologist. Their survey found that the most frequently used broad-band personality measure was the MMPI-2 (82.1%, WS = 1.75), followed by the PAI (50%, WS = 1.07), and then the MCMI-III (40.9%, WS = 0.67). The most frequently used scales were narrow-band personality measures, such as the Beck scales (86.2%, WS = 2.14), suggesting that clinical neuropsychologists tend to favor shorter, more specific scales during neuropsychological assessments (Smith et al., 2010).

These studies both suggest that the MMPI-2 and the PAI are the dominant broadband objective personality inventories used in forensic and neuropsychological assessments. Since these measures rely primarily on the self-report of the client, they may be highly susceptible to feigning. In the following section, the problem of feigning and broad methods for its detection will be explored.

### **Feigning and Deception in Psychological Assessment**

As with the medical field, where patients may claim symptoms or damages that are not actually present, the psychological field is vulnerable to feigned symptom reporting (Rogers, 2008a). Feigning of psychopathological symptoms may very well be a bigger problem than feigning in medical settings as there are fewer known biological markers that can be used to validate the client's claims, often requiring the clinician to take clients at their word. The faking of psychological symptoms in order to gain a diagnosis has become a major problem in the field



of professional psychology (Rogers, 2008a). It is important to understand that different people fake psychopathology for different reasons, leading to two major categories of faking behavior: Factitious Disorder and Malingering.

Factitious Disorder is a condition recognized in the *DSM-5* characterized by the “falsification of medical or psychological signs and symptoms in oneself or others that are associated with the identified deception” (APA, 2013, pp. 325). The faking of symptoms can relate to the person who is faking or a person other than the one who is reporting the symptoms; for instance, a parent reporting feigned psychological symptoms in their child. This latter behavior is referred to as Factitious Disorder Imposed on Another, or Factitious Disorder *by Proxy*. The *DSM-5* describes Factitious Disorder Imposed on Self as the falsification of signs or symptoms in order to present oneself as ill which occurs even in the absence of external incentives (APA, 2013, p. 324-325). Prevalence rates of Factitious Disorder are largely unknown due to the deceptive nature of the condition. It has been estimated that roughly 1% of individuals meet the criteria for this condition in hospital settings (APA, 2013). This condition has colloquially been referred to as Munchausen’s or Munchausen’s *by Proxy*. One key feature of Factitious Disorder is the absence of an obvious external reward. Individuals with Factitious Disorder may feign for a variety of reasons, many of which are not readily identifiable – such as seeking attention from others or some other covert intrapsychic need (APA, 2013).

Malingering, though not considered a psychiatric disorder, was included in the *DSM-IV-TR* as a V-code, which is used to signal that no diagnosis was made but something else needs to be brought to professionals’ attention. According to the *DSM-IV-TR*, “the essential feature of Malingering is the intentional production of false or grossly exaggerated physical or psychological symptoms, motivated by external incentives such as avoiding military duty,

avoiding work, obtaining financial compensation, evading criminal prosecution, or obtaining drugs” (APA, 2000). Contrary to factitious disorder malingerers are feigning symptoms specifically for an identifiable, external gain. The threat of malingering is particularly salient in evaluations conducted for compensation. One study, which calculated the combined rate of malingering across 11 studies, found that roughly 40% of the over 1300 compensation-seeking participants were believed to be malingering (Larrabee, 2003). The threat of malingering is substantial.

### **Feigning in Adults.**

A vast majority of the extant literature on feigning symptoms has focused on feigning in adults. Adults often have clear motivations to feign symptoms, such as financial compensation following an accident, access to social security and disability benefits, access to medication, et cetera. It has been important to discover how to identify feigning in adult populations. It should be noted that there is another type of feigning or deception in which the client or patient presents with fewer problems than are occurring or no problems at all. This type of feigning is typically referred to as *defensiveness* (Rogers, 2008a). The present project is focused on the issue of individuals faking the presence of disorders, so the issue of detecting defensiveness is outside of the scope of the current project and will not be reviewed.

**Detecting feigning and deception in adults.** Psychologists and other practicing clinicians are not without tools to aid in the process of identifying when patients or clients are feigning. There is a growing literature base outlining procedures, techniques, and measures that are useful in the detection of feigning and deception.

There are multiple strategies of detection that different measures and techniques use. Different scales on the same measure may employ multiple approaches to detecting feigning to

help provide a more comprehensive assessment of the likelihood of its occurrence. The first strategy involves the investigation of endorsement of *rare symptoms*. Clinicians look for endorsement of symptoms that are rarely endorsed by legitimate clinical populations. This strategy capitalizes on the idea that feigners will overreport problems that are rare, even for those with the condition they are trying to feign, in an attempt to deceive the clinician (Rogers, 2008b). Examples of scales using the rare symptom strategy is the Rare Symptom scale on the Structured Interview of Reported Symptoms (SIRS; Rogers, Bagby, & Dickens, 1992), the *Fp* scale on the MMPI-2, and the Negative Impression Management scale on the PAI.

Another strategy is to look at *quasi-rare symptoms*. This strategy looks at symptoms that are very infrequently found in typical populations, which often results in large effect sizes between normal and feigned profiles. These problems, though not often occurring in normative samples, often occur in clinical samples and can make interpretation of quasi-rare symptoms difficult. Scales that utilize quasi-rare symptoms as a detection strategy include the *F* and *Fb* scales on the MMPI-2 (Rogers, 2008b).

The *improbable symptoms* strategy looks at symptoms that have a fantastical quality. These symptoms cannot be true and thus endorsement of such symptoms leaves little doubt that feigning is occurring. One problem with improbable symptoms is that they tend to have high face-validity and are unlikely to be useful when assessing sophisticated feigners. The Improbable and Absurd Symptoms scale on the SIRS utilizes this strategy (Rogers, 2008b).

A fourth strategy looks at *symptom combinations*. This looks at symptoms that, individually, are common in clinical populations but rarely occur together. The strength of this strategy is its believed resistance to coaching. This resistance has only ever been tested with

structured interviews, so there are limited options for clinicians who wish to employ this strategy. The Symptom Combinations scale of the SIRS makes use of this strategy.

A fifth strategy looks at *spurious patterns of psychopathology*, which looks at scale profiles that have been found to be characteristic of feigning and are very uncommon in clinical populations. The complexity of this strategy makes it difficult for feigners to prepare to evade detection. The complexity of this strategy is a double-edged sword resulting in a considerable need for cross-validation of the patterns to rule out chance variance. Examples this include the Rogers Discriminant Function and Malingering Index on the PAI (Rogers, 2008b).

The *indiscriminant symptom endorsement* strategy looks to catch those feigners who endorse a considerable number of symptoms across a wide variety of problems. This strategy has also only been tested with clinical interviews and can be seen on the SIRS Symptom Selectivity Scale. Alternatively, the *symptom severity* strategy looks at the intensity of reported symptoms. Severely clinically impaired individuals still only endorse a few items as being “unbearable” or “extreme.” Some feigners may be likely to report a wide range of symptoms with extreme intensity. This strategy can be found in the Lachar-Wrobel Critical Items scale of the MMPI and the Symptom Severity scale of the SIRS (Rogers, 2008b).

Another strategy involves the investigation of *obvious symptoms*. Specifically, this strategy looks for the presence of a pattern of endorsement of symptoms that are well-known with a general omission of subtle symptoms of serious mental disorders. It is believed that these are less likely to be associated with the disorder in the feigner’s mind. The Obvious-Subtle scale of the MMPI-2 interprets profiles using this strategy (Rogers, 2008b).

One strategy uses clinician’s observations of clients to investigate discrepancies between *reported and observed symptoms*. When personal reports of symptoms conflicts with clinical

observations, it can help verify that feigning is occurring. However, standardization of this method is very difficult to accomplish (Rogers, 2008b).

One last major strategy involves looking out for *erroneous stereotypes*. The theory behind this strategy is that many people have common misconceptions about what symptoms are associated with mental disorders. Feigner's profiles are likely to fall into these stereotype patterns. Since this strategy capitalizes on catching feigners who endorse socially-sanctioned or media-supported presentations of disorders that may not be true, it is very difficult for feigners to prepare for this strategy and evade detection. The Dissimulation scale on the MMPI-2 utilizes this strategy (Rogers, 2008b).

The strategies explored thus far have all been for the detection of over-reporting of symptoms, which is only one way noncredible responding in evaluations. There is the issue of effort – a word whose definition has been problematic due to the idea that some clients expend a great deal of effort to present in a noncredible manner (Sherman, 2015). There may be times during an evaluation in which clients do not put forth the effort necessary to produce a valid profile. There have been several stand-alone measures to help detect minimal effort in evaluations (Kirkwood, 2015b), including the 15-Item Test (Rey, 1964) and the Test of Memory Malingering (TOMM; Tombaugh, 1996). This is where scales such as the Inconsistency index on the PAI-A may come into play. Because the emphasis of the current study is on effortful feigning, further review of detection methods for minimal effort is beyond the scope of this review.

There are quite a few popular measures and techniques currently used in practice that make use of these strategies, such as various scales on the MMPI-2 and PAI. There are also

numerous strategies for detecting feigning of cognitive impairment in addition to those presented for detecting feigned psychopathological disorders.

Before investigating some of the extant literature on different assessment techniques, it is important to note that there are two major forms of research into patient or client response styles to detect feigning. The first is the *simulation research design*, in which participants are randomly assigned to experimental conditions and are compared to a relevant clinical sample. This design has strong internal validity due to the experimental manipulations. The participants are unlikely to experience the same incentives and consequences for failing or succeeding at feigning, resulting in generally weak external validity. These are analogous to randomized controlled trials and investigate the clinical efficacy of measures to detect feigned response styles.

The second major research design is the *known-groups comparison*, which compares the response styles of those identified in real-world conditions as being either malingerers or genuine patients. Since the researcher has no control over group assignment, internal validity is weak. External validity is relatively strong, as the participants are presumably feigning for real reasons and incentives. This is a more naturalistic research approach and can establish the effectiveness of measures in real-world practice.

There are also two other designs – *differential prevalence design* and *bootstrapping comparisons* – which are considerably less represented in the literature. The differential prevalence design assumes that the majority of a broadly-defined group (i.e., litigants) are more likely to have a distinct response style compared to another broadly-defined group. This strategy makes accuracy of classification nearly impossible (Rogers, 2008a). The bootstrapping comparisons design uses multiple detection measures and applies strict cut scores to maximize

specificity. This design is typically employed for detecting feigning of cognitive impairment (Berry & Schipper, 2008).

Table 2 shows the recommended guidelines for interpreting effect-sizes when reviewing the literature on feigning and malingering. These recommendations are somewhat higher than what is typically interpreted for effect sizes, as “more rigorous standards are needed for professional practice, especially when the presence of a response style may serve to invalidate an individual’s clinical presentation” (Rogers, 2008b, p. 17).

In the following sections, different methods for detecting feigning will be discussed. This includes a brief overview of clinical interviewing techniques and cognitive methods for detection, followed by a more in-depth discussion of the literature on personality measures, with particular emphasis on the MMPI-2 and PAI.

***Clinical interviewing.*** Professionals may use specially developed structured interviews to assess for feigning. A comprehensive investigation of the different clinical interviews that have been developed is outside of the scope of the current paper. One such interview that has appeared frequently in the extant literature is the SIRS (Rogers, Bagby, & Dickens, 1992). The SIRS has 172 items that ask clients about current symptoms. The responses load onto eight scales that align with different strategies that individuals may use to feign. Criteria for detecting feigning using the SIRS includes: at least one primary scale elevations in the “definite malingering” range, three or more scales elevated to the “probable malingering” range, and a total score equal to or greater than 76 (Rogers et al., 1992). The SIRS has well-documented reliability and validity (see Rogers, 2008c for review). While certainly not the only structured interview that has been developed that is useful in the detection of malingering and feigning, the SIRS is typically used

as the standard method of detecting feigning in psychological evaluations when the clinician begins to suspect the client may be feigning symptoms (Rogers, 2008c).

***Cognitive methods.*** Professionals can assess for feigning is through the use of effort testing. This is a strategy to ensure the presence of a minimal level of effort when someone is administered an evaluation. One of the most popular measures of effort testing is the Test of Memory Malingering (TOMM; Tombaugh, 1996). The TOMM is a forced-choice measure requiring clients to repeatedly recognize a picture of a common object from a choice of two objects. The idea is that if the client's performance is below that of a sample of seriously brain-damaged participants across three trials, it is evidence the client is intentionally exaggerating symptoms. Effort testing is used primarily in a neuropsychological evaluation and is utilized less often in strictly psychological evaluations. In these settings, a structured interview may be more typically utilized (Berry & Schipper, 2008). This method is typically not useful for detecting feigned mental disorders.

***Personality Inventories.*** Methods have been developed and researched in assessing for the presence of false symptoms through the administration of objective personality measures, such as the MMPI-2 and the PAI. These measures include a number of validity indices to measure the consistency of responses, as well as negative distortion scales. These scales are designed to detect when psychopathological symptoms are being overreported.

*The Minnesota Multiphasic Personality Inventory, 2<sup>nd</sup> Edition (MMPI-2).* Given that the MMPI-2 is the most dominant personality inventory used in clinical practice and is used in several of the studies investigated later in this paper, it is important to give a brief description of the scale.



The MMPI-2 includes 567 items presented in a true/false format and standardized with a nationally representative sample of 2600 adults (Butcher et al., 2001). Since its publication in 1989, over 2000 articles, books, and dissertations have been published that included the MMPI-2, with the literature base growing every year (Graham, 2012). The items on the MMPI-2 load onto several validity, clinical, content, and supplemental scales that have been developed over the years. The validity scales will be discussed in more detail later in this paper. There are 10 clinical scales on the MMPI-2 with several overlapping items that load onto multiple scales. The clinical scales are: Hypochondriasis, Depression, Hysteria, Psychopathic Deviate, Masculinity-Femininity, Paranoia, Psychasthenia, Schizophrenia, Hypomania, and Social Introversion. Though some of the terminology used in the clinical scales may be outdated (Graham, 2012), a great deal of work has validated the use of the scales for a variety of psychological problems and there is a substantial body of literature and personal accounts that can help in the interpretation of scale elevations and depressions (Graham, 2012). Numerous other scales have been developed for the MMPI-2 to help investigate specific problems that are outside of the scope of this paper.

The MMPI-2 includes several scales that are useful in detecting inaccurate response styles. The first is the Variable Response Inconsistency (VRIN) scale, which includes a series of item pairs that are either similar or opposite in content to ensure that individuals are answering consistently across the scale. The True Response Inconsistency (TRIN) scale detects when individuals are responding inconsistently with indiscriminant true or false responses through the use of 20 item pairs that are opposite in content. For detecting the presence of the overreport of symptoms, the Infrequency (*F*) scale detects endorsement of items that are atypical or rarely endorsed. The *F* scale is part of a larger cluster of scales known as the *F family* of scales. Another member of this family, the Back Infrequency (*Fb*) scale is similar to the *F* scale, but

assesses responding on the latter half of the scale. Individuals with severe psychopathology endorse many of the items on the *F* scale, so the Infrequency Psychopathology (*Fp*) scale was developed to monitor the endorsement of items that are very rarely endorsed, even by clinical populations (Butcher et al., 2001; Graham, 2012). The Symptom Validity Scale (*FBS*; Lees-Haley, English, & Glen, 1991) detects items frequently endorsed by identified feigners. Bury and Bagby (2002) found that this was not a particularly useful scale for detecting overreporting. There is one other scale that has been found to be useful for detecting feigning and has been added to the *F* family: the Gough Dissimulation Index (*F-K*; Gough, 1950), which looked at the difference between the *F* and *K* scales to determine the accuracy of the profile. A meta-analysis by Rogers, Sewell, and Salekin (1994) concluded that the use of the *F* family of scales was most appropriate for the detection of feigning and interpretation of supplemental validity scales did not add significant clinical information. Additional validity scales are present for detecting underreporting of symptoms, such as the Lie (*L*) scale, and the correction (*K*) scale (Butcher et al., 2001).

A rather large body of literature exists on the use of the MMPI-2 for detecting feigned response styles (Greene, 2008), including three meta-analyses. The first was conducted by Rogers, Sewell, and Salekin (1994), which found that the *F* and *F-K* scales had the largest effect sizes and were thus the most effective for detecting feigning. A second meta-analysis by Rogers, Sewell, Martin, and Vitacco (2003) analyzed 62 MMPI-2 feigning studies using simulation design written between 1989 and 2002. This study found that the *F* family, particularly *Fp*, were highly consistent and useful across settings and populations for detecting feigning. They concluded that the MMPI-2 should not be used as the sole measure for detecting feigning but that it should rather be combined with other approaches, such as structured interviewing (Rogers et

al., 2003). Finally, the meta-analysis by Nelson, Sweet, and Demakis (2006), investigated the FBS and found, through the analysis of 19 studies, that this scale resulted in large effect sizes and was comparable to the other validity scales. This is contrary to the findings of Bury and Bagby (2002) and indicates the results of the existing literature on the *FBS* are in support of its use (Nelson et al., 2006). Additional studies and evidence for the usefulness of the MMPI-2 for detecting feigned response styles are presented in Greene (2008).

Pelfrey (2004) looked at the relationship between the intelligence of feigners as well as their knowledge of the MMPI-2 as it relates to their ability to avoid detection from the validity indices. This study included 72 master's level graduate students in a clinical or counseling psychology program. All participants completed the Wonderlic Personnel Test (an intelligence test), a questionnaire about prior knowledge of the MMPI-2, and the MMPI-2. When completing the MMPI-2, participants were instructed to feign psychopathology in order to support a plea of "not guilty, by reason of insanity" for a murder the participant was alleged to have committed. Higher scores on the *F* and *F-K* scales were correlated to lower intelligence scores and lower prior knowledge of the MMPI-2 and those who were more intelligent or who had stronger prior knowledge of the test were better able to avoid detection (Pelfrey, 2004). Clinicians need to be more cautious when dealing with more intelligent and/or more informed clients and take additional steps to determine the truth of their reports. This study speaks to the use of the MMPI-2 as a screener and then following up with additional methods when feigning is suspected.

*The Personality Assessment Inventory (PAI)*. The PAI contains 344 items that are presented in a 4-point Likert format from 0 (*Not at all True*) to 3 (*Always True*). This is a key difference between the PAI and the MMPI-2. The response format allows for both the determination of the existence of a symptom as well as the severity at which the symptom is

present (Morey, 1991). This is particularly useful, as the *Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> Edition, Text Revision* (DSM-IV-TR; American Psychiatric Association, 2000) indicates that psychiatric symptoms are relatively common in the general population but not at clinically significant levels. The PAI was designed to differentiate between the presence of mild and severe symptoms. The standard PAI profile is divided into 22 non-overlapping primary scales: 4 validity scales, 11 clinical scales, 5 treatment scales, and 2 interpersonal scales.

The validity scales include the Inconsistency scale, the Infrequency scale, the Negative Impression scale, and the Positive Impression scale. These four scales are used to determine the internal validity of a single participant's PAI responses. External researchers have developed numerous supplemental scales that assess the validity of the PAI profile. The validity scales and supplemental distortion indices will be described in more detail later in the current paper.

The clinical scales assess a wide array of psychopathological conditions described in the *DSM-IV-TR*, which was the current iteration at the time of publication. The Somatic Complaints scale includes items that focus on preoccupation with physical health and somatic complaints and can be useful in aiding in the diagnosis of somatization or conversion disorders. The Anxiety and Anxiety-Related Disorders scales focus on the symptoms and signs of anxiety and can be especially useful in gathering information on generalized anxiety, phobias, traumatic stress, and obsessive-compulsive symptoms. The Depression scale measures levels of depressive symptoms while the Mania scale measures emotional, cognitive, and behavioral symptoms of mania; both of these scales are useful in diagnosing a range of mood disorders. The Paranoia clinical scale includes items that provide information regarding paranoid tendencies and disorders. The Schizophrenia scale asks questions about the presence and severity of both positive and negative symptoms that are associated with Schizophrenia. The Borderline Features scale assesses traits

typically linked to Borderline Personality Disorder, such as unstable interpersonal relationships, impulsivity, affective instability, and uncontrolled anger. The Antisocial Features scale focuses on a range of externalizing behaviors that are commonly associated with Antisocial Personality Disorder. Finally, the Alcohol Problems and Drug Problems clinical scales focus on the consequences of and features of dependence for alcohol and drugs, respectively (Morey, 1991). A large amount of literature exists on the clinical applications of the PAI for different diagnostic populations (see Blais, Baity, & Hopwood, 2010).

The treatment scales provide information that is pertinent to establishing the necessity for treatment and estimating the participant's likelihood of treatment adherence. The Aggression scale focuses on verbal, physical, and indirect aggression, anger, hostility, and assertiveness. The Suicidal Ideation scale collects information ranging from feelings of hopelessness to plans for suicide; elevations on this scale would denote a high need for immediate intervention. The Stress scale measures the impact of recent major stressors on the participant's life, while the Nonsupport scale identifies a perceived lack of social support. Finally, the Treatment Rejection scale provides information that would be useful in determining if a client will be willing to adhere to treatment.

The two interpersonal scales measure the individual's styles of social interaction. The Dominance scale measures the extent to which someone is controlling and independent in relationships. The Warmth scale measures how interested someone is in having supportive and empathic interpersonal relationships (Morey, 1991).

The psychometric properties of the PAI are strong. In terms of reliability, the internal consistency alphas for the PAI were reported in the professional manual across three different samples: .82 (normative sample), .86 (clinical sample), and .82 (college sample). Test-retest

reliability for the clinical, treatment, and interpersonal scales were all reported to be between .71 and .91 (with no clinical scales falling below .85). The validity scales yielded significantly lower test-retest reliability (.29 - .81). The reliability statistics presented in the professional manual offer initial evidence of the psychometric strength of the PAI (Morey, 1991). A study by Siefert, Sinclair, Kehl-Fie, & Blais (2009) estimated the internal consistency alphas for the clinical scales to be between .83 and .94, with a median of .88. They found that the questions for a given scale were relatively independent of questions from other scales.

Studies on the validity of the PAI presented in the professional manual is promising, revealing moderate to strong correlations between the PAI scales and analogous scales on the MMPI-2, NEO-PI, and other rating scales (Morey, 1991). When compared to the MMPI-2, the PAI was found to identify significantly more valid profiles (Braxton, Calhoun, Williams, & Boggs, 2007). One study investigated the validity of the PAI compared to the Rorschach. This study compared nine schizophrenic patients to fifteen non-schizophrenic patients on the PAI and Rorschach schizophrenia scales. While they found a moderate positive correlation between the two ( $r = 0.42$ ), the PAI was able to distinguish between schizophrenic and non-schizophrenic patients, which the Rorschach could not. These results demonstrate the strength of the PAI compared to a popular projective measure in determining the existence of psychotic disorders (Klonsky, 2004). Edens and Ruiz (2008) investigated the criterion validity of the PAI subscales when comparing the profiles of 57 patients to their clinical diagnoses. They found that the depression scale had a correlation of .28 with psychiatric inmates diagnosed with mood disorders and the anxiety-related disorders scale had a correlation of .37 with inmates diagnosed with PTSD (Edens & Ruiz, 2008). Only small to moderate correlations were observed between clinician assessment and self-report assessment of personality disorders (Bradley, Hilsenroth,

Guarnaccia, & Westen, 2007); this serves as evidence that the PAI is not intended to act as a stand-alone diagnostic tool and should be used in conjunction with other clinical practices (Sellbom & Bagby, 2008).

While the MMPI-2 is one of the strongest broadband objective personality measures, the PAI does boast several strengths. One of these strengths is how well its terminology lines up with those used in the *DSM* and in clinical settings, compared to the dated terminology used by the MMPI-2 (Morey, 2003). In addition, the shortened length of the PAI compared to the MMPI-2 may make the scale easier for clients to complete. Furthermore, the scales on the PAI do not include overlapping items, which helps make interpretation of scale elevations easier. Finally, as already stated, the format of the items theoretically allows for interpretation of symptom presence and severity, which is a point in its favor in this writer's view.

With regards to the PAI's capacity to assess profile validity, a number of scales have been developed. Upon its original publication, the PAI validity scales included the Inconsistency scale (ICN), the Infrequency scale (INF), the Negative Impression Management scale (NIM), and the Positive Impression Management Scale (PIM). The ICN was designed simply to ensure the client answered consistently throughout the inventory, utilizing pairs of either highly positively or highly negatively correlated items. The INF is used to identify if clients are responding carelessly or randomly, using neutral items that tend to have very high or very low endorsement rates. NIM reveals the degree to which the client may be exaggerating symptoms in order to present an overall unfavorable impression, which is indicative of feigning. Finally, the PIM suggests the degree to which clients are presenting an overly favorable impression, as evidenced partially by the reluctance to admit minor flaws that most people would endorse (Morey, 1991).

Rogers, Sewell, Morey, and Ustad (1996) conducted an evaluation of the original PAI's ability to detect feigning. They gathered together 166 undergraduate students to comprise the 'naïve group' and 80 graduate students in a clinical or counseling psychology program to comprise the 'sophisticated group.' All participants were randomly assigned to groups to attempt to simulate schizophrenia, depression, or generalized anxiety disorder. A clinical comparison sample was obtained from the clinical standardization sample of the PAI and was comprised of 45 participants with schizophrenia, 136 participants with major depression, and 40 participants with generalized anxiety disorder, while comorbid overlap between the disorders were eliminated from the sample. They noted some key differences between the naïve and sophisticated participants. Naïve participants tended to take on a global response style, showing elevations on several clinical scales, resulting in marked elevation on NIM. Sophisticated participants were focused with regards to feigning responses, which led to very believable symptom profiles. It was thus found that the validity indices in isolation were not terribly successful in identifying feigned profiles from clinical profiles, particularly in the sophisticated group. To address this problem, the authors conducted a discriminant function analysis that included information from over 20 scales and subscales on the PAI in order to better detect feigned psychopathology. The results of the discriminant function used to detect group membership were fairly accurate, with a hit rate of 73% (Rogers et al., 1996). This study accomplished two major goals: demonstrating the susceptibility of the PAI to feigning as it stood and developing a stronger method for identifying feigning. The *Rogers Discriminant Function* (RDF), as it was named, is included in the updated PAI manual (Morey, 2007b) as a supplemental negative distortion scale.



Another supplemental scale the negative distortion index developed for the PAI reported in the updated PAI manual is the Malingering Index (MAL; Morey, 1996). MAL includes eight features of the PAI profile that are more frequently observed in malingering than is seen in legitimate clinical participants. For each of the eight features that are present, the scale raw score is increased by one. The positive presence of a feature increases the raw score by one. An example would be the presence of a T-score greater than 110 on the NIM. This adds one point to the MAL raw score. In addition, an elevation on the depression scale (DEP) of greater than 85T coinciding with a score of greater than 45T on the treatment rejection scale (RXR) is also indicative of feigning. The eight different features are independently assessed. The raw score is calculated, ranging from zero to eight, and a T-score is calculated using the clinical profile sheet (Morey, 2007b).

Numerous other scales have since been developed as negative distortion indices for the PAI. Mogge, Lepage, Bell, and Ragatz (2010) developed what they called the *negative distortion scale* (NDS). The NDS was built on the hypothesis that participants who are exaggerating symptoms tend to endorse rare symptoms very frequently. This scale consists of 15 items that are very rarely endorsed by clients unless they have very severe psychopathology. The authors established an internal consistency of the NDS at an alpha coefficient of 0.74, which compares with that found for the NIM (0.72). They conducted a second study to validate the NDS. The records of 91 patients at a state psychiatric facility were reviewed who had been administered the PAI and the SIRS. The profiles of those patients who were identified by the SIRS as feigning were compared to non-feigned profiles. They found that feigned profiles revealed significantly higher scores on the NDS than did non-feigners. This finding combined with a regression analysis showing the comparative strength of the NDS to the other negative

distortion indices previously discussed (NIM, MAL, and RDF) offered preliminary evidence of the effectiveness of the NDS at detecting feigning (Mogge et al., 2010).

By combining these supplemental indices with the standard validity scales, clinicians using the PAI have several strong tools for detecting feigned mental disorders. Coaching and other forms of preparation may still make the PAI susceptible to feigning, especially when the individual is feigning a less-severe condition (Ruiz & Ochshorn, 2010).

Thomas, Hopwood, Orlando, Weathers, and McDevitt-Murphy (2012) conducted a study to further validate the validity indices of the PAI, including the NDS. The study consisted of a total of 202 participants who fell into one of three groups: individuals diagnosed with PTSD ( $n = 46$ ), individuals instructed to feign PTSD and coached on the validity scales ( $n = 79$ ), and individuals instructed to feign PTSD but not coached on the validity scales ( $n = 77$ ). Coached participants received information on the PAI validity scales while non-coached participants were given no such additional instructions. They found that all four PAI validity indicators showed statistically significant and moderate-to-large effects. When comparing genuine to all feigned profiles, the NIM showed an effect size of 1.24, the MAL yielded an effect size of 1.28, the RDF resulted in an effect size of 0.82, and the NDS showed the highest effect sizes at 1.60 and provided the highest hit rates in identifying feigners from clinical profiles. Their results support the use of all four validity indicators for detecting the feigning of PTSD, with especially strong support for the NDS (Thomas et al., 2012).

A number of studies have been conducted that have investigated the relative effectiveness of the PAI to several other previously described instruments. Whiteside, Dunbar-Mayer, and Waters (2009) investigated the relationship between performance on the TOMM and the validity indices on the PAI. The sample included in the study consisted of 222 clients receiving

outpatient neuropsychological evaluations who received both the TOMM and the PAI. This study, therefore, directly investigated the relationship between a cognitive and a personality indicator for feigning. They utilized only the four standard validity scales. A factor analysis found that the scores on the TOMM and PAI separated fairly well into cognitive and personality factors, though NIM was found to load onto both factors. There was a significant relationship between NIM and the TOMM, such that higher scores on NIM were associated with poorer effort on the TOMM. Their results support that both cognitive methods (TOMM) and personality methods (PAI) can be used to detect exaggerated responding (Whiteside et al., 2009).

Another study by Edens, Poythress, and Watkins-Clay (2007) compared the PAI to the Structured Inventory of Malingered Symptomology (SIMS) and the SIRS in terms of their ability to detect malingerers in psychiatric and general population prison inmates. The study included 115 prison inmates across four groups: psychiatric unit inmates who were not suspected of exaggerating symptoms (patients), psychiatric unit inmates who were suspected of feigning (suspected malingerers), general population inmates told to feign mental illness, and general population inmates asked to fill out the measures under standard instruction. The results showed that the validity scales of all three measures were all significantly able to detect malingerers in the general population of inmates. The MAL and RDF scales on the PAI outperformed other indicators in differentiating between suspected malingerers and patients. This provides further support for the use of the PAI in the detection of feigning when comparing it to the SIRS, which is commonly regarded as the gold-standard in feigning detection (Edens et al., 2007).

There is also evidence of strength of the PAI's performance compared to other self-report measures of personality and psychopathology. Sullivan and King (2010) compared the ability of the PAI to differentiate between faked profiles to non-faked profiles to that of the Symptom

Checklist-90 (SCL-90-R; Derogatis, 1992). The SCL-90-R is a 90-item screening instrument used to assess current psychopathological symptoms and contains the Positive Symptom Total (PST) scale, which is an indicator of feigning. The study included 41 psychology students split into two groups: those told to fake psychological impairment (malingerers) and those given the standard administration instructions (control). Their results found that the validity indices of the PAI - particularly RDF - outperformed the SCL-90-R in detecting the malingerers from the control group (Sullivan & King, 2010). Though containing a relatively small sample, this study showed the strength of the PAI in detecting malingering.

The NIM, MAL, and RDF have become the primary scales used to detect feigning psychopathology on the PAI. Sellbom and Bagby (2008) present a three-tiered approach to using these scales to assess for feigning. When NIM is less than 73T, MAL is less than 3, and/or the RDF is low, there is a low likelihood of feigning. When NIM is greater than 73T, MAL is greater than or equal to 3, and/or RDF is high, feigning needs to be further evaluated. Finally, when NIM is higher than 110T, or RDF has a raw score of 1.80 or greater, feigning is very likely. As can be seen by this approach, the recommendation is to screen using the PAI and corroborate with other measures. The PAI may be a more appropriate measure of *ruling out* feigning rather than *ruling in* feigning (Sellbom and Bagby, 2008).

*Comparing the MMPI-2 to the PAI.* Literature on the effectiveness of the PAI in detecting feigning is generally positive. A question could be raised regarding its ability to detect feigned responding relative the MMPI-2. A few studies exist to address this question. The first of these was conducted by Bagby, Nicholson, Bacchiochi, Ryder, and Bury (2002). Their study consisted of 45 undergraduate students. Their scores were compared to those of 19 inpatients and 56 outpatients who had been administered both the MMPI-2 and PAI (Honest Responders –

Patients data). The procedure for the study involved each of the participants being administered both the MMPI-2 and PAI twice. Participants participated in two sessions, separated by a 2-hour lunch break. In the morning, they completed the MMPI-2 and PAI under standard instructions (the Honest Responders – Student data). In the afternoon, they were administered both instruments again in either a coached (told to feign mental disability, informed about the validity scales, and given strategies on how to avoid detection) condition or uncoached (simply told to feign mental disability) condition. The feigning conditions (coached and uncoached) showed significantly higher scores on the *F*, *Fb*, and *Fp* scales of the MMPI than honestly responding patients. Honestly responding patients scored higher on *F* and *Fb* than honestly responding students, but no significant difference was found between these groups for *Fp*, which is exactly how *Fp* is intended to work (Bagby et al., 2002). Two of the validity scales of the PAI (NIM and MAL) were less effective than the MMPI-2 in distinguishing between the honestly responding patients and feigners. The RDF was successful in differentiating between groups and was found to be marginally more successful than the *F* family of scales from the MMPI-2. RDF and the *F* scales were only moderately correlated, suggesting that they may utilize somewhat different approaches to detecting feigning (Bagby et al., 2002). Though these results did not fully support the strength of the PAI scales, it did provide strong evidence for the RDF.

Eakin, Weathers, Benson, Anderson, and Funderburk (2006) conducted additional research that investigated detecting the feigning of PTSD. Their study considered of 85 undergraduate students, with 23 meeting criteria for PTSD. The remaining 62 were split into Faker and Control groups. All participants completed the MMPI-2 and PAI. PTSD participants and the Control group were read the standard instructions following information regarding the validity scales. The Faker group was provided with a lecture on PTSD, including reasons for

malingering, symptoms, and comorbid problems typically associated with PTSD, and then told to respond on the two measures as if they had PTSD as well as being informed about the validity scales. The results of the study found that the MMPI-2 *F* family of scales was a significant predictor of group status. The PAI validity scales were overall nonsignificant, which was in contrast to some previous findings. Similar to Bagby et al. (2002), the RDF was the strongest of the PAI scales, though it was not found to be a significant predictor in this study. Given that the strength of the RDF compared to other scales was in the direction predicted by previous literature, the authors noted that a larger sample size may have revealed significant results. Furthermore, it is possible the differences between the scales' construction resulted in the difference in strength. First, the face validity of items on the PAI tends to be stronger than the MMPI-2, so participants may have been more readily able to pick out PTSD-related symptoms. Second, the true/false response format of the MMPI-2 may make it harder to avoid extreme responding than the 4-point scale of the PAI. Also of note was that the relevant clinical scales (Keane PTSD scale on the MMPI-2 and the Anxiety-Related Disorders: Traumatic Stress scale on the PAI) were both found to be significant predictors of group status, with Fakers showing higher levels on the clinical scale than actual clinical individuals. It is also important to point out that a large proportion of Fakers were able to avoid detection on both the MMPI-2 and PAI in the current sample. One final limitation of this study should be noted: namely, the PTSD group, though meeting DSM-IV criteria for PTSD, were not seeking treatment and were identified as part of the study; therefore, symptom severity may have been lower than would be seen in a clinical setting (Eakin et al., 2006). These results are particularly surprising given the evidence in support of the PAI in detecting feigned PTSD provided by Thomas and colleagues (2012).

A more recent study by Veltri and Williams (2012) investigated whether the disorder participants are asked to feign moderates feigning detection on the MMPI-2 and PAI. Their study consisted of 265 undergraduates who completed the MMPI-2 and PAI twice. One week after the first administration, which was under standard instructions, the participants returned for a second administration under one of the six experimental conditions: coached and uncoached schizophrenia, coached and uncoached PTSD, and coached and uncoached GAD. The results found that the disorder being feigned moderated the effects of coaching on successful feigning. Specifically, participants were relatively unsuccessful in feigning schizophrenia on either the MMPI-2 or the PAI, regardless of coaching. The MMPI-2 and PAI were able to detect uncoached feigners in the PTSD and GAD conditions, but were less successful in the coached conditions for these two disorders. Based on the reported results, the *Fb* from the MMPI-2 was more vulnerable to coached feigning of GAD while RDF from the PAI was more vulnerable to coached PTSD (Veltri & Williams, 2012), again suggesting weakened usefulness of the PAI in detecting feigned PTSD, as supported by Eakin et al. (2006). This study did not include a clinical comparison sample, so it is difficult to determine the overall effectiveness of these two measures in differentiating between feigners and individuals with the disorders. The number of feigned profiles that were found to be valid between the two suggests that these scales are quite susceptible to feigning when individuals are coached on specific internalizing disorders (Veltri & Williams, 2012). This is concerning, especially given that most individuals seen in clinics who intend to feign a disorder would be likely to look up information on the disorder prior to evaluation.

One final study comparing the MMPI-2 and PAI is of note. Blanchard, McGrath, Pogge, and Khadivi (2003) compared the PAI to the MMPI-2 in detecting overreporting of symptoms.

The study consisted of 52 undergraduates. All students completed the MMPI-2 and PAI with instructions to overreport that included context for faking. They were told about the presence of the validity scales, and given information about symptoms that would help them feign. Their profiles were compared to a sample of inpatients who had completed the MMPI-2 and PAI. The study found that the *F-K* index (MMPI-2) was the single best predictor, followed by *Fp*, with MAL, RDF, and NIM following that. Their results suggest that the MMPI-2 may be the single most appropriate choice if only one measure can be given; however, the PAI still boasts significant predictive power that would be adequate in clinical settings. The PAI added a significant incremental validity to the prediction model, suggesting the two inventories measure somewhat different constructs and that the combination of the two scales leads to the strongest and most accurate detection of feigning (Blanchard et al., 2003). A summary of these studies can be found in Table 3.

The literature has not reached a total consensus on relative strength of the PAI compared to the MMPI-2 in detecting feigning or feigned responding. The initial study by Bagby et al. (2002) demonstrated that the RDF performed on a comparable level to the MMPI-2's *F* family of scales. Subsequent studies did not replicate the strength of the RDF compared to the *F* family (Eakin et al., 2006). It appears that both the RDF and the *F* scales are fairly susceptible to feigning of internalizing disorders when individuals have been coached on the disorders and the measures (Veltri & Williams, 2012). Further research will be needed to investigate the comparative strength of these two scales in detecting feigned responding before any conclusions can be drawn with confidence. Research has trended towards favoring the MMPI-2 in identifying adults likely to be feigning. The PAI does have support for the clinical utility and accuracy in differentiating between feigned and valid profiles (Blanchard et al., 2003). Given the strengths of



the PAI discussed earlier and the idea that the PAI can operate at accuracy levels required for clinical use, a fairly strong argument can be made for a clinician's selection of the PAI when evaluating clients.

**Individuals' knowledge and feigning success.** The person's prior knowledge and stereotypes about the disorder being feigned impacts their success at feigning. In a very early study on the subject, Kroger and Turnbull (1975) investigated how well undergraduate college students were able to fake MMPI profiles for an air force officer and a creative artist. In the first experiment, where participants were just told to try to fake the profile, the participants were able to fake the profile of the officer without being detected by the validity indices, but not the creative artist. In the second experiment, the participants were given a more accurate description of a creative artist's personality. Participants who were equipped with that information were able to successfully reproduce the profile of the artist on the MMPI without detection (Kroger & Turnbull, 1975). These findings suggest that individual's prior knowledge about the profile they are trying to mimic have an important effect on their ability to fake that profile.

More recently, Mahar and colleagues (2006) found that respondents often used their internal stereotypes about different jobs in order to make fake profiles. They reported results that those persons with more training in a field – and therefore more holding a more accurate stereotype – were better able to fake a job profile in that field (Mahar, Coburn, Griffin, Hemeter, Potappel, Turton, & Mulgrew, 2006). This supported Kroger and Turnbull's (1975) original findings, as well as replicated the results found by Vasilopoulous, Reilly, and Leaman's (2000) findings. Vasilopoulous and colleagues (2000) investigated the topic of prior knowledge on impression management in personality evaluations. The presence of internal stereotypes that were somewhat inaccurate was detrimental to efforts at feigning (Vasilopoulous et al., 2000).

This was the case in another study in which parents were told to fake “good parents” on the MCMI-III in the context of child custody evaluations. Parents’ perceptions of the good parent led to notable elevations on the Histrionic, Narcissistic, and Compulsive scales (Lenny & Dear, 2009), which ultimately may not have helped their case.

Research on simulation in personality inventories have found that generalized “faking bad” is relatively easy to detect by the distortion indices. When someone approaches personality inventories with an accurate and specific idea for what they want to try to fake, they are much more successful. The operant term is accurate, as it has been found that individuals have been incredibly unsuccessful at feigning rarer, less well-known conditions like Schizophrenia (Nichols & Greene, 1997). It is thus not surprising that Veltri and Williams (2012) found that participants could not feign schizophrenia regardless of coaching, whereas they were easily able to feign generalized anxiety and PTSD with coaching. It is important to remember that an individual’s underlying knowledge and depth of understanding of a disorder drastically affects their ability to fake it.

No studies could be found that directly investigated the effects of prior knowledge on adolescents’ ability to feign. It is theoretically likely that prior knowledge functions similarly for adolescents as it does for adults, as adolescents are increasingly capable of lying in the same way as adults (see Peterson & Peterson, 2015)

### **Feigning in Adolescents**

As stated, considerably less research has been done investigating deception in adolescent populations. A study by Faust, Hart, Guilmette, & Arkes (1988) gave 125 practicing psychologists two malingering protocols and two true protocols for adolescents and told each participant that half of the protocols were feigned. When asked to differentiate between the

genuine and feigned protocols, an overall hit rate of only 13% was achieved. This study suggests that not only does feigning occur in adolescents, but also that practicing psychologists are generally highly inaccurate in determining when it has occurred without the help of additional assessment data (Faust et al., 1988). There has been a formal call for validity testing by major professional organizations, including the National Academy of Neuropsychology (NAN; Bush et al., 2005) and the International Neuropsychological Society (INS; Larrabee, 2012), which shows that it is recognized that professionals must take steps to ensure the validity of their evaluation results. Clearly it is important to consider feigning in adolescent clients and to take steps to ascertain the validity of the information obtained in the assessment of adolescents.

From a developmental perspective, the capacity to lie begins to develop in children at around the age of three. Young children are not likely able to sustain their deception as they have not developed many of the prerequisite skills required to understand that their behavior would result in a false belief in the person being deceived (Salekin, Kubak, & Lee, 2008). Children who have not yet fully developed their theory of mind may lie but typically will be unable to maintain that lie (Slick, Tan, Sherman, & Strauss, 2011). It is only once this theory of mind develops that children begin to intentionally deceive - at or around the ages of six to seven. Feigning and deception on the level of malingering requires a very complex set of skills, including maintaining verbal and nonverbal behaviors consistent with the deception as well as remaining consistent throughout the entirety of the deception. Malingering is highly unlikely to occur in children (Salekin et al., 2008). An adolescent (defined as the age range from 12 to 18 years) is believed to have developed the cognitive capacity and mastery over their behaviors that are required to successfully feign (Peterson & Peterson, 2015). Adolescents are capable of sophisticated lies, role-playing and managing their facial expressions on a level similar to adults, which allow them

to successfully malingering (Salekin et al., 2008). Lying and other forms of intentional deception are common symptoms of some psychiatric conditions such as Conduct Disorder. Few children are believed to possess the cognitive capability to sustain deception, it is not surprising that Conduct Disorder is designated as being “early onset” when diagnosed in persons younger than 13 years and is associated with greater severity (APA, 2013).

In adults, the rewards for feigning are typically quite clear: financial gain or other compensation, avoidance of legal liability and criminal responsibility, et cetera. The motivations that lead adolescents to feign have not been adequately investigated, leaving a considerable amount of speculation (Slick et al., 2011). It is possible that adolescents would feign for many of the same incentives as adults. Conti (2004) described a case study in which a 16-year-old young man feigned symptoms of Attention Deficit/Hyperactivity Disorder (ADHD) in order to gain access to stimulant medication. This adolescent did not acquire the medication for personal use, but instead sold the medication to his peers (Conti, 2004). Drug-seeking behavior is as real with adolescents as it is with adults (Harrison, 2015). Adolescence does come with additional potential areas of gain that would motivate adolescents to feign. Adolescents may feign in order to avoid school or receive academic accommodations (Slick et al., 2011). For example, students may be seeking extra time on tests and assignments, reductions in assignment length, or the ability to take breaks from class (Harrison, 2015). Peebles, Sabella, Franco, and Goldfarb (2005) presented a series of case studies in which two of the six adolescent cases were found to be feigning in order to avoid attendance at school, with one of the cases involving a young woman who was repeatedly and intentionally reopening an old surgical wound (Peebles et al., 2005). Social incentives may also be present, such as wanting to gain attention or sympathy from others or seeking an excuse to avoid social responsibilities (Baker & Kirkwood, 2015).

Another possibility regarding the occurrence of feigning in adolescents is the idea of “malingering by proxy” (Slick et al., 2011). In malingering by proxy cases, adolescents are malingering due to parents or other adults pressuring them to feign conditions. A hypothetical case involving malingering by proxy would be a parent requiring their adolescent child to fake symptoms of ADHD so that they (the parent) can sell the stimulant medication on the street. Adolescents may feign in order to obey or gain approval from an authority figure (Slick et al., 2011).

Not all feigning is done in order to gain some sort of reward or to avoid otherwise normal activities such as school. It is also possible that adolescents will feign conditions in order to be removed from an unsafe environment or to live with a preferred parent in a custody situation (Salekin et al., 2008). Greenfeld (1987) described a case in which a 14-year-old young woman feigned psychosis in order to be removed from a household in which she had been subjected to sexual abuse. In this case, feigning psychopathology was an adaptive strategy (Greenfeld, 1987).

By building strong rapport with clients, taking a thorough history, and conducting a thorough clinical interview, examiners may be able to ascertain the incentive that the adolescent is trying to achieve. Clinicians should be mindful about what benefits a child could potentially get out of a psychological diagnosis. Using objective rating forms, especially third-party report, and collecting information from teachers and parents can really help illuminate the motivations for deception and be used to verify the adolescent’s responses (Baker & Kirkwood, 2015).

It is unsurprising that little is known regarding the prevalence of feigning in adolescents, given the deceptive nature of the behavior and the lack of systematic investigation into the problem in adolescent populations. Rogers, Hinds, & Sewell (1996) estimated malingering prevalence rates of 15% of 53 diagnosed adolescent offenders. Other studies found that there is a

believed incidence of at least some level of malingering in up to 60% of Social Security Disability evaluations with children (Chafetz, 2008; Chafetz, Abrahams, & Kehlmaier, 2007). That is exceptionally high and may be due to the high external incentives that arise from this type of setting. Other studies have found that the prevalence of deception attempts in typical clinical evaluations is around 5% (Kirkwood, 2015a). Given the difficulty in identifying when adolescents are feigning and the wide variety of motivations present in adolescence to feign, it is clear that additional research needs to be done both on understanding feigning in adolescents and how to best detect feigning in adolescents. Before investigating the research that could be found investigating feigning in adolescence, the adolescent versions of the important objective personality measures will be briefly reviewed.

**Objective personality inventories with adolescents.** The measures presented thus far were intended for use with adults. These scales quickly became popular for use when assessing adolescents (ages of 12 and 18). It was proposed that many of the items used on with adults may be inappropriate for adolescents and it was found that the MMPI overpathologized adolescents who completed the adult form (Archer, 1984). This led to the need to develop personality measures analogous to those with adults that could be effectively used with adolescent populations. In the following sections, the adolescent forms of two popular broad-band personality inventories – the MMPI and PAI – will be presented. Much of the psychometric adequacy of the adolescent versions are based upon the research completed on the adult forms.

***The Minnesota Multiphasic Personality Inventory for Adolescents (MMPI-A).*** The MMPI-A is a direct derivation of the MMPI-2. Published in 1992, the MMPI-A is appropriate for individuals between the ages of 14 and 18. The results of revisions to the adult MMPI-2 yielded 478 items, with many items rewritten to use wording more appropriate to adolescents.

The MMPI-A requires roughly a sixth-grade reading level to complete independently (Butcher, Williams, Graham, Archer, Tellegan, Ben-Porath, & Kaemmer, 1992). It includes many of the same scales, including parallels of the same clinical scales, as the MMPI-2. Often these are interpreted in the same manner as the clinical scales of the MMPI-2 (Graham, 2012).

*The Personality Assessment Inventory – Adolescent (PAI-A)*. The PAI-A is a direct derivation of the adult PAI. The goal of the PAI-A was to retain the structure of the adult inventory while making items more appropriate for adolescents (Morey, 2007a; Krishnamurthy, 2010). The PAI-A “grew out of the expressed interest of many professionals who wished to use the PAI with adolescents in clinical settings” (Morey, 2007a, pg.1). 80 items were eliminated and some items underwent rewording, reducing the reading requirement to the fourth grade level. The fourth-grade reading level represents another strength of the PAI-A over the MMPI-A in addition to the strengths described for the adult scale. The final version contained 264 items in the same response format as the PAI. True to its intended goal, the PAI-A retained the same scale structure as the PAI (Morey, 2007a). Scores on the PAI-A are presented in the form of linear T scores with a mean of 50 and a standard deviation of 10.

Standardization of the PAI-A was comprised of a U.S. Census-matched community sample of 707 adolescents between the ages of 12 and 18. The standardization sample was recruited from urban and rural areas across 21 states. Sampling was not random in order to yield sample characteristics that were proportional to the U.S. Census population reports. The sample was cross-stratified based on gender, ethnicity, and age. The community standardization sample contained 51.1% young men and 48.9% young women participants. Racial makeup of the standardization sample included 61.5% Caucasian, 15.4% African American, 16.3% Hispanic, and 6.8% “other” (Morey, 2007a). Due to the composition of the Census data, very few racially

diverse participants were included in the standardization sample. The psychometric adequacy of the PAI-A on diverse populations still needs to be further researched (Krishnamurthy, 2010).

A clinical standardization sample of 1160 clinical individuals with an average of 15.29 years of age was also collected and included as part of the standardization data. As with the adult form, the clinical standardization sample provides a mean clinical level for each of the scales.

The psychometric properties of the PAI-A reported in the professional manual were strong (Morey, 2007a). Internal consistency analyses revealed a mean alpha of .79. Test-retest reliability correlations were reported to average .78. Studies conducted during standardization compared the PAI-A to the MMPI-A, the NEO-PI, and other broad-band and specific measures of personality and symptoms used with adolescents. These validity results yielded moderate correlations between the PAI-A scales and the analogous subscales of other instruments (Morey, 2007a). No third-party validity studies investigating the PAI-A could be found.

The PAI-A shows a lot of promise for use in the clinical diagnosis of adolescents. The information presented in the professional manual for the PAI-A shows a preliminary strength for the instrument and provides a base from which external research can be compared to. Since the PAI-A is a direct derivation of the PAI and has the same scale structure, much of the psychometric strength of the instrument has been assumed from the adult form. Additional research needs to be conducted in order to strengthen the psychometric foundations of the instrument and to verify that the psychometrics of the adult form can be translated to speak to the strength of the adolescent form.

**The detection of feigning in adolescents using objective personality measures.** Given the emphasis on adult populations with regards to the literature on feigning, relatively little attention has been paid to detecting feigning in adolescents. Some studies have been done on



adolescents using cognitive techniques such as the TOMM and the Word Memory Task (WMT; Green, Allen, & Astener, 1996) that have shown some promise in detecting sub-optimal performance in adolescent samples (see Salekin et al., 2008 and Slick et al., 2011 for review). Structured interviews such as the SIRS have received some support for supplementing screening data to detect feigning (Rogers, Hinds, and Sewell, 1996; reviewed below). It appears plausible to assert that many of the methods used to detect feigning in adults may be applied to adolescent populations with some modifications in cutting scores. Though few studies currently exist on the use of objective personality measures in detecting feigned psychopathology in adolescents, there has been some support for their use. In the following sections, the current literature on the MMPI-A and the PAI-A will be reviewed.

**MMPI-A.** Given the dominant popularity of the MMPI over other objective personality inventories, it is not surprising that much of the extant literature on detecting feigning in adolescence using objective personality measures utilizes the MMPI-A. Literature on the effectiveness of the MMPI-A for detecting feigning in adolescent clients can help attest to the idea that the adult and adolescent forms may operate in similar ways.

The first study that could be found using the MMPI-A to detect feigning was conducted by Rogers, Hinds, and Sewell (1996). This study aimed to investigate the clinical usefulness with adolescent offenders of not only the MMPI-A, but also the SIRS and SIMS as well. Their study consisted of 53 adolescents from a residential psychological treatment facility. All participants completed all measures twice - once under the honest condition and the other under the feigned condition. In the feigning condition, participants were randomly assigned to feign schizophrenia, major depression, and generalized anxiety disorder. Because this was among the first studies utilizing these measures with adolescent populations, there have not been established cuttings

scores found to be appropriate with adolescents; the adult cutting scores were compared to the optimal cutting scores, which only took their sample into account. Their results found support only for the  $F-K$  index using a cutting score of  $F-K > 20$ , which was considerably different than the adult cutting score ( $F-K > 10$ ). MMPI-A validity scales were highly accurate in ruling out feigning (high negative predictive power of .91 - .93), but not in ruling in feigning (positive predictive power ranging from .45 [ $Fp$ ] to .83 [ $F-K$ ]). The SIMS Af scale showed a high positive predictive power rate (.91), suggesting it is highly effective in showing that feigning has occurred. The SIRS boasted the lowest rate of false positives and the highest degree of consistency. The authors concluded that the MMPI-A, particularly using the  $F-K > 20$  cut score, may be used as an effective screener for feigning. Given the overall high rates of false positives found in this study, the results of the screening should be corroborated by other methods like the SIRS (Rogers, Hinds, and Sewell, 1996).

A second study using the MMPI-A was conducted by Baer, Kroll, Rinaldo, and Ballenger (1999), who were interested in the MMPI-A's ability to discriminate between random responding and overreporting (i.e., feigning). The study consisted of 69 adolescents from the general community randomly assigned to one of three groups (standard, overreporting, and random) and 20 adolescents from psychological treatment programs. Participants in the standard group completed the MMPI-A under the standard instructions. Those in the overreporting group were given instructions that they were trying to avoid prosecution for a serious crime and to complete the MMPI-A as if they were trying to show serious psychological problems. Those in the random group were to fill out the response sheet without access to the item booklet. The results found that the  $F$  and VRIN scales were useful in detecting overreporting and random responding. The  $F$  scale was very successful in differentiating between overreported profiles and

all other profiles. A cutting score of  $F > 79T$  resulted in near perfect positive and negative predictive power (1.00 and .98 respectively). The  $F-K$  scale ultimately offered a small degree of additional information, suggesting it may not offer particularly useful information in a clinical setting (Baer et al., 1999). This study offered more support for the use of the MMPI-A to assess overreporting of symptoms. This study asked its participants to simulate “serious psychological problems” and not a specific disorder, which may have led to a more easily detectable pattern of overreporting.

Salekin, Kubak, and Lee (2008) reviewed these two studies as well as two others that could be found investigating the use of the MMPI-A in detecting overreporting. Their conclusions mirrored those of the two already presented: the  $F$  and  $F-K$  index seem to have some clinical utility in detecting overreporting, though the data remains relatively limited and optimal cuttings scores have not yet been determined. They recommend that further evaluation of feigning occur when 1)  $F > 70T$  and/or 2)  $F-K > 13$  (Salekin et al., 2008). It appears that the use of a single objective personality inventory is inappropriate for detecting feigning in adolescents and clinicians should use multiple methods. The MMPI-A may be a useful screening measure.

**PAI-A.** To date, only two studies could be found that investigated the ability of the PAI-A to detect feigned responding in adolescents. Rios and Morey (2013) conducted a study investigating the PAI-A’s, negative distortion indicators ability to detect feigned ADHD in older adolescence. They used the NIM, PIM, MAL, and RDF, using the procedures for calculating the MAL and RDF described in the manual for the adult PAI (Morey, 2007b). The goals of the study included determining: whether adolescents could successfully feign ADHD, whether feigning would be more successful when participants were given descriptive materials on ADHD, and

whether the PAI-A negative distortion indicators could successfully distinguish between feigning participants and adolescent patients with a clinical diagnosis of ADHD.

The study consisted of two distinct groups of participants: feigning participants and members of the clinical standardization sample of the PAI-A. The feigning participants group was comprised of 100 undergraduate students who were either 17 or 18 years old selected from an introductory psychology research pool. The clinical comparison sample included 37 patients ages 17 or 18 years who had been diagnosed by their treating clinician who were administered the PAI-A as part of the standardization process of the scale. It should be noted that the PAI-A data was not used to make the diagnosis in the clinical sample. The measures used for the study were the PAI-A and the Conners Adult Attention Rating Scale (CAARS), a common self-report measure used to identify ADHD symptoms. Feigning participants were split into two conditions. The first condition – *coached* – involved showing participants a short video about ADHD as well as information included in the DSM-IV-TR regarding ADHD symptoms and were then asked to fill out the self-report measures in a way that someone with ADHD would respond. The second condition – *noncoached* – were simply given the same instructions as the coached condition about how to respond but were not given any information on ADHD. It was stressed to all participants that their responses needed to be believable in order to get a psychiatrist to make a diagnosis of ADHD.

Results showed that 45% of participants across both conditions successfully simulated ADHD (as evidenced by a T-score above 70 on the CAARS) and the coached participants were not significantly better at feigning than the noncoached participants. Significant results were found for NIM, RDF, and PIM (note: PIM was atypically lower on feigned profiles while NIM and RDF were inflated). The RDF index showed the strongest ability to detect feigned

responding. The MAL index significantly distinguished between the clinical sample and participants in the noncoached condition who were successful at feigning ADHD, suggesting that those with less knowledge about the condition were more likely to endorse more severe and rare symptoms. The study found that the cut-scores used on the distortion scales (which were derived from adult samples) underidentified feigning with adolescents. They suggested that lower cut scores may be more appropriate with adolescents. The study concluded that the available validity indices on the PAI-A, as well as additional distortion detection scales originally designed for the adult PAI, are fairly effective in detecting feigned responding (or malingering) of adolescents attempting to pretend to have ADHD (Rios & Morey, 2013). The PAI-A does not directly assess for ADHD, though many of the symptoms may appear on the scale as symptoms of other conditions. It may have been more difficult for participants to distinguish between ADHD-related symptoms and non-ADHD-related symptoms, resulting in more widespread symptom endorsement than may be seen when adolescents are attempting to feign a condition directly measured by the PAI-A, such as generalized anxiety disorder or major depressive disorder.

Another study investigated the validity indices to detect faking good and faking bad on the PAI-A. 98 undergraduate college students were asked to overreport or underreport symptoms when filling out the PAI-A. These students were age-matched with individuals from the clinical standardization sample and community standardization sample to provide comparisons. This study supported the idea that all distortion indices that could be calculated for the PAI-A operated the way that they were supposed to. The positive distortion indices picked up when participants were underreporting while the negative distortion indices detected the overreporters (Meyer, Hong, & Morey, 2014). This study found stronger support for MAL than did Rios &

Morey (2013). It is possible MAL is much more sensitive to generalized feigning than specific, targeted attempts to feign.

### **Major Depressive Disorder**

Studies have found that feigning is more difficult to detect when an individual is attempting to fake a specific condition compared to generally being told to feign mental illness. The detection of feigning studies that look at specific disorders may be more representative of real life situations where individuals will focus on specific disorders. If an individual is studying a specific condition before going in for evaluation (Rogers, 2008d) it would be helpful to know how respondents coached on that disorder compare to others. The selection of a specific disorder to be the target of feigning was identified for the current study. The condition selected for the current study is major depressive disorder (MDD).

Depression is one of the leading causes of disability in the United States. The Centers for Disease Control (CDC) estimated that roughly 8% of individuals at or older than the age of 12 suffer from depression during any 2-week period (CDC, 2012). Another estimate by the National Institute of Mental Health (NIHM) suggests that 6.7% of adults have major depressive disorder. Furthermore, about 3.3% of adolescents (ages 13-18) experience clinical levels of depression (NIMH, 2014). Depression is a very well-known mental illness and may theoretically be a condition regularly targeted by individuals attempting to feign psychopathology.

**The DSM-5 definition of major depressive disorder.** Major Depressive Disorder is described in the current iteration of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; APA, 2013)* as the classic condition within the depressive disorders group. As outlined in the *DSM-5*, Major Depressive Disorder is a psychiatric condition characterized by discreet periods in which the individual experiences persistent depressed mood and loss of interest in

previously enjoyable activities, as well as several other symptoms – such as significant changes in weight, appetite, energy levels, and sleep – which impair the individual’s daily functioning (APA, 2013, p. 160-161).

**How major depressive disorder manifests in adolescence.** Symptoms of depression in adolescents include many of the standard criteria, such as loss of interest or pleasure, low self-esteem, excessive fatigue or loss of energy, feelings of worthlessness, and weight loss or gain. Depression in adolescents is also associated with several additional symptoms such as “inability to tolerate routines, overinvolvement with pets, aggressive behavior, somatic complaints, restlessness, loneliness, irritability, running away, stealing, guilt feelings, and suicidal preoccupations” (Sattler & Hoge, 2006, p. 363).

Depressive symptoms occur commonly in typically-developing adolescents. A depressive disorder should be considered when the symptoms represent a major change in the adolescents behavior over time. Depression in adolescents is also tied to a variety of other conditions, such as conduct disorder, oppositional defiant disorder, and anxiety disorders. Depressive disorders are also linked to low academic achievement and interpersonal difficulties (Sattler & Hoge, 2006). Depression in adolescents can be a highly debilitating condition.

**The assessment of major depressive disorder.** Though some symptoms of major depressive disorder are observable, many are by nature internalizing, making the diagnosis of depression very difficult. In addition to the standard clinical interview, many scales have been developed to aid in the detection of significant depressive symptomology. Broad-band personality measures such as the MMPI-2, MMPI-A, PAI, and PAI-A include scales of depression and other related symptoms that are useful for the assessment of depression in addition to aiding in differential diagnoses. Several narrow-band measures and symptom

checklists specific to major depressive disorder have been developed. With regards to adolescents, the Beck Depression Inventory for Youth (BDI-Y; Beck, Beck, & Jolly, 2001), Children's Depression Inventory (CDI; Kovacs, 2001), and Reynolds Adolescent Depression Scale, 2<sup>nd</sup> Edition (RADS-2; Reynolds, 2002) are useful narrow-band inventories for depression.

**Possible motivations to feign major depressive disorder.** Treatment options available for individuals with major depressive disorder, including pharmacotherapy as well as certain academic accommodations may provide motives for feigning. These treatment options may serve as potential motivators for feigning. Antidepressants - such as selective serotonin reuptake inhibitors (SSRIs) like Prozac, Zoloft, and Lexapro; tricyclics, which are older and used less often today due to potentially serious side effects; and monoamine oxidase inhibitors (MAOIs), which are the oldest class of antidepressants and are typically used to treat “atypical” depression – are typically prescribed (NIHM, 2014). It is worth noting that research has found that antidepressants are generally not addictive (Lichtigfeld & Gillman, 1998). It is possible individuals would attempt to feign major depressive disorder in order to obtain a prescription for antidepressant medication.

With regards to academics, a number of accommodations may be given for students diagnosed with major depressive disorder. Academic accommodations include, but are not restricted to, frequent breaks, photocopy of another student's notes, alternate format of exams, extended time or small-group/separate setting for exams, and shortened assignments (Souma & Rickerson, 2012). Though not all of these accommodations are appropriate for all cases, students may be motivated to feign major depressive disorder in order to receive some of these accommodations to make school easier. There may also be some social incentives at play (Baker & Kirkwood, 2015). A child whose family is frequently busy or highly stressed may be



motivated to be identified as depressed in order to gain attention. There are many potential reasons why an adolescent may attempt to feign Major Depressive Disorder.

### **Purpose of the Present Study**

The purpose of the present study is to expand the limited research on detecting feigning of mental disorders in adolescents using objective personality inventories. The present study aimed to determine the extent to which adolescents are capable of accurately feigning major depressive disorder. The present study subsequently aimed to validate the use of the PAI-A in the detection of feigning with a high-school adolescent population using a simulation design, comparing typically-functioning adolescents randomly assigned to control and feigning conditions to clinical profiles from the clinical standardization sample of adolescents diagnosed with MDD. This study further aimed to replicate the findings by Rios and Morey (2013) and validate the supplemental distortion scales developed for the adult PAI on the PAI-A.

**Research questions.** The current study aimed to address a number of important research questions. The first question was: can adolescents successfully feign major depressive disorder? This was determined through their scores on the PAI scale and subscales related to depression, with a score of greater than  $70T$  providing evidence of feigning depressive symptoms, similar to the procedures used in Rios & Morey (2013). The  $70T$  cut-off represents two standard deviations above the mean and is typically designated start of the “clinically significant” range.

The second question addressed by the current study was: can the PAI-A accurately differentiate between non-clinical, clinical, and feigned profiles? This study addressed this question by investigating how the NIM, MAL, and RDF scales differed between conditions and using regression to determine the degree to which levels of these indices predict group membership.

Third, the current study aimed to investigate which validity scale on the PAI-A is the strongest predictor of feigning? This question would help guide clinicians towards which scales warrant the most attention when making decisions regarding the validity of the profile. This was accomplished through an investigation of the previously mentioned regression analysis and identifying which of the indices explained the most variance.

The fourth research question was: Does knowledge of the symptoms of a depressive disorder alter an adolescent's ability to successfully feign? This was explored by testing for differences between the noncoached and coached feigning conditions.

## Chapter III – Methods

### Participants

The current study was comprised of two independent groups of participants. The community adolescent sample included 120 adolescents in their sophomore, junior, and senior years of high school. This sample size was derived from a power calculation (Friendly, n.d.) utilizing Keppel's (1991) recommendation for a desired power of 0.80 and an alpha level of 0.05. For an effect-size estimate, a minimum effect size of 0.75 was used as per Rogers' (2008b) recommendations for interpreting a medium effect size in feigning studies. The output for the power analysis can be found in Appendix A. The effect sizes found in Rios and Morey (2013) were used with this program – using a 0.01 alpha level due to the significance of the results of the study – which yielded consistent power with the calculation for the present study. All participants were recruited from one of 5 high schools in central Indiana and Illinois. The sample represented a convenience sample comprised of local high schools that gave consent to allow the researcher to recruit students from that school. All adolescents within the sophomore, junior, and senior years at those high schools had consent forms sent home to their parents or guardians and all adolescents who returned with parent/guardian consent or personal consent (if the adolescent is 18) were included in the study up to 120 participants.

The second group of participants included archived data derived from the clinical standardization sample of the PAI-A to provide the clinical comparison group. These individuals completed the PAI-A during the course of a clinical evaluation and their responses on the PAI-A did not influence their ultimate diagnostic impressions. Of the 1160 individuals included in the clinical standardization sample, roughly 18% have been diagnosed with major depressive disorder, though that included the whole age range of the PAI-A (12-18). 50 clinical comparison

participants with a diagnosis of major depressive disorder between the ages of 15 and 18 were randomly selected from the clinical standardization dataset and included in the current study.

These 50 participants made up the Honest Clinical group.

All participants completed a brief Subjective Units of Distress Scale (SUDS) to screen for current depressive mood. Participants also completed a demographics questionnaire – including a question asking if the participant has a history of a depression diagnosis – and brief manipulation check to ensure comprehension and compliance with the experimental condition.

Following data collection, there were 170 total participants. After investigating the manipulation checks, three participants were omitted from the analyses due to failure to pass the manipulation check. In other words, these three participants' responses on the manipulation check suggest they did not understand or did not follow the directions provided. Two participants were omitted from the feigning groups due to a self-reported history of depression diagnoses, which would have likely impacted their ability to feign the condition. Finally, one participant was omitted due to failing to complete the PAI-A.

The final sample included 164 adolescents between the ages of 15 and 18 ( $M = 16.64$ ). Of the 164 participants, 84 were young men (51.2%), 79 were young women (48.2%), and 1 did not specify their biological sex (0.6%). The racial/ethnic composition of the final sample was as follows: 140 Caucasian (85.4%), 11 African American (6.7%), 9 Hispanic (5.5%) and 4 Asian (2.4%). Free and reduced lunch programs in the participating schools ranged from 20% to 50% ( $M = 37%$ ). This composition is representative of the areas in which recruitment occurred. The 164 participants were divided into one of four groups: Honest Clinical (HC;  $n = 50$ ), Honest Nonclinical (HN;  $n = 39$ ), Uncoached Feigning (UF;  $n = 38$ ), and Coached Feigning (CF;  $n =$

37). Figure 1 shows the consort diagram for the current study, describing where participants were derived and how they were included or excluded from the final analyses.

## Measures

**Personality Assessment Inventory – Adolescent (PAI-A).** The PAI-A (Morey, 2007a) is a broad-band self-report measure of personality and psychopathology. It contains 264 items presented in a 4-point response format. The PAI-A is designed for adolescents between the ages of 12 and 18. Scores on the PAI-A are presented in the form of linear T scores with a mean of 50 and a standard deviation of 10.

Standardization of the PAI-A was comprised of a U.S. Census-matched community sample of 707 adolescents between the ages of 12 and 18. The standardization sample was recruited from urban and rural areas across 21 states. Sampling was not random in order to adhere to the demographics reported in the U.S. Census population reports. The sample was cross-stratified based on gender, ethnicity, and age. The community standardization sample was comprised of 51.1% young men and 48.9% young women participants. Racial makeup of the standardization sample included 61.5% Caucasian, 15.4% African American, 16.3% Hispanic, and 6.8% “other” (Morey, 2007a). Due to the composition of the Census data, very few racially diverse participants were included in the standardization sample. Therefore, the psychometric adequacy of the PAI-A on diverse populations still needs to be further investigated (Krishnamurthy, 2010).

In addition, a clinical standardization sample of 1160 adolescents with psychiatric diagnoses (average of 15.29 years of age) was also collected and included as part of the standardization data. The clinical standardization sample provides a mean clinical level for each of the scales.

The psychometric properties of the PAI-A reported in the professional manual were strong. Internal consistency studies showed mean alpha of .79. Test-retest reliability correlations were reported to average .78. Studies presented in the manual of the PAI-A compared this instrument to the MMPI-A, the NEO-PI, and other broad-band and specific measures of personality and symptoms used on adolescents. These validity results yielded moderate correlations between the PAI-A scales and the analogous subscales of other instruments (Morey, 2007a). To date, no third-party validity studies investigating the PAI-A could be found. The PAI-A takes roughly 25-45 minutes to complete.

### **Procedures**

Participants received a folder containing all study materials upon arrival at the experimental session and providing the researcher with the appropriate and complete consent form. Each participant's folder and all included materials were assigned a participant number. The informed consent sheet was stored separately from their study folder. All study materials contained only the participant's assigned number to maintain confidentiality. Participants completed all materials in a group format with the researcher present to supervise and answer questions.

Participants first completed a Subjective Units of Distress Scale (SUDS; Wolpe, 1969) to provide an estimate of their mood in the moment as well as their average mood over the last two weeks. The SUDS was included as a brief screener for depressive symptoms. The intention was that any participant responding with a SUDS of 2 or below on a 10-point Likert scale would not be included in the data analysis and would be advised to seek out support from a professional. No participants required omission on the basis of their SUDS score. The SUDS used for the current study can be found in Appendix B.

Following the SUDS, the participant's file contained one of three randomly-assigned sets of written instructions unique to each of the three experimental conditions (HN, UF, and CF). Individuals in the control group received a written transcript of the standard instructions for the PAI-A, instructing them to fill out the measures honestly.

Individuals in the Uncoached Feigning group were provided with the following scenario: "High school is boring. You do not like having to pay attention in class or do all of the homework. Someone you know has been diagnosed with depression and gets certain benefits at school, like more time to finish tests and not having to turn in as much homework. The student also gets to leave class when he gets 'upset.' You decide you want to be diagnosed with depression and get these same services so school is easier. You meet with a psychologist who asks you a bunch of questions and then gives you a long test that asks even more questions about how you are feeling. You know that in order to fool the psychologist into thinking you have depression, you will need to fake answers on the test." These participants received no further information and told to complete the PAI-A as if they were trying to fake depression.

Individuals in the Coached Feigning group were provided with the same scenario as those in the UF group. In addition to the scenario, the participants were given a list of symptoms of major depressive disorder that can be easily found online and similar to the criteria listed in the *DSM-5*. They were allowed to refer to this list while completing the PAI-A. All instructions given to participants are included in Appendix C.

Following completion of the PAI-A, participants completed a demographics questionnaire. It included questions about the participant's age, biological sex, race, grade point average, and a question about a history of depression treatment (Appendix D). Next, the participants completed a brief manipulation check to ensure that they understood and complied

with the instructions they were given (Appendix E). Finally, participants completed a positive mood induction exercise to alleviate any negative emotions that may have occurred during the study (Appendix F). They were also provided with resources in case they have experienced suicidal ideation (Appendix G). Completion of all included questionnaires and measures took 30 to 50 minutes. Following completion of all study materials, all participants were provided with a \$5 Amazon Gift Card as an incentive for participation. This reward was mutually agreed-upon by the researcher and high school administration.



## Chapter IV – Results

### Research Questions

The current study has a number of research questions that will be addressed in the following results and discussion. The first is: can adolescents successfully feign major depressive disorder? This will include an analysis of group differences on the Depression clinical scale (DEP) and the three subscales – Affect (DEP-A), Cognitive (DEP-C), and Physiological (DEP-P). The second research question is: can the PAI-A accurately differentiate between honest and feigned profiles? This second question will be answered through testing for differences between groups on the dependent variables from the negative distortion indices (NIM, RDF, and MAL) and will identify cut-scores. The final question is: does knowledge of the disorder aid in feigning? This question will be answered through an analysis of the differences between the two feigning groups on the depression scales and negative distortion indices and explored further in the Discussion section.

### Feigning Success

The first research question was whether adolescents in the feigning conditions were capable of reaching clinically significant levels of depression on the PAI-A. Clinical significance is defined as a score of 70T or higher, representing a reported level of symptomology two standard deviations above the general population. If a participant in a feigning condition obtains a score of 70T or above on the depression scale, they are considered a “successful feigner.” Results of a cross-tabulation showed that 87% of the participants across both of the feigning groups are classified as “successful feigners.” The provision of additional information on depression symptoms did not appear to impact participants ability to successfully feign depression.

### **Clinical Scales and Subscales**

Given 87% of feigning participants were “successful,” the questions remains of whether or not there are significant differences between groups on the depression clinical scale (DEP) and the three subscales (DEP-C, DEP-A, and DEP-P). A univariate analysis of variance (ANOVA) was conducted for the clinical scale. A post-hoc analysis was conducted using Tukey’s HSD. For the three subscales, a Multivariate analysis of variance (MANOVA) was conducted and post-hoc analyses were done using a discriminant function analysis. The DEP clinical scale was analyzed separately from the subscales for a couple of reasons. First, the clinical scale is made up of the subscales, which would mean that the two would be highly correlated, thereby impacting the analysis. Second, clinicians are likely to look at the clinical scale before they look at any of the subscales.

Results of the ANOVA showed that there were significant differences between the groups on the DEP scale. Consistent with Cumming (2013), the following analysis will include effect sizes and 95% Confidence Intervals (CI) instead of the traditional p-value. The post-hoc analysis found that there was a statistically significant difference between the Honest Nonclinical (HN;  $M = 55.308$ ) group, and the Honest Clinical (HC;  $M = 65.480$ ) group ( $d = 0.728$ , mean difference = 10.17, 95% CI [2.56, 17.78]). The width of the CI suggests the differences between the two honest groups are moderate, at best. HC was statistically significantly lower than both the Uncoached Feigning (UF;  $M = 84.763$ ) group ( $d = 1.348$ , mean difference = 19.28, 95% CI [11.62, 26.95]) and the Coached Feigning (CF;  $M = 86.000$ ) group ( $d = 1.46$ , mean difference = 20.52, 95% CI [12.80, 28.24]), which were not statistically different from each other. The CIs for the differences between the HC and feigning groups were substantially greater than 0, suggesting there were substantial differences between the groups that are thus likely to be clinically

important in addition to statistically significant. HC profiles understandably showed higher levels of depression on the DEP scale than did HN profiles and those asked to feign demonstrated even higher levels on the DEP scale, suggesting they demonstrated higher item endorsement than legitimately depressed individuals.

The results of the MANOVA using Wilks' Lambda showed that the depression subscales for the PAI-A were significantly different across the experimental groups (Partial Eta Squared = 0.199). The resulting canonical discriminant function found one significant function. The canonical discriminant function provides structure coefficients – correlations between the dependent variables (the depression subscales) and the discriminant function. When interpreting these correlations, a cutoff of 0.3 is often recommended (Tabachnick and Fidell, 1996). Structure coefficients above 0.3 are believed to contribute significantly to the observed group differences. Function 1 – the only significant function – depicts a pattern between the honest and feigning groups. The structure coefficients for DEP-A ( $r = 0.971$ ), DEP-C ( $r = 0.858$ ), and DEP-P ( $r = 0.771$ ) were all considered valuable sources of information for the discriminant function. For DEP-C, HN ( $M = 54.000$ ) was lower than the HC ( $M = 64.080$ ), which was lower than the UF ( $M = 80.895$ ) and CF ( $M = 80.895$ ) groups. DEP-A followed the same trend, with HN ( $M = 54.974$ ) being lower than HC ( $M = 66.340$ ), which in-turn was lower than UF ( $M = 85.711$ ) and CF ( $M = 86.3784$ ). On the DEP-P subscale, HC ( $M = 54.158$ ) and HN ( $M = 59.720$ ) were similar and lower than the UF ( $M = 74.158$ ) and CF ( $M = 65.293$ ) groups, which were similar to each other. The feigning groups reported significantly higher symptoms of depression than the honest nonclinical and even the honest clinical group. Figure 2 shows the mean T-scores for each condition on the depression clinical scale and subscales. 95% CIs are shown for each group on each scale. If interval bars are not touching or barely touching, there is a significant and

meaningful difference between the groups (similar to  $p < .01$ ). If they overlap only moderately, it is similar to  $p < .05$ , while substantial overlap indicates a nonsignificant group difference (Cumming, 2013).

Means, standard deviations, and effect sizes for group differences between the depression scales and subscales are shown in Table 4. Please refer to Table 2 for guidelines on interpreting the size of the effects. The effect sizes between the honest groups were small, as were the effect sizes between the two feigning groups. The effect sizes between HC and the two feigning groups were moderate-to-large. The effect sizes between HN and the two feigning groups were large-to-very large.

### **Validity Scales**

The RDF and MAL indexes were calculated using the instructions presented in the PAI manual (Morey, 2007b), using instructions designed for the adult form, since no instructions for the adolescent form have been established, as advised by Rios and Morey (2013). To determine if there were significant differences between experimental groups on the negative distortion indices (NIM, MAL, and RDF), a multivariate analysis of variance (MANOVA) was conducted. Post-hoc analyses were done using a discriminant function analysis.

The results of the MANOVA using Wilks' Lambda showed that the validity indices for the PAI-A were significantly different across the experimental groups (Partial Eta Squared = 0.243). The resulting canonical discriminant function found two significant functions. Table 5 shows the results of the discriminant function, including the structure coefficients for the validity indices. Function 1 depicts a pattern between the honest and feigning groups and shows that RDF ( $r = 0.906$ ) is the most distinct between honest and feigning groups, followed by NIM ( $r = 0.603$ ), and then MAL ( $r = 0.377$ ). Function 2 depicts a pattern between the HC and HN groups.

For this function NIM ( $r = 0.783$ ) was the most distinct index, suggesting that NIM was different between the honest groups. RDF ( $r = -0.403$ ) and MAL ( $r = 0.320$ ) also provided significant information.

Data for the NIM is presented as T-scores while the RDF and MAL are presented as raw scores because T scoring information for these indices are not available for the PAI-A. For NIM, HN ( $M = 52.180$ ) was lower than HC ( $M = 61.440$ ), which was lower than UF ( $M = 77.763$ ) and CF ( $M = 74.000$ ). For MAL, HN ( $M = 0.821$ ) and HC ( $M = 1.100$ ) were similar and lower than UF ( $M = 1.947$ ) and CF ( $M = 1.757$ ). RDF followed the same trend as MAL, with HN ( $M = -0.915$ ) and HC ( $M = -0.942$ ) being similar to each other and lower than UF ( $M = 0.989$ ) and ( $M = 1.186$ ). There were substantial differences between honest and feigning groups, with feigning groups scoring significantly higher on the distortion indices than honest participants (Function 1). For the NIM clinical participants scored higher than the nonclinical honest participants (Function 2). This suggests that the validity indices may be used to differentiate between honest and feigned profiles, as they are intended.

Means, standard deviations, and effect sizes for the group comparisons of the negative distortion indices are presented in Table 6. Given the effect sizes, the RDF appears to be the most significantly different between groups and the strongest index with regards to predicting group membership. The RDF for the honest conditions were very similar to each other ( $d = 0.028$ ), as are the two feigning conditions ( $d = 0.175$ ). When comparing honest groups to feigning groups, the effect sizes are very large (ranging from 1.816 to 2.047). This trend lends strong support for the RDF, as it suggests the RDF does pick up on actual feigning and is not impacted by the presence of actual psychological symptoms reported honestly.

The effect sizes for the MAL were considerably lower, with most being quite small in magnitude. The exceptions were between the HN and both feigning groups (0.953 to 1.039). The MAL did pick up on some moderate group differences between nonclinical participants and lying participants. The group differences between HC and the feigning groups were small, suggesting it may be less useful for determining the difference between actual clinical profiles and those that were feigned.

The effect sizes for the NIM followed a similar trend to the RDF. Honest groups were similar in magnitude ( $d = 0.684$ ), as were the two feigning groups ( $d = 0.237$ ). There were moderate effect sizes between the HC and the two feigning groups (0.769 to 1.079) and very large effects between HN and the two feigning groups (1.522 to 1.976). This data suggests the NIM may have more difficulty differentiating between genuine clinical and feigned profiles than it does with differentiating between nonclinical and feigned profiles. To a degree, the NIM could be expected to be somewhat elevated by the presence of real psychological symptoms. When participants were lying, NIM was significantly higher than it was for the honest clinical participants.

### **Regression Analysis**

The previously described MANOVA and ANOVAs showed that there were, in fact, significant differences between experimental groups on the negative distortion indices. The question of predictive power for the indices still stands. A multinomial logistic regression analysis was conducted with the HC group being selected as the reference group against which results for the other groups were compared. This group was selected because the task of differentiating between genuine clinical profiles and faked profiles is clinically more important than differentiating between honest nonclinical profiles and faked profiles.

Table 7 shows the results for the nominal regression analysis. The McFadden pseudo R-squared coefficient for the regression model was 0.280, suggesting the model explains 28% of the variance in group membership. The results showed that the NIM was a significant predictor for the HC and HN groups, such that the NIM for HC was higher than HN. The other negative distortion indices were not significant predictors of HN compared to HC. For both of the feigning groups, the only significant predictor was the RDF. This data suggests only the RDF has significant predictive utility in determining when a participant has responded honestly.

### **Cut-Scores**

It is critical to determine appropriate cut-score thresholds for the PAI-A negative distortion indicators. These cut-scores can be used by clinicians to help guide decisions regarding whether or not a profile is deemed valid and honest. For the adult PAI, sufficient research exists to provide clinicians with relatively reliable cut-scores. This is not the case with the PAI-A. For the current analyses, cross-tabulation was used to investigate the cut-scores reported by the PAI literature and those reported by Rios & Morey (2013) with their PAI-A sample. Receiver operating characteristics (ROC) curves were used to evaluate the sensitivity and specificity of cut-scores in order to find an optimal threshold for the current sample. The ROC curves for the negative distortion indices are displayed in Figure 3.

Table 8 shows the cut-scores, sensitivity, and specificity estimates for the three different samples (adult PAI literature [Hawes & Boccaccini, 2009], Rios & Morey [2013], and the present study). Sensitivity can be defined as the percentage of true positives - the percentage of feigning participants that were correctly classified as feigning. Specificity is the percentage of true negatives - the percentage of honest participants correctly classified as honest. For the current sample, the cut-off score selected for each negative distortion index were selected as the

optimal balance between sensitivity and specificity. Because only the NIM is included in the initial standardization of the PAI-A, it is the only one presented as a T-score. The MAL and RDF indices are presented as raw scores. As can be seen in Table 8, the recommended cut-scores from the adult PAI literature had some difficulty correctly classifying participants in the current sample. The current study found the optimal cut-score for the MAL to be identical to that reported in Rios & Morey (2013). For the NIM and RDF, higher cut-scores were optimal for the present sample.

The ROC curves also provide the useful area under the curve (AUC) statistic. For AUC, a coefficient of 1.000 represents a perfect test, while a coefficient of 0.500 represents a test performing purely from chance (indicated by the diagonal lines in Figure 1). AUCs from 0.5 to 0.6 are considered functionally useless; 0.6 to 0.7 is considered poor performance; 0.7 to 0.8 is considered fair performance; 0.8 to 0.9 is considered good performance; and 0.9 to 1.0 is considered excellent performance. For the current study, the AUC for the NIM was 0.806 (good), the MAL was 0.708 (fair), and the RDF was 0.912 (excellent). The AUCs support the evidence found by other analyses that the RDF was by far the strongest of the negative distortion indices. The NIM performed well while the MAL only performed fair. The cut-score threshold for the NIM may have some utility in ruling out or ruling in feigning. The MAL showed limited utility in this regard in the current sample.



## Chapter V – Discussion

“There are three types of lies – lies, damn lies, and statistics.” ~Benjamin Disraeli

### General Discussion

**Feigning depression.** The current study examined adolescents’ ability to feign clinical levels of depression symptoms on the PAI-A, the effect of coaching on their success in this regard, and the validity of the negative distortion indices to detect when lying has occurred. With respect to success at feigning depression, 87% of participants across the feigning groups were able to mimic clinical levels of depression on the PAI-A. This is higher than the success of those feigning ADHD in Rios and Morey (2013). Widespread knowledge of the basic symptoms of depression may also help explain why coaching participants (giving them additional information on depression) did not increase their ability to feign in the current study.

The current study has shown that adolescents *can* mimic clinical levels of reporting when trying to feign depression on the PAI-A. According to past research (Kroger and Turnbull, 1975; Nichols & Greene, 1997; Vasilopoulos et al., 2000; and Mahar et al., 2006), since participants appeared to have an accurate preconceived notion of depression, they should be able to fake it without detection. According to the results of the current analysis, there were significant differences on scales of feigning. It is no surprise that the participants told to feign depression showed significantly higher scores on the depression clinical scale and subscales. It was more surprising that they were still significantly higher on these scales than respondents who are diagnosed with depression who completed the PAI-A. This was upheld across all three of the clinical subscales for depression. It appears that adolescents will look for and endorse as many symptoms as they can to try to convince the clinician of their feigning, whereas actual depressed clients are less likely to exhibit every symptom of depression. Another way to interpret the

significant elevation on the Depression scales is due to the concern about the face validity of the PAI brought up by Eakin and colleagues (2006). Adolescents were easily able to identify which items assessed for depression, allowing them endorse a high number of symptoms. This may have somewhat backfired on those intending to feign, as many overshot the mark when compared to bona fide depressed adolescents. Regardless of the reason, this finding suggests that an incredibly high T-score on the depression scale may be an early indication that the participant may be trying to deceive the examiner.

**Catching the deception.** With so many adolescents capable of lying to reach clinical levels of depression on the scale and subscales, it is critical that the negative distortion indices be able to detect when this deception has occurred. The results of the current study lend support to the negative distortion indices, particularly the NIM and RDF.

Consistent with prior research (Rios & Morey, 2013), the RDF was the single strongest index for differentiating feigned from honest profiles. There were no significant differences between the honest clinical and nonclinical conditions; nor were there significant differences between the coached and uncoached feigning conditions. The effect sizes between the honest and feigning groups on the RDF were very large (ranging from 1.815 to 2.047). All of this suggests that the RDF is functioning exactly as it is designed to do: differentiate between honest and dishonest responding, regardless of the presence of an actual diagnosable condition. The current study suggests the RDF is highly capable at determining when adolescents are lying. This exciting evidence is dampened by a sobering fact: unlike the adult PAI, the PAI-A scoring software and hand-score forms are not set up to calculate the RDF. The RDF needs to be calculated by hand using the instructions found in the adult PAI manual. Many clinicians who work with adolescents may not be aware of the RDF or, even if they are, may not have the

instructions readily available in order to calculate it by hand. The formula used to hand-calculate the RDF is included in Appendix H.

The results for the NIM are somewhat more complicated. In the current study, the feigning groups were indeed higher on the NIM than the two honest groups. However, the Honest Clinical group was also significantly higher than the Honest Nonclinical group ( $d = 0.684$ ). While feigners scored significantly higher than non-feigners, elevations were also seen for bona fide clinical profiles. This suggests that the NIM was detecting some symptom endorsement that was theoretically linked to actual pathology and not, necessarily, on the deception with the current sample. There may be some quasi-rare symptoms (i.e., symptoms that are uncommon in nonclinical but common in clinical populations) mixed in with the rare symptoms (symptoms that are uncommon even for clinical populations) on the NIM (see Rogers, 2008b), which results in elevations even with earnestly depressed respondents. It is also possible that elevations on NIM may be a clinical indicator unique to depression, as overly-negative self-evaluations are a key feature of MDD; it is possible other conditions would not see such elevations on the NIM for bona fide profiles. For example, it is plausible to believe that depressed individuals may endorse “since the day I was born, I was destined to be unhappy” due to their tendency towards catastrophic thinking. The NIM was not as elevated for the clinical population as it was for the feigners, suggesting that it may still be useful in determining if a profile is invalid. Though the current study offers some support for the NIM, the evidence is not as strong as was presented in prior literature (Rios & Morey, 2013; Meyer, Hong, & Morey, 2014). In these studies participants were asked to feign ADHD (which is not directly assessed by the PAI-A) and “severe mental illness,” respectively. It is possible that the utility of the NIM is improved when the feigned disorder is not an identified scale of the PAI-A. It is also possible

that the NIM's ability to detect feigning is improved when the adolescent is attempting to feign highly severe and rare disorders assessed by the PAI-A, like Borderline Personality Disorder and Schizophrenia, consistent with Nichols and Greene (1997).

Very little support was given for the MAL index in the current study. Small-to-moderate effect sizes were seen between the Honest Nonclinical and the two feigning groups, suggesting that MAL may be somewhat useful in differentiating between feigned profiles and those of honest, typically-developing adolescents. This is rarely useful in a clinical evaluation, where the task is to determine if the adolescent has a legitimate disorder or if he/she is trying to lie. The MAL index showed relatively low predictive utility and the effect sizes between the clinical sample and the feigning groups was small by the standards of the dissimulation research. This finding is only partially supported in the prior research. Rios and Morey (2013) found that MAL was a weak predictor when adolescents were knowledgeable about the target disorder and were capable of a more strategic approach to feigning. In the current study it appears as if even the uncoached feigners had some prior knowledge of what depression is which helped them avoid detection from the MAL. Previous research has found support for the MAL with unsophisticated, uncoached participants (Rios & Morey, 2013) and relatively strong support for the MAL when participants are simply told to feign mental illness (Meyer, Hong, & Morey, 2014). Like with the RDF, the PAI-A is not set up to calculate the MAL index without the help of the manual for the adult PAI. The current study offers little support for clinicians to go out of their way to calculate the MAL with adolescent populations.

**Effects of coaching.** One of the research questions pertained to whether or not coaching would increase participants' chances of successfully feigning and/or avoiding detection from the negative distortion indices. According to the results of the current study, the answer appears to

be “no” when talking about feigning depression. Coached and uncoached feigners were equally successful at reaching clinical elevations of depression on the PAI-A. Across all depression scales/subscales, the two groups were not significantly different. This may be due to the more widespread understanding of depression as a psychiatric disorder in the mainstream society, Feigning participants may not have needed to be educated on the symptoms of depression as they may have already known them. Based on Kroger and Turnbull’s (1975) original research, if all participants already had a similar concept of depression, their profiles should look similar, as was the case. The fact that uncoached feigners were able to match coached feigners suggests that the adolescents in the current study had an accurate concept of depression. This finding on the nonsignificant differences is consistent with prior research (Nichols & Greene, 1997; Veltri & Williams, 2012) that found that participants were more unsuccessful at feigning schizophrenia than the more commonly known disorders (i.e., GAD and PTSD).

Coaching on the symptoms of depression did not improve participants’ success at avoiding detection from the negative distortion indices, either. Across all three indices, there were no significant differences between the feigning groups. The literature describes two major types of coaching (coaching on symptoms and coaching on the tests/validity scales; Youngjohn, Lees-Haley, & Binder, 1999). It is possible that coaching participants on the presence of the validity indices (and not the symptoms of a disorder) may improve their ability to feign, as suggested by Veltri and Williams (2012) with the adult PAI. For this study, coaching did not appear to significantly impact the feigning participants. An adolescent client who comes in having studied a list of symptoms would not be expected to be more or less successful at successfully pulling off the deception.

## Implications for Practice

The current study does offer some important implications for clinicians working with adolescent populations. First, the current study lends support to the PAI-A when working with adolescent clients. There are developed scales in place that can be used to assist clinicians in determining if the client is trying to deceive. Clinicians should be aware that the NIM – the only negative distortion index typically calculated on the PAI-A – may show some elevations for bona fide clinical profiles. Only exceptionally high T-scores on the NIM should be automatically considered invalid.

Next, the current study speaks to the importance of calculating the RDF when working with adolescent clients, especially in settings where the risk of deception is high (i.e., forensic evaluations, or working with Conduct Disordered populations). The PAI-A does not currently make calculating the RDF easy. Clinicians can go to one of three places to obtain the equation to calculate the RDF by hand: 1) page 19 of the adult PAI manual (Morey, 2007b), 2) the appendix of the original article in which the RDF was developed (Rogers et al., 1996), or 3) Appendix H of this paper.

The current study may help advise clinicians of cut-scores to use when working with typical adolescent clients. With the current sample, the cut scores that were found to be optimal with adult populations were not particularly useful in detecting feigning in adolescents. The optimal cut-scores were much closer to those reported by Rios and Morey (2013), with some minor differences. For the NIM, a cut-score of 64T led to an 80% correct classification of feigners and a 67.4% correct classification of honest responders. For the MAL, a cut-score of 2 resulted in a 57.3% true positive and 77.5% true negative result. Finally, and most notably, a cut-score of -0.266 on the RDF resulted in an 88% true positive and 73% true negative result. These

cut-scores were optimal for the current sample. Additional research needs to be done in order to find more stable cut-scores across multiple populations, as has been done to some extent with the adult PAI. As stated, Appendices I through K contain information about additional cut-scores for the negative distortion indices that professionals could refer to should they decide to use more stringent cut-scores when working with adolescents.

It is critical for clinicians to understand the limitations of the PAI-A and other objective personality inventories in detecting deception. While the rates of true positives were relatively high for the current sample, a large percentage of honest respondents were classified as feigners by both the RDF and the NIM. Recommendations for stand-alone tests of deception or noncredible responding indicate the rate of false positives should be less than 10% (Larrabee, 2015). Though the RDF was close at 12%, it still may not be as powerful as tests designed specifically to assess for feigned responding. Consistent with previous literature and the consensus on objective personality inventories (Salekin et al., 2008), clinicians should regard the PAI-A negative distortion indices as screeners for deception. If a client surpasses the recommended cut-scores, the clinician should follow-up with more specific measures of feigning such as the SIRS (Rogers et al., 2003). The use of multiple sources of validity testing is acceptable to ensure accuracy (Larrabee, 2015). Re-testing with the same measure is generally not believed to be helpful unless the adolescent decides to respond more honestly the second time (Elingson, Heggstad & Makarius, 2012).

When clinicians become alerted that the adolescent may potentially be attempting to feign in an evaluation, there are several ways to follow-up on these suspicions. Behavioral observations are the first line of defense. An adolescent can say he is experiencing severe depressed mood and psychomotor retardation, but these are symptoms that should be readily

identifiable during the evaluation. Carefully investigating school records and the adolescent's medical history can help either verify or refute their claims (Carone, 2015), as psychological issues like depression do not typically come on suddenly and there should be some indication of deteriorating performance prior to the evaluation. It is also important to remember that feigned data may still provide important information. This can guide case conceptualization and recommendations (Connery & Suchy, 2015). A child who is trying to appear depressed in order to gain desired attention from adults could easily then be "treated" without making a diagnosis through recommendations with the parents.

Finally, clinicians may be unsure what to do when they discover that their client is trying to fake a disorder during an evaluation. It is important for clinicians to carefully consider whether to bring up the feigning to the client during the exam. If the adolescent is aware that the clinician was able to "catch" them, it may result in a more sophisticated attempt in the future. On the other hand, if clients are made aware that their attempts to feign have been detected, they may abandon their attempts and respond honestly. It is important to wait until the evaluation is complete before disclosing concerns about feigning to parents in order to avoid parents believing that the clinician had already made up his/her mind before the all of the data was collected (Connery & Suchy, 2015). That last point brings up another issue: providing feedback when you are suspicious of non-credible reporting. Connery and Suchy (2015) offer some guidelines and recommendations for approaching feedback sessions under these circumstances. It is important to discuss the concerns with the parents first and bring the child in only once the parents understand the limitations of the evaluation data. Interested clinicians are encouraged to read Connery and Suchy (2015) for a more thorough discussion of how to proceed with feedback sessions.



## Strengths and Limitations

*Strengths.* The current study is among the first of its kind with regards to the PAI-A and the first known, to target the specific disorder of depression. This study does boast a number of strengths in its methodology and compared to previous research. First, previous studies using the PAI-A (Rios & Morey, 2013; Meyer et al., 2014) used college students within the PAI-A's age range for their samples. The current study used high school adolescents between the ages of 15 and 18. This accomplished a couple of different things. The current study began to extend the age-range for evidence on feigning detection down. In addition, clinicians using the PAI-A are more likely to use it with high-school aged adolescents. The inclusion of a high school sample helps bolster the external validity of the findings.

A second strength is in the targeting of Major Depressive Disorder as the feigned condition compared to previous studies on the PAI-A that have either not selected a target condition or selected a condition directly assessed by the PAI-A. A clinician may not opt to even administer the PAI-A if the presenting problem is ADHD. Since depression is assessed directly by the PAI-A it is more likely clinicians may include it in the assessment battery.

Third, the inclusion of the clinical sample from the clinical standardization data is a significant strength of the current study. These clinical participants were diagnosed with Major Depressive Disorder, independent of the results on the PAI-A thus reducing some of the confounds that may occur when an adolescent is given the diagnosis based, in part, on his/her performance on the PAI-A.

Fourth, previous research has largely compared feigners to clinical groups. The current study also included a non-clinical comparison group to demonstrate the ability of the validity indices at differentiating between honest and dishonest responding regardless of the actual

presence of a psychiatric condition. This helped lend credence to the assertion that, for instance, the RDF was relatively independent of actual symptom level. The inclusion of an honest nonclinical group helped illuminate some of the limitations of the NIM.

***Limitations.*** The study of detecting deception and feigning in adolescents is still in its infancy. The current study offers some important early evidence for the effectiveness of the PAI-A at detecting feigning in adolescents. There are a few limitations that need to be considered.

First, the clinical sample included received clinical diagnoses of Major Depressive Disorders from a number of different examiners who participated in the standardization of the PAI-A. The validity of these diagnoses is dependent upon the criterion used in the standardization process and it is possible that these criteria differ from those used in the DSM-5 or in school evaluations. The degree to which co-morbid disorders may have affected individual profiles in the clinical standardization sample is unknown.

Second, the PAI-A is designed to be used with adolescents aged 12-18 however the current study only collected data from 15-17 year olds. The current study does not represent the entire range of adolescence. The ability of young adolescents (ages 12 to 15) to successfully feign and the ability of the validity indices to detect this feigning remains unknown. Future research should work to further extend the age of study downward to help provide direction for clinicians working with younger populations.

Third, all participants were given a small incentive in the form of a five-dollar gift card for participating in the study. While it was beneficial to be able to provide an external reward to motivate participants to engage with the study and follow directions, it is important to note that this reward may not provide the same incentive as those sought by adolescents who feign in real-world evaluations.

Finally, the current sample included a high number of Caucasian participants from low-to-middle socioeconomic areas in Illinois and Indiana and all participants were described as typically-developing adolescents (with the exception of the clinical comparison group). The literature on the use of the PAI-A with diverse cultures and socio-economic statuses remains limited (Krishnamurthy, 2010), and it is unclear if the validity indices may behave differently with such diverse clients. Clinical populations characterized by deception (i.e., Conduct Disorder) may take a somewhat different approach to feigning; thus, the current study may not fully validate the PAI-A for use with these special populations.

### **Future Directions**

The research on detecting deception and feigned responding in adolescents using objective personality inventories is still rather sparse. There exist a plethora of future research opportunities that remain to be explored. Additional research needs to be done in order to help determine robust cut-scores for the PAI-A validity indices. The effects of different types of coaching (i.e., teaching of the validity indices instead of symptoms) on deception should also be explored. Knowing that research has shown that the validity indices perform somewhat differently based on the specific disorder being targeted (if any), additional research should be done with other conditions assessed by the PAI-A to determine if the current results can be applied beyond feigned depression. It will be important to target disorders that are assessed by the PAI-A. It is likely that PTSD is a condition that would be at high risk for feigning due to the potentially lucrative incentives it may earn through personal injury or civil responsibility cases (Sherman, 2015). PTSD would be a logical target for future investigations of the PAI-A negative distortion indices. Future research should work to extend the age-range downwards even further to determine if younger adolescents are capable of feigning in the same way as older adolescents

and if the negative distortion indices are capable of detecting this feigning. Finally, future research with adolescent feigning should begin comparing the validity indices of multiple measures (such as comparing the MMPI-A to the PAI-A), as has been done with the adult forms in order to determine which scales may be the most useful in screening for deception.

### **Summary**

The current research provided important information regarding the PAI-A's ability to detect when adolescents are feigning. It may come to no surprise that many participants in the feigning group were capable of lying and achieving clinical levels of depression on the PAI-A. The current study lends strong support for the use of the RDF in predicting when deception has occurred. The NIM performed decently, but it should be noted that clinically diagnosed individuals showed some elevations on the NIM making clear interpretation of NIM scores more difficult. Very little support was given for the MAL index in the current study and it is possible that the MAL is better suited for generalized feigning when the adolescent is simply trying to feign mental illness. This study provides a critical starting point for several lines of future research in the field of adolescent deception as well as important considerations for practitioners who evaluate adolescents.

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## Tables

Table 1: Developmental Progression of Lying and Deception

Table 1

*Developmental Progression of Lying and Deception*

<u>Age</u>	<u>Capacity to Deceive</u>	<u>Source</u>
2-3 years	Basic, unsustainable lying begins.	<i>Slick et al., 2011</i>
4-5 years	Effortful control and Theory of Mind begin to develop; child can engage in intentional but unmaintainable lying.	<i>Kieras et al., 2005;</i> <i>Salekin et al., 2008</i>
6-7 years	Theory of Mind developed; verbal deception is present, but may not be consistent throughout duration of deception.	<i>Salekin et al., 2008</i>
8-11 years	Child maintains verbal deception; makes unsophisticated attempts to include accurate nonverbal deception/role-playing.	<i>Salekin et al., 2008</i>
12-18 years	Child maintains sophisticated verbal deception and includes consistent role-playing/nonverbal deception necessary for feigning; refined to mirror adult deception.	<i>Salekin et al., 2008;</i> <i>Slick et al., 2011</i>
18+	Adult feigning and malingering.	<i>Rogers, 2008b</i>

*Note:* Age ranges based on typical development, though some variation may be present.

Table 2: Recommended Effect-Sizes for Feigning Studies

Table 2

*Recommended Effect-Sizes for Feigning Studies*

<u>Small</u>	<u>Moderate</u>	<u>Large</u>	<u>Very Large</u>
< 0.75	0.75-1.25	1.26-1.50	> 1.50

*Note:* These recommendations are intended to assist in the interpretation of the magnitude of effect sizes for studies on detecting feigning. These ranges were taken from Rogers (2008b).

Table 3: MMPI-2 and PAI Feigning Comparison Studies

Table 3  
*MMPI-2 and PAI Feigning Comparison Studies*

<u>Study</u>	<u>Important Findings</u>	<u>Type of Comparison</u>	<u>Significant Effect Size(s)</u>
<i>Bagby et al., 2002</i>	RDF outperformed F-family scales, which outperformed the NIM and other PAI validity scales.	Coached Malingerer v. Psychiatric Patient	$F = 1.03$ ; $F_b = 0.91$ ; $F_p = 1.46$ ; RDF = 1.87; NIM = 0.44
		Uncoached Malingerer v. Psychiatric Patient	$F = 1.07$ ; $F_b = 1.02$ ; $F_p = 1.33$ ; RDF = 1.55; NIM = 0.53; MAL = 0.48
<i>Eakin et al., 2006</i>	PAI Scales = Nonsignificant.	Faker v. PTSD	$F = .89$ ; $F_b = 1.04$ ; $F_p = .97$
<i>Veltri &amp; Williams, 2012</i>	Disorder being feigned moderated ability to detect feigning for both. Feigning Schizophrenia was unsuccessful across conditions; PTSD and GAD were vulnerable to coaching.	Feigning Schizophrenia	$F = .47$ ; $F_b = .50$ ; $F_p = .55$ ; RDF = 0.24; NIM = 1.07; MAL = 0.94
		Feigning PTSD	$F = .92$ ; $F_b = .69$ ; $F_p = .91$ ; RDF = 1.09; NIM = 1.39; MAL = 1.05
		Feigning GAD	$F = 1.44$ ; $F_b = 1.26$ ; $F_p = 1.26$ ; RDF = 1.57; NIM = 0.88; MAL = 0.61
<i>Blanchard et al., 2003</i>	MMPI-2 > PAI, though PAI still showed clinically acceptable accuracy.	Feigners v. Patients	F-K = 3.44; $F = 2.24$ ; $F_b = 1.62$ ; $F_p = 3.16$ ; RDF = 2.48; NIM = 0.2.48; MAL = 2.61

*Note:* For each comparison condition, only effect sizes that were reported to be significant at  $p < .05$  were reported. For additional information, please consult the appropriate study.

Table 4: Means, Standard Deviations and Effect-Sizes for the Depression Scales

Table 4

*Means, Standard Deviations and Effect-Sizes for the Depression Scales*

Scale	<i>M/SD</i>	HC	HN	UF	CF	Effect Size (Cohen's d)					
						HC vs. HN	HC vs. UF	HC vs. CF	HN vs. UF	HN vs. CF	UF vs. CF
DEP	<i>M</i>	65.480	55.308	84.763	86.000	0.73	1.35	1.47	2.23	2.39	0.09
	<i>SD</i>	15.016	12.807	13.566	12.923						
DEP-C	<i>M</i>	64.080	54.000	80.895	81.973	0.70	1.11	1.22	2.07	2.25	0.08
	<i>SD</i>	16.289	12.007	13.914	12.902						
DEP-A	<i>M</i>	66.340	54.974	85.711	86.378	0.77	1.30	1.36	2.37	2.47	0.05
	<i>SD</i>	16.481	12.696	13.230	12.711						
DEP-P	<i>M</i>	59.720	54.385	74.158	75.216	0.45	1.21	1.31	1.61	1.70	0.09
	<i>SD</i>	11.588	12.347	12.220	12.134						

*Note:* HC = Honest Clinical; HN = Honest Nonclinical; UF = Uncoached Feigning; CF = Coached Feigning. \*\*p < .00

Table 5: Canonical Discriminant Function for Negative Distortion Indices

Table 5

*Canonical Discriminant Function for Negative Distortion Indices*

<u>Function</u>	<u>Eigenvalue</u>	<u>Wilks'</u> <u>Lambda</u>	<u>df</u>	<u>Sig.</u>	<u>Within-Group Correlations</u>		
					<u>RDF</u>	<u>NIM</u>	<u>MAL</u>
1*	1.155	.434	9	.000	0.906	0.603	0.377
2	0.67	.936	4	.032	-0.403	0.783	0.320

*Note:* \*Sig <0.001



Table 6: Means and Effect-Sizes for the Negative Distortion Indices

Table 6

*Means and Effect-Sizes for the Negative Distortion Indices*

<u>Scale</u>	<u>M/SD</u>	<u>HC</u>	<u>HN</u>	<u>UF</u>	<u>CF</u>	Effect Size (Cohen's d)					
						<u>HC vs.</u> <u>HN</u>	<u>HC vs.</u> <u>UF</u>	<u>HC vs.</u> <u>CF</u>	<u>HN vs.</u> <u>UF</u>	<u>HN vs.</u> <u>CF</u>	<u>UF vs.</u> <u>CF</u>
NIM	<i>M</i>	61.440	52.180	77.763	74.000	0.684	1.079	0.769	1.976	1.522	0.237
	<i>SD</i>	15.636	11.028	14.611	17.007						
MAL	<i>M</i>	1.100	0.821	1.947	1.757	0.297	0.695	0.582	1.039	0.953	0.152
	<i>SD</i>	1.093	0.756	1.335	1.164						
RDF	<i>M</i>	-0.942	-0.915	0.989	1.186	0.028	1.816	2.004	1.852	2.047	0.175
	<i>SD</i>	0.998	0.921	1.125	1.122						

*Note:* HC = Honest Clinical; HN = Honest Nonclinical; UF = Uncoached Feigning; CF = Coached Feigning. \*\*p < .00

Table 7: Multinomial Regression Analysis for the Negative Distortion Indices

Table 7

*Multinomial Regression Analysis for the Negative Distortion Indices*

Group		B	Std. Error	Wald	df	Sig.	Exp(B)
HN	Intercept	3.434	1.212	8.036	1	0.005	
	RDF	0.270	0.237	1.302	1	0.254	1.310
	MAL	0.183	0.324	0.319	1	0.572	1.201
	NIM	-0.064	0.023	8.008	1	0.005	0.938
UF	Intercept	-2.312	1.433	2.603	1	0.107	
	RDF	1.581	0.312	25.695	1	0.000	4.860
	MAL	0.177	0.310	0.325	1	0.569	1.193
	NIM	0.025	0.023	1.109	1	0.292	1.025
CF	Intercept	-1.265	1.432	0.780	1	0.377	
	RDF	1.784	0.322	30.618	1	0.000	5.951
	MAL	0.177	0.318	0.312	1	0.577	1.194
	NIM	0.008	0.024	0.101	1	0.750	1.008

*Note:* HN = Honest Nonclinical; UF = Uncoached Feigning; CF = Coached Feigning. Each group is compared to the Honest Clinical group.

Table 8: Cut-Scores, Sensitivity, and Specificity for the PAI-A

Table 8

*Cut-Scores, Sensitivity, and Specificity for the PAI-A*

<u>Validity Index</u>	<u>Source</u>	<u>Cut-Score</u>	<u>Sensitivity</u>	<u>Specificity</u>
NIM	PAI Literature	81T <sup>a</sup>	29.3%	91.0%
	Rios & Morey (2013)	60T	89.3%	57.3%
	Current Study	64T	80.0%	67.4%
MAL	PAI Literature	3 <sup>a</sup>	29.3%	92.1%
	Rios & Morey (2013)	2	37.8%	81.1%
	Current Study	2	57.3%	77.5%
RDF	PAI Literature	0.00 <sup>b</sup>	84.0%	78.7%
	Rios & Morey (2013)	-0.439	88.0%	67.4%
	Current Study	-0.266	88.0%	73.0%

<sup>a</sup>From Hawes & Boccaccini (2009). <sup>b</sup>From Rogers et al. (1996).

**Figures**

Figure 1: Consort Diagram for the Current Study

Figure 1  
Consort Diagram for the Current Study

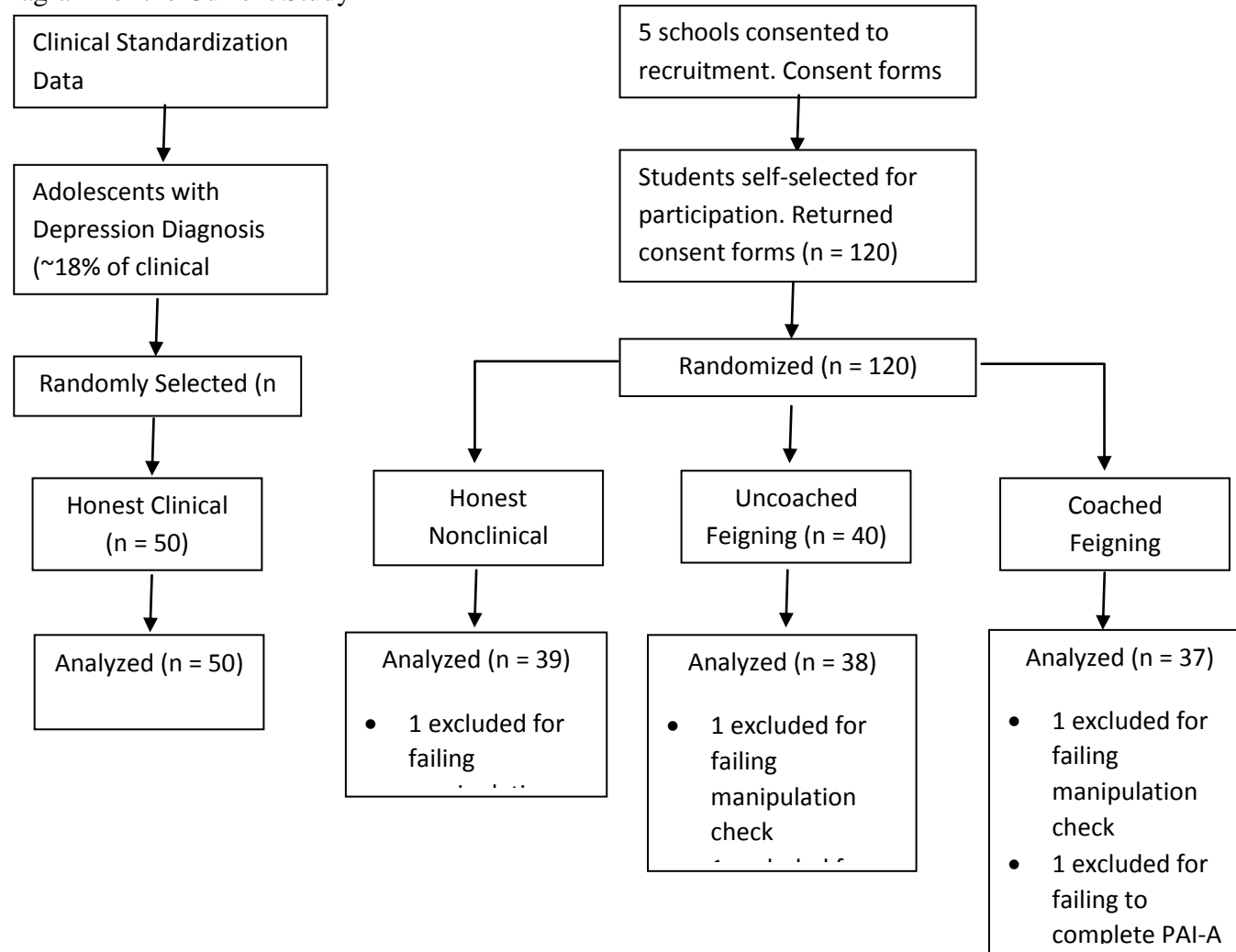
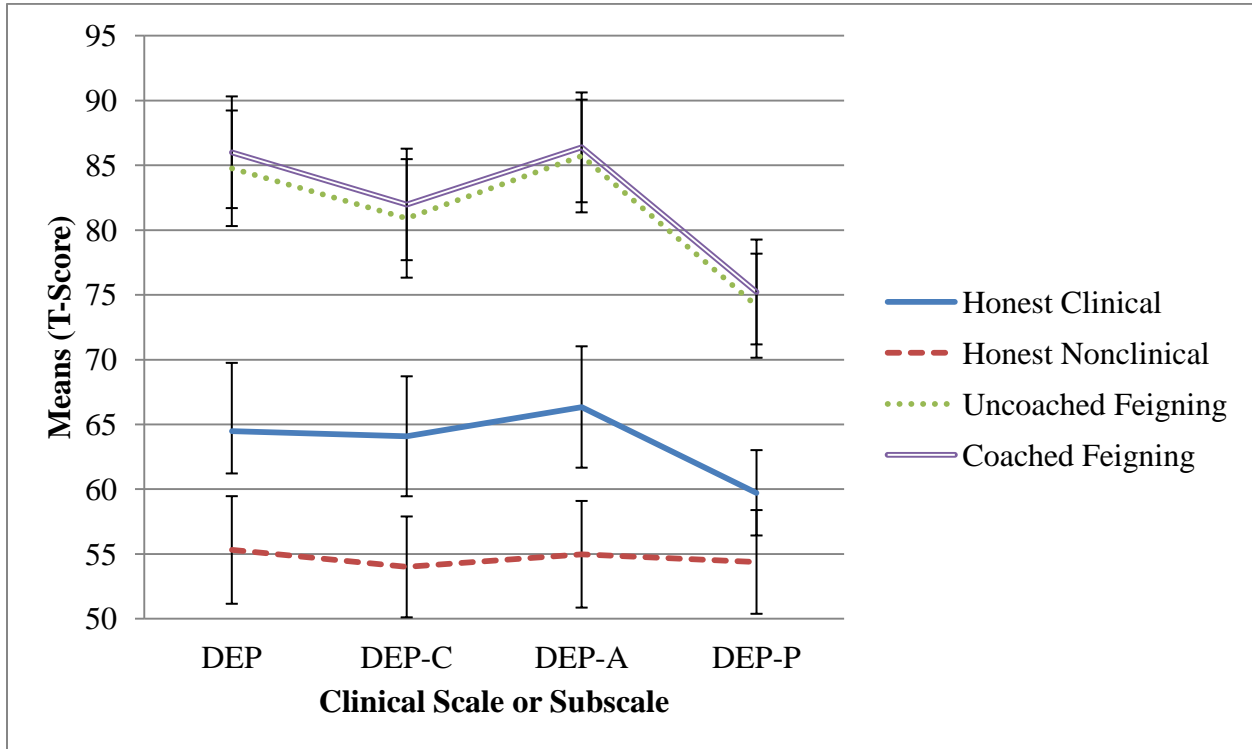


Figure 2: Depression Scale and Subscales Means

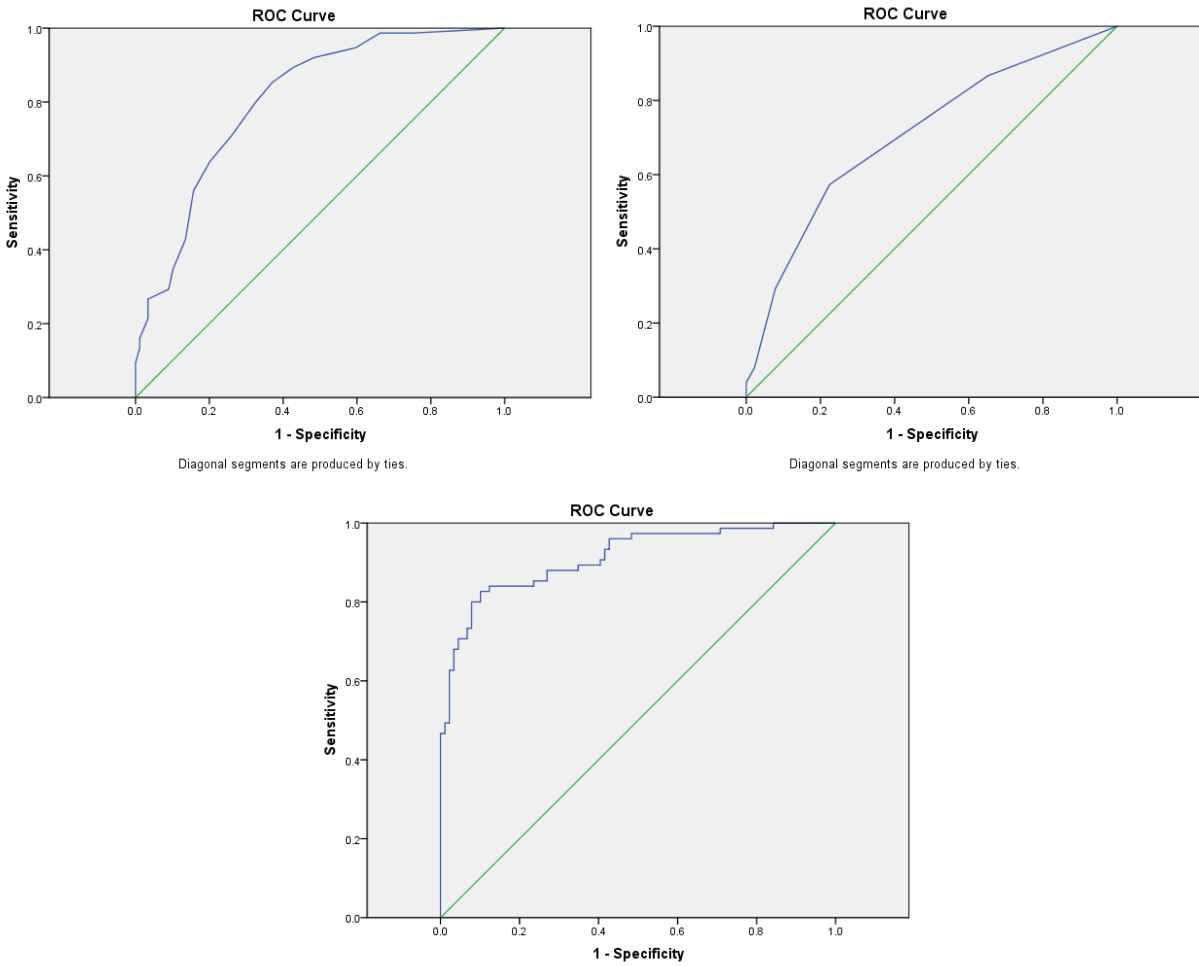
Figure 2  
 Depression Scale and Subscales Means



**Fig 1.** Group means for the depression clinical scales and subscales. Scores are presented as T-scores. Error bars depict 95% confidence interval for each mean.

Figure 3: Receiver Operating Characteristic (ROC) Curves

Figure 3  
*Receiver Operating Characteristic (ROC) Curves*



**Fig 2.** Top left = NIM; top right = MAL; bottom = RDF. Diagonal reference line denotes chance probability.

Appendix A: Output for Power Analysis

## Power Analysis for ANOVA Designs

The power parameters you specified were:

- a = '4' (levels of factor for power)
- b = '1' (levels of factor(s) crossed with A)
- delta = '0.75 1.0 1.25' (effect size(s))
- alpha = '0.05' (significance level)

Power analysis for ANOVA designs  
 4x 1 layout Ha: T1=GM-Delta/2, T2=T3=...=T(k-1)=GM, Tk=GM+Delta/2  
 tested at Alpha= 0.050

DELTA (in units of sigma=Std. Dev.)

N	0.750	1.000	1.250
2	0.065	0.077	0.094
3	0.084	0.112	0.152
4	0.103	0.150	0.215
5	0.123	0.190	0.281
6	0.145	0.231	0.347
7	0.166	0.273	0.412
8	0.189	0.315	0.475
9	0.212	0.357	0.534
10	0.235	0.399	0.590
12	0.282	0.479	0.688
14	0.329	0.554	0.767
16	0.376	0.622	0.830
18	0.422	0.683	0.878
20	0.467	0.736	0.913
25	0.572	0.840	0.965
30	0.663	0.907	0.987
35	0.740	0.947	0.995
40	0.802	0.971	0.998
50	0.891	0.992	0.999
60	0.942	0.998	0.999
70	0.971	0.999	0.999
80	0.985	0.999	0.999
90	0.993	0.999	0.999

The sample size values given are those for each of the 4 levels of the factor called 'Factor A'.

## Appendix B: Subjective Unit of Distress Scale (SUDS)

Please rate your mood on the following items on a scale of 0 to 10:

1. How would you rate your current mood? How are you feeling *now*?

0	1	2	3	4	5	6	7	8	9	10
Completely Sad, Nothing is Going Right										Completely Happy, Life is Perfect

2. In the last 2 weeks, how would you rate your average or overall mood?

0	1	2	3	4	5	6	7	8	9	10
Completely Sad, Nothing is Going Right										Completely Happy, Life is Perfect



## Appendix C: Instructions for Participants

Instructions [**Honest Responding Condition**]

First you will be asked two brief questions about your mood. Then, please fill out the first form in this folder, the Personality Assessment Inventory – Adolescent (or PAI-A). Psychologists use the PAI-A to help diagnose certain mental disorders. Please **DO NOT** fill out any of the information on the front page. Read the instructions at the top of page 2 for completing the PAI-A. Then, please answer the questions **as honestly as you can**. You will not get in trouble for any of your responses.

Once you have finished filling out the PAI-A, please fill out the two brief surveys and questionnaires in the back of your folder. Please complete these surveys **as honestly as you can**.

After you have finished filling out all forms and surveys, please take a few moments to complete a brief exercise designed to alleviate any discomfort you may feel from answering the questions. If any negative feelings persist following this exercise, please see the researcher for additional resources and strategies.

Please bring your folder to the examiner when everything in the folder is completed. Upon completion of study materials, you will receive a \$5 Amazon gift card as a reward for your participation. Thank you for your help and participation in this study.

### Instructions [Uncoached Feigning Condition]

First you will be asked two brief questions about your mood. Then, please fill out the first form in this folder, the Personality Assessment Inventory – Adolescent (or PAI-A). Psychologists use the PAI-A to help diagnose certain mental disorders. Please **DO NOT** fill out any of the information on the front page. Read the instructions at the top of page 2 for completing the PAI-A. However, **instead of putting down how you would actually answer the questions, please answer the questions the way you think someone with depression would answer the questions.** Your goal is to try to “trick the test” into showing that you have depression. You will not get in trouble for any of your responses. Your reason for trying to trick the test is described below:

*“High school is boring. You do not like having to pay attention in class or do all of the homework. Someone you know has been diagnosed with depression and gets certain benefits at school, like more time to finish tests and not having to turn in as much homework. The student also gets to leave class when he gets ‘upset.’ You decide you want to be diagnosed with depression and get these same services so school is easier. You meet with a psychologist who asks you a bunch of questions and then gives you a long test that asks even more questions about how you are feeling. You know that in order to fool the psychologist into thinking you have depression, you will need to fake answers on the test.”*

**Remember:** Your goal is to make the psychologist think you have depression based on your answers!

Once you have finished filling out the PAI-A, please fill out the two brief surveys and questionnaires in the back of your folder. Please complete these surveys **as honestly as you can.** After you have finished filling out all forms and surveys, please take a few moments to complete a brief exercise designed to alleviate any discomfort you may feel from answering the questions. If any negative feelings persist following this exercise, please see the researcher for additional resources and strategies.

Please bring your folder to the examiner when everything in the folder is completed. Upon completion of study materials, you will receive a \$5 Amazon gift card as a reward for your participation. Thank you for your help and participation in this study.

### Instructions [Coached Feigning Condition]

First you will be asked two brief questions about your mood. Then, please fill out the first form in this folder, the Personality Assessment Inventory – Adolescent (or PAI-A). Psychologists use the PAI-A to help diagnose certain mental disorders. Please **DO NOT** fill out any of the information on the front page. Read the instructions at the top of page 2 for completing the PAI-A. However, **instead of putting down how you would actually answer the questions, please answer the questions the way you think someone with depression would answer the questions.** Your goal is to try to “trick the test” into showing that you have depression. You will not get in trouble for any of your responses. Your reason for trying to trick the test is described below:

*“High school is boring. You do not like having to pay attention in class or do all of the homework. Someone you know has been diagnosed with depression and gets certain benefits at school, like more time to finish tests and not having to turn in as much homework. The student also gets to leave class when he gets ‘upset.’ You decide you want to be diagnosed with depression and get these same services so school is easier. You meet with a psychologist who asks you a bunch of questions and then gives you a long test that asks even more questions about how you are feeling. You know that in order to fool the psychologist into thinking you have depression, you will need to fake answers on the test.”*

To help you complete this form, here is a description of how people with depression may look and feel:

People who are clinically depressed feel sad or hopeless most of the day, almost every day, for at least two weeks. They may lose interest in things they used to enjoy and lose all motivation to do things they used to find fun. They may gain or lose a lot of weight in a very short period of time. They often either spend too much time sleeping, or too little. They often do not have a lot of energy and become tired easily. They move slower and take longer to do things than before. They often feel worthless or feel guilty for things that are not their fault. They cannot get these thoughts out of their head, which makes it harder to focus in class or in other activities. They watch for evidence that they are useless and ignore or minimize their successes. They take criticism very hard and are easily upset. They may begin crying over little things. In some instances depressed people may become angry over little things as well. Sometimes people who are depressed think about death and try to kill themselves.

**Remember:** Your goal is to make the psychologist think you have depression based on your answers!

Once you have finished filling out the PAI-A, please fill out the two brief surveys and questionnaires in the back of your folder. Please complete these surveys **as honestly as you can**. After you have finished filling out all forms and surveys, please take a few moments to complete a brief exercise designed to alleviate any discomfort you may feel from answering the questions. If any negative feelings persist following this exercise, please see the researcher for additional resources and strategies.

Please bring your folder to the examiner when everything in the folder is completed. Upon completion of study materials, you will receive a \$5 Amazon gift card as a reward for your participation. Thank you for your help and participation in this study.

## Appendix D: Demographics Questionnaire

\*Participant Number: \_\_\_\_\_

Please fill out the following questions as honestly as you can.

1. What is your age? \_\_\_\_\_
2. What is your sex (circle one)?                      Male      Intersex      Female
3. How would you describe your race?
  - a. African American
  - b. Asian-American
  - c. White/Caucasian
  - d. Hispanic-American
  - e. Other (Please Specify): \_\_\_\_\_
4. What is your estimated cumulative grade point average (GPA)? \_\_\_\_\_  
(The GPA is the average value of all of your grades so far, often with a maximum value of 4.0)
5. To your knowledge, have you received treatment for depression (circle one)?    Yes    No

*\*The participant number is solely for the purpose of keeping all materials together and organized. This number is not connected with your name and cannot be used to identify you.*

## Appendix E: Manipulation Check

\*Participant Number: \_\_\_\_\_

Please fill out the following questions as honestly as you can and to the best of your ability.

1. How easy were the instructions to understand (circle one)?

1	2	3	4	5
Very Difficult				Very Easy

2. Were you asked to answer the PAI-A honestly (circle one)?      Yes      No

3. Were you asked to answer the PAI-A like someone with severe anxiety (circle one)?

No	Yes
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4. Were you asked to answer the PAI-A like someone with depression (circle one)?

No	Yes
----	-----

5. Were you asked to answer the PAI-A randomly, without looking at the items (circle one)?

No	Yes
----	-----

6. Did you try to follow the instructions given to you (circle one)?      Yes      No

7. How successful do you think you were in completing the PAI-A using the instructions you were given (circle one)?

1	2	3	4	5
Completely Unsuccessful				Completely Successful

8. Were you aware that there were items on the PAI-A designed to trip you up (circle one)?

No	Yes
----	-----

*\*The participant number is solely for the purpose of keeping all materials together and organized. This number is not connected with your name and cannot be used to identify you.*

## Appendix F: Positive Mood Induction

\*Participant Number: \_\_\_\_\_

Some of the questions you answered in this study may have made you feel anxious, uneasy, or uncomfortable. The point of this exercise is to reduce any of these feelings. Please read the following instructions and spend a few moments completing the exercise.

## Instructions:

After you have finished reading, please close your eyes and try to think of your favorite summer memory. It could be a trip to the beach, a day out with friends, or whatever you want. The only rule is that the memory is of a time that made you *happy*. In your mind, try to remember everything about this memory – how it looked, felt, and sounded. Most importantly, try to remember how you felt and how this event made you happy. With your eyes closed, try to see your summer memory in your mind. Feel the warmth of summer on your skin. Try to hear your laughter as you enjoy yourself. Take as much time as you need to think about this memory.

After a few moments, open your eyes and please *briefly* write down what you recalled and what made it a happy memory. Your response can be as detailed as you want it to be.

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Again, the goal of this exercise was to help reduce any feelings of anxiety or discomfort you may be feeling by prompting you to think about a happy memory. If you are still experiencing any anxiety or uneasiness, please see the researcher for additional strategies and resources that may be helpful. Thank you for participating in this study. Your time and effort is greatly appreciated.

*\*The participant number is solely for the purpose of keeping all materials together and organized. This number is not connected with your name and cannot be used to identify you.*

## Appendix G: Crisis Steps and Resources

**IMPORTANT NOTICE: If you are having thoughts about hurting or killing yourself,** please talk to someone immediately. You should talk to someone whom you trust, such as a parent, sibling, friend, teacher, or the school counselor. I, the researcher, am highly concerned about the safety of all students I come in contact with. Therefore, you may also talk to me directly at any time before, during, or after completing the study. Keep in mind that if you are in danger of harming or killing yourself, I will do everything I can to help keep you safe, which will likely involve notifying school personnel or your parents.

Below are the phone numbers for the 24-hour crisis hotlines. If you ever have thoughts about suicide, please do not hesitate to call these numbers:

1-800-273-TALK (1-800-273-8255)

1-800-SUICIDE (1-800-784-2433)

Or visit: [www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org).

*This notice is yours to keep. Store these numbers somewhere you can access them in case of a crisis. Please be safe. And above all, talk with someone about your thoughts should they arise.*



## Appendix H: Formula for Calculating the Rogers Discriminant Function

$$\begin{aligned} \text{RDF} = & 0.01718613(\text{ICN}) + 0.01976398(\text{INF}) - 0.01917862(\text{STR}) + 0.02103711(\text{RXR}) - \\ & 0.03403340(\text{SOM-C}) + 0.02824221(\text{SOM-H}) - 0.04109886(\text{ANX-A}) + 0.05324155(\text{ANX-P}) - \\ & 0.01773748(\text{ARD-O}) + 0.02758030(\text{ARD-P}) - 0.01741280(\text{ARD-T}) + 0.04121700(\text{DEP-C}) + \\ & 0.01603311(\text{PAR-H}) + 0.01554190(\text{PAR-R}) + 0.01775538(\text{SCZ-P}) - 0.02750892(\text{SCZ-T}) - \\ & 0.02909405(\text{BOR-I}) + 0.03675012(\text{BOR-N}) - 0.01793721(\text{BOR-S}) + 0.02152554(\text{ANT-E}) - \\ & 6.60458400 \end{aligned}$$

*Note:* The RDF equation was taken from Rogers, Sewell, Morey, & Ustad (1996). Scale and Subscale scores used for the RDF calculation are T-scores. This equation was originally developed for the adult PAI. No deviations from the calculation were made when calculating the RDF for PAI-A in the current study.

## Appendix I: Sensitivity and Specificity Table for the Negative Impression Management Index

<b>T-Score</b>	<b>Sensitivity</b>	<b>Specificity</b>
41	1.000	0.00
43	0.987	0.247
46	0.987	0.337
49	0.947	0.404
52	0.933	0.461
55	0.920	0.517
58	0.893	0.573
61	0.853	0.629
64	0.800	0.674
67	0.707	0.742
69	0.640	0.798
72	0.560	0.843
75	0.427	0.865
78	0.347	0.899
81	0.293	0.910

Appendix J: Sensitivity and Specificity Table for the Rogers Discriminant Function Index

<b>Raw Score Range</b>	<b>Sensitivity</b>	<b>Specificity</b>
-4.64 to -2.00	1.000	0.000 to 0.135
-1.88 to -1.51	0.987	0.157 to 0.292
-1.50 to -0.99	0.973	0.292 to 0.517
-0.84 to -0.80	0.960	0.517 to 0.573
-0.78 to -0.76	0.933	0.573 to 0.584
-0.70 to -0.68	0.907	0.584 to 0.596
-0.63 to -0.59	0.893	0.596 to 0.652
-0.58 to -0.27	0.880	0.652 to 0.730
-0.18 to -0.06	0.853	0.730 to 0.764
-0.03 to 0.14	0.840	0.764 to 0.876
0.15 to 0.20	0.827	0.876 to 0.899
0.26 to 0.34	0.800	0.899 to 0.921
0.52 to 0.56	0.707	0.933 to 0.955

Appendix K: Sensitivity and Specificity Table for the Malingering Index

<b>Raw Score</b>	<b>Sensitivity</b>	<b>Specificity</b>
0	0.867	0.348
1	0.573	0.775
2	0.293	0.921
3	0.808	0.978
4	0.040	1.00
6	0.00	1.00