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Barbara H. Cromwell  
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THE IMPOSTOR PHENOMENON IN THE CLASSROOM:  
PERSONALITY AND COGNITIVE CORRELATES

by

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B.S. May 1955, Central Michigan University  
M.S. December 1977, Old Dominion University

A Dissertation Submitted to the  
Faculty of Old Dominion University  
in Partial Fulfillment of the Requirements  
for the Degree of

DOCTOR OF PHILOSOPHY

URBAN SERVICES

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ABSTRACT  
The Impostor Phenomenon in the Classroom:  
Personality and Cognitive Correlates

by

Barbara H. Cromwell  
Old Dominion University

This study was designed as an ex post facto investigation of the Impostor Phenomenon (IP) in high-achieving students on the secondary educational level. The purpose of the study was to ascertain if impostors could be differentiated from non-impostors on the basis of gender, grade level, grade point average (GPA), personality characteristics and irrational beliefs. A cutoff score of 40 on the Harvey IP Scale was selected a priori to divide subjects into impostor and non-impostor groups.

Subjects for this investigation consisted of 104 honors English students in grades nine through twelve from a large suburban high school in Southeastern Virginia. Each subject completed the Harvey IP Scale, Demographic Data Form, Adjective Check List (ACL) and Jones's Irrational Beliefs Test (IBT).

Separate chi-square analyses revealed that the proportion of impostors and non-impostors remained constant across both gender and grade level. The results of a one-way analysis of variance indicated that the impostor and non-impostor groups did not differ significantly on mean GPA. A stepwise discriminant analysis of the ACL Need Scales

revealed that three variables (Succorance, Deference and Intraception) combined to significantly differentiate the impostor and non-impostor groups. A stepwise discriminant analysis of the IBT scales showed that a combination of High Self-Expectation, Anxious Overconcern, Dependency and Emotional Irresponsibility significantly separated the impostor and non-impostor groups.

The null hypotheses relating to gender, grade level and GPA were supported by the data. The null hypotheses relating to the Need Scales of the ACL and the IBT scales were not supported by the data. The Adapted Child scale of the ACL was the best single predictor of the IP.



To all high-achieving students who suffer from the Impostor Phenomenon.

CHAPTER I  
INTRODUCTION

The Impostor Phenomenon (IP) has been defined by Harvey and Katz as "a psychological syndrome or pattern based upon intense, secret feelings of fraudulence in the face of achievement tasks and situations."<sup>1</sup> This syndrome has been found by researchers to be distinct from the theoretically similar constructs of self-monitoring behavior and self-esteem,<sup>2</sup> trait anxiety,<sup>3</sup> and introversion.<sup>4</sup> Those who suffer from the IP are believed to be caught in a cycle of emotions, cognitions, and actions that control their lives.

The theory behind the IP developed out of the clinical observations of two psychologists, Clance and Imes.<sup>5</sup> These researchers coined the term to describe a subjective sense of intellectual phoniness which they found to be prevalent among a select sample of high-achieving career and college women. Despite their professional status, advanced degrees and academic honors, many of these women maintained a strong belief that they were not intelligent. In addition, they believed they had deceived others into believing they were bright. Their greatest fear was that someone would discover their self-perceived lack of ability. When this discovery happened, all their past achievements, all they had worked so hard for, would be lost. Each new achievement-related task held the possibility of future failure for these women.

Clance and Imes observed that repeated successes over time did nothing to weaken the experiencing of the IP in these women or to strengthen their belief in their own ability. To cover up their self-perceived lack of ability, the women who experienced the IP evidenced some of the following behaviors: (a) they were diligent and worked hard at their achievement-related tasks, (b) they attributed their success to factors other than ability, e.g., personal charm, luck, perceptiveness, (c) they had difficulty accepting praise from others and believing praise was deserved, and (d) they were not given to taking risks. The psychologists attributed the IP to early sex-role socialization and early family dynamics. The most common symptoms observed were generalized anxiety, depression, lack of self-confidence, and frustration due to the inability to meet self-imposed standards of achievement.

Clance, in her recent publication, The Impostor Phenomenon: Overcoming the Fear that Haunts Your Success, states that "demands placed on students seem to create conditions conducive to an increase in IP behavior and feelings in the population."<sup>6</sup> Students who suffer from the IP fear they cannot keep repeating their achievements. When faced with a need to perform, e.g., write a paper, take an examination, do a class project, students who are vulnerable to the IP experience what Clance terms the "Impostor Cycle."<sup>7</sup> Basically, after an achievement-related task is assigned, these students are plagued by bad dreams, worry, self-doubt, and anxiety. These experiences result in procrastination or extreme over-preparation. Eventually, success follows and there is resultant praise from authority, temporary elation, and relief. The next time a task is assigned, the cycle is

repeated. Over a period of years, students who are victims of the IP develop the false belief that they must endure this torment to ensure success and that any attempt to break the cycle will result in certain failure. Clance further describes those who suffer from the IP as having a need to be the very best, as fearing failure, as denying their ability and discounting praise from others, and as having a fear of and guilt about success.<sup>8</sup>

This study is concerned with vulnerability to the Impostor Phenomenon (IP) in high-achieving high school students. There is a growing body of evidence that shows many high-achieving students experience the IP and that the IP is related to emotional distress which limits their achievement and detracts from the quality of life.

#### Pilot Study

A pilot study by Cromwell<sup>9</sup> indicated that high-achieving students are troubled by impostor-related feelings and behaviors as measured by the Harvey IP Scale. The major purpose of the pilot study was to determine if the IP was exhibited in high-achieving high school students as previous studies had all used college students or college graduates.

The Harvey IP Scale scores range from 0 to 84 and according to Harvey, a relatively low score indicates one may have a mild case of the IP. A score in the middle range indicates one is more troubled by "impostor" feelings. A score in the upper range of the IP is likely to cause significant anxiety and prevent the person from achieving all that they might.<sup>10</sup> Holmes, in support of Harvey, has recently found that a cutoff score of 62 could be reliably used to differentiate

clinical impostors from non-clinical impostors.<sup>11</sup>

Subjects for the pilot study were 30 honors students (14 juniors and 16 seniors) enrolled in an urban Catholic high school. For the juniors, the mean of the Harvey IP Scale was 37.57 with a standard deviation of 8.59. For seniors, the mean was 33.62 with a standard deviation of 9.08. For the total sample of 30, the mean and standard deviation were 35.43 and 8.79 respectively.

The results indicated that the total sample mean of 35.43 was most similar to Harvey's collegiate honors students whose IP Scale mean was 34.56.<sup>12</sup> The results also showed that juniors experienced the IP to a significantly greater extent than the seniors ( $p < .05$ ). This result supported Harvey's earlier finding that as years in an academic program increase, the IP decreases.<sup>13</sup> No subject in the pilot study experienced a clinical level of the IP. However, 36.6 percent of the subjects scored 40 or above on the Harvey IP Scale.

The items on the Harvey IP Scale most frequently endorsed by the subjects of the pilot study were those included in Factor 1 of the scale labelled "true impostor."<sup>14</sup> The items were feelings of being discovered for who one really is, of being a "phony," of concealing secrets about the self, and of gaining achievement by luck or accident. The items of "unworthiness" and "inadequacy" were not significant for this group.

#### Research Questions

The results of the pilot study confirmed the existence of the Impostor Phenomenon in high school students. However, many questions remain unanswered concerning the experiencing of the IP on the

secondary educational level. Would the results have been different if testing had taken place in the fall rather than the spring when juniors were faced with the multiple tasks of final examinations, SATs and college applications? What is the relationship between grade point average (GPA) and the IP? Can impostors be differentiated from non-impostors on the basis of personality characteristics? Finally, what is the cognitive set that allows impostors to deny or disparage their intelligence despite objective evidence to the contrary?

Ellis has outlined a set of beliefs postulated to be the most common source of emotional distress.<sup>15</sup> Many of these beliefs are associated with Clance and Imes's original conceptualization of the IP, specifically beliefs concerning high self-expectations, anxious overconcern with future failure, problem avoidance, and perfectionism. Zwemer and Deffenbacher found that anxious overconcern, problem avoidance, frustration reactivity, and personal perfection were significant regression factors for the full range of generalized anxiety--the major symptom of the IP.<sup>16</sup>

Specific irrational beliefs have also been associated with another symptom of the IP, depression. Nelson found that a need to excel in all endeavors, obsessive worry about possible future misfortunes, and helplessness for change were the strongest correlates of depression.<sup>17</sup>

These beliefs have also been positively associated with psychological distress,<sup>18</sup> low self-esteem,<sup>19</sup> deficits in assertiveness,<sup>20</sup> Type A behavior,<sup>21</sup> and negatively with emotional well-being.<sup>22</sup> The identification of the beliefs that in theory support and maintain

the experiencing of the IP would be valuable in that they offer specific targets for intervention to alleviate impostor symptoms.

#### Purpose

The purpose of this investigation was to determine if impostors could be differentiated from non-impostors on the basis of selected demographic, personality, and cognitive variables predicated on the IP literature. The independent variable of interest was the IP. The dependent variables selected for study were gender, grade level, GPA, personality characteristics, and irrational beliefs.

#### Significance

This study was concerned with vulnerability to the IP in high-achieving high school students. Although both Harvey and Clance, the two major authors, assume that impostors and non-impostors differ in personality characteristics and cognitive beliefs, these assumptions have not been tested empirically. By identifying the demographic, personality, and cognitive variables that differentiate impostors from non-impostors, the study contributes to the understanding of the IP construct and may provide a basis for identification and intervention.

The investigation also advances the research by expanding the study of the IP on the secondary educational level. In addition, there has been a tendency of past researchers to find low levels of the IP in their subject populations and then to use the median-split procedure to differentiate impostors from non-impostors. For purposes of this study, the impostor level was set a priori at a score of 40 or above on the Harvey IP Scale.

This investigation may also lead to hypotheses concerning targets for intervention to facilitate students in decreasing the strength of impostor-related symptoms and increasing their feelings of self-confidence. Finally, the study of high-achieving students is timely. The rising suicide rate among honors students is drawing national attention to this population.<sup>23</sup> Delisle in his review of the research associated with honors students and suicide stressed some factors similar to Clance and Imes's original description of IP victims. For example, the honors student's perception of failure may be far different from other students; a "B" may be equivalent to failure in a student whose standard of success is perfection. The expectations of honors students by parents, teachers, and society that they are identified as the "future leaders of the next generation" may seem unattainable to these students.

#### Definition of Terms

To clarify the meaning of variables under study, the following definitions are used:

1. Impostor phenomenon: "A psychological syndrome or pattern based on intense secret feelings of fraudulence in the face of achievement tasks and situations."<sup>24</sup>
2. High-achieving student: A student who is selected for honors English placement on the basis of ability, standardized test scores, and teacher recommendation.
3. Impostor: A student who scores 40 or above on the Harvey IP Scale.
4. Personality characteristics: "Salient nuances" and "major



factors" that can be used to distinguish one person from another.<sup>25</sup>

5. Irrational beliefs: Beliefs which are assumed to be true but are in fact illogical and incompatible with adjustive behavior.<sup>26</sup>

### Hypotheses

The purpose of this research was to determine the demographic, personality, and cognitive variables that differentiate impostors from non-impostors in English honors students on the secondary educational level. Based upon the writings of both Harvey and Clance, the review of the literature, and the investigator's pilot study, the following hypotheses were investigated:

Hypothesis #1. There is no significant difference in the proportion of males and females classified as impostors or non-impostors.

Hypothesis #2. There is no significant difference in the proportion of impostors and non-impostors across grade level.

Hypothesis #3. There is no significant difference between the mean grade point average (GPA) of impostors and non-impostors.

Hypothesis #4. There is no significant difference between impostors and non-impostors on the Need Scales of the Adjective Check List.

Hypothesis #5. There is no significant difference between impostors and non-impostors on the Irrational Beliefs Test.

### Rationale

This study was designed as an ex post facto investigation of the impostor phenomenon in high-achieving students on the secondary

educational level. The purpose of the study was to determine if impostors could be differentiated from non-impostors on the basis of selected demographic, personality, and cognitive variables. Subjects for the investigation were 105 students enrolled in honors English classes at a suburban high school in Southeastern Virginia. A Demographic Data Form was used to collect data on the subject's gender, grade level, and GPA. The Adjective Check List was used to measure the subject's personality characteristics. Irrational beliefs were measured by the Irrational Beliefs Test. The Harvey IP Scale was used to measure the Impostor Phenomenon. A cutoff score of 40 was selected for this study based on Harvey's contention that a relatively low score on her IP Scale, which ranges from 0 to 84, indicates one has a mild case of the IP. A score in the middle range indicates one is more troubled by "impostor" feelings. A score in the upper range indicates the IP is causing significant anxiety and quite likely prevents one from accomplishing all that one might.<sup>27</sup>

Gender was selected for testing based on the assumption that due to sex-role socialization and early family dynamics, females are more likely to be impostors than males. Grade level was included as a variable based on the results of the investigator's pilot study that showed juniors were more likely to be impostors than seniors. GPA was selected for testing because it was assumed that those with the highest GPAs receive more public recognition, have more to lose in the event of failure, and thus would be more likely to be impostors.

Personality was selected for study because the literature related to the IP and personality has shown mixed results. Research by

Lawler, using the Myers-Briggs Type Indicator (MBTI) as her instrument, found that impostors were more likely to be introverts than extraverts.<sup>28</sup> Her finding was supported by Holmes who found a correlation of  $-.44$  between the Extraversion-Introversion Scale of the MBTI and the Harvey IP Scale.<sup>29</sup> In contrast, Clance and Imes in their original formulation of the IP observed that impostors did not fall into any one diagnostic category.<sup>30</sup> Recently, Harvey wrote that impostors cannot be characterized by any one personality type.<sup>31</sup> Flewelling suggested that impostors be viewed as suffering from an introverted personality style and "a particularly heavy-handed super-ego."<sup>32</sup> Further investigation of the personality characteristics of impostors contributes to the understanding of the IP construct.

Irrational beliefs were selected for testing because the cognitive set that allows impostors to deny or disparage their intelligence has not been studied empirically. The identification of the irrational beliefs that, in theory, support and maintain the experiencing of the IP may offer specific targets for intervention to decrease impostor-related symptoms and increase feelings of self-confidence.

#### Assumptions

At least two assumptions are important to this study. First, although it was assumed that all subjects completed the instruments honestly and presented their perceptions accurately, no absolute control was possible. Second, it was also assumed, but not actually verified, that subjects were relatively unfamiliar with the IP construct.

### Limitations

The study was limited to one middle to upper-middle class high school and the sample selected may not be representative of honors English students in rural or inner city schools.

### Summary

The purpose of this study was to determine if impostors could be differentiated from non-impostors on the basis of selected demographic, personality, and cognitive variables. This chapter included the background of the problem area, the results of a pilot study which investigated the incidence and intensity of the IP in the population of interest, the research questions, along with the significance, definitions, assumptions, limitations and hypotheses of the study. The following chapter, Chapter II, focuses upon the IP as a credible psychological construct and the Rational Emotive Theory of Emotion as a basis for exploring the emotional distress experienced by victims of the IP.

## ENDNOTES

<sup>1</sup>Joan C. Harvey with Cynthia Katz, If I'm So Successful, Why Do I Feel Like a Fake? (New York: Random House, Inc., 1985), 2.

<sup>2</sup>Joan C. Harvey, The Impostor Phenomenon and Achievement: A Failure to Internalize Success (Ann Arbor, MI: University Microfilm International, 1981), pub no. 8210500, 47-57.

<sup>3</sup>Mary E. Topping, The Impostor Phenomenon: A Study of Its Construct and Incidence in University Faculty Members (Ann Arbor, MI: University Microfilm International, 1983), pub. no. 8316534, 90-91.

<sup>4</sup>Sarah W. Holmes, "The Impostor Phenomenon: A Validity Study of Clance's IP Scale," (M.A. thesis, Georgia State University, 1986), 40-41.

<sup>5</sup>Pauline R. Clance and Suzanne A. Imes, "The Impostor Phenomenon in High Achieving Women: Dynamics and Therapeutic Interventions," Psychotherapy: Theory, Research, and Practice 15, no. 3 (Fall 1978): 241-47.

<sup>6</sup>Pauline R. Clance, The Impostor Phenomenon: Overcoming the Fear that Haunts Your Success (Atlanta: Peachtree Publications, Ltd., 1985), 110.

<sup>7</sup>Ibid.

<sup>8</sup>Clance, The Impostor Phenomenon, part two: "The Personality Behind the Mask," 49-113.

<sup>9</sup>Barbara H. Cromwell, "The Impostor Phenomenon in High-Achieving High School Students," Paper presented to the Department of Education, Old Dominion University, Norfolk, VA (1986).

<sup>10</sup>Harvey with Katz, If I'm So Successful, 113-14.

<sup>11</sup>Holmes, "The Impostor Phenomenon," 44.

<sup>12</sup>Harvey, The Impostor Phenomenon and Achievement, 39.

<sup>13</sup>Ibid., 112-13.

<sup>14</sup>Patrick W. Edwards et al., "A Validation Study of the Harvey Impostor Phenomenon Scale," Paper presented to the Department of Psychology, University of Georgia, Athens (1983).

<sup>15</sup>Albert Ellis, Reason and Emotion in Psychotherapy (New York: Lyle Stuart, 1962; repr., Secaucus, NJ: Lyle Stuart, Inc., 1973), 60-68.

<sup>16</sup>Weare A. Zwemer and Jerry L. Deffenbacher, "Irrational Beliefs, Anger, and Anxiety," Journal of Counseling Psychology 31, no. 3 (July 1984): 391-93.

<sup>17</sup>Eric R. Nelson, "Irrational Beliefs and Depression," Journal of Consulting and Clinical Psychology 45, no. 6 (December 1977): 1190-91.

<sup>18</sup>Daren A. LaPointe and Cathy J. Crandell, "Relationship of Irrational Beliefs to Self-Reported Depression," Cognitive Therapy and Research 4, no. 2 (June 1980): 247-50.

<sup>19</sup>Michael J. Daley and Robert L. Burton, "Self-Esteem and Irrational Beliefs: An Exploratory Investigation with Implications for Counseling," Journal of Counseling Psychology 30, no. 3 (July 1983): 361-66.

<sup>20</sup>Jeffery M. Lohr and Dennis Bonge, "Relationships Between Assertiveness and a Factorially Validated Measure of Irrational Beliefs," Cognitive Therapy and Research 6, no. 2 (September 1982): 353-56.

<sup>21</sup>Timothy W. Smith and Sharon S. Brehm, "Cognitive Correlates of the Type A Coronary-Prone Behavior Pattern," Motivation and Emotion 5, no. 3 (September 1981): 215-23.

<sup>22</sup>Frank W. Wicker, Frank C. Richardson, and Frank B. Lambert, "Differential Correlates of Irrational Belief," Journal of Personality Assessment 49, no. 2 (April 1985): 161-67.

<sup>23</sup>James R. Delisle, "Death with Honors: Suicide Among Gifted Adolescents," Journal of Counseling and Development 64, no. 9 (May 1986): 558-60.

<sup>24</sup>Harvey with Katz, If I'm So Successful, 2.

<sup>25</sup>Harrison G. Gough and Alfred B. Heilbrun, The Adjective Check List Manual, 1980 ed., (Palo Alto, CA: Consulting Psychologists Press, 1980), 1.

<sup>26</sup>Jones's Irrational Beliefs Handbook (Wichita, KS: Test Systems International, Ltd., 1985), 2.

<sup>27</sup>Norma K. Lawler, The Impostor Phenomenon in High Achieving Persons and Jungian Personality Variables (Ann Arbor, MI: University Microfilm International, 1981), pub. no. 8424597, 111.

<sup>28</sup>*Ibid.*, 113-14.

<sup>29</sup>Holmes, "The Impostor Phenomenon," 32.

<sup>30</sup>Clance and Imes, "The Impostor Phenomenon in High Achieving Women," 242.

<sup>31</sup>Harvey with Katz, If I'm So Successful, 35.

<sup>32</sup>Ann L. Flewelling, "The Impostor Phenomenon in Individuals Succeeding in Self-Perceived Atypical Professions: The Effects of Mentoring and Longevity," (M.A. thesis, Georgia State University, 1985), 43.

CHAPTER II  
REVIEW OF THE LITERATURE

The purpose of Chapter II is to present the empirical research that forms the basis for the current study. This review is divided into two sections. The first section focuses on the research surrounding the Imposter Phenomenon (IP) as it has developed from clinical observations to a hypothesized, measurable psychological construct.

The second section of the review focuses on irrational beliefs as they are related to the emotional distress experienced by those who are vulnerable to the IP, i.e., individuals who doubt their intellectual abilities and competence despite objective evidence to the contrary. The irrational beliefs that theoretically support and maintain the experiencing of the IP in high-achieving populations have yet to be explored.

Impostor Phenomenon

The psychological construct called the Impostor Phenomenon (IP) developed out of the clinical observations of two psychologists, Clance and Imes.<sup>1</sup> They used the term to describe a subjective experience of intellectual phoniness which they found to be both prevalent and intense among a select sample of 150 high-achieving women. Approximately one-third of the women were recognized professionals in various fields and two-thirds were students recognized for their academic



excellence. Subjects were observed in both individual therapy and interactional groups.

Despite advanced degrees, professional status, and scholastic honors, many of these women maintained a strong belief that they were not as intelligent as their peers. They imagined that their high achievement was the result of some kind of luck or mistake and that their true abilities had been overestimated by others. As a result, they lived in constant fear of being discovered as intellectual "phonies" or "fakes."

Clance and Imes stressed that the experiencing of the IP was a well-guarded secret--one that was not immediately revealed in therapy. They also observed that the experiencing of the IP was persistent, chronic, and self-perpetuating, i.e., repeated successes over time were not sufficient to weaken the strength of IP symptoms. The symptoms most frequently observed were "generalized anxiety, lack of self-confidence, depression, and frustration related to their inability to meet self-imposed standards of excellence."<sup>2</sup>

The psychologists discovered some behaviors which seemed to strengthen and maintain the IP in these women. Those who suffered from the IP worked very hard at their achievement endeavors to prevent the discovery of their self-perceived lack of ability. They were not given to taking risks, such as presenting their own opinions and ideas to those in authority. They attributed their success to factors other than intelligence, e.g., good looks, sociability, or hard work. In addition, they had difficulty accepting praise and in believing that praise was deserved.

The authors noted that early family dynamics and societal sex-role expectations may have contributed to symptom formation in these high-achieving women. They hypothesized that women are more vulnerable than men because girls grow up learning they are less intelligent and competent than boys. Later they use this information to support their self-doubts regarding their intelligence and attribute their achievements to factors other than ability.

Along with sex-role socialization, Clance and Imes described two styles of family dynamics which contributed to the development of the IP in these women. In the first style another family member was labelled the intelligent one while the victim was labelled the socially adept or sensitive one. The victim believed the family myth and attributed her academic achievements to her sociability or sensitivity.

In the second style, the victim was labelled by the family as superior in every way; there was nothing she could not be or do easily. When the victim learned that she often made mistakes and had to work hard to achieve academically, she learned to doubt her intelligence and her abilities.

Since Clance and Imes's original conceptualization of the IP, researchers have sought to explore the experiencing of the IP in various high-achieving populations. The primary direction of the research has been to evaluate the soundness of the IP as a distinct psychological construct.

Based upon Clance and Imes's contention that sex-role expectations play a role in the experiencing of the IP, Imes predicted that high-achieving men would attribute their achievements to ability and

high-achieving women would attribute their achievements to the impostor-related variables of effort, luck, sensitivity to expectations, likableness, and intellectual image. Imes hypothesized that those who had internalized feminine personality characteristics, i.e., selflessness, concern for others, and the desire to be with others, would attribute their success to the impostor-related variables. She further hypothesized that women in a sex-role congruent field (nursing) would have lower scores on the attributions to impostor-related factors than women in sex-role incongruent fields (all other departments).<sup>3</sup>

Imes selected 67 male and 83 female university faculty members as subjects. To qualify as high achievers, subjects were required to hold a terminal degree in their field and to hold the rank of assistant professor or above.

To measure the IP, Imes designed an Attribution Questionnaire which listed ten achievements common to university faculty members. For each achievement, subjects were asked to rate the degree to which ability or the impostor-related factors contributed to their success. Imes used the short form of Spence, Helmreich and Stapp's Personal Attributes Questionnaire (PAQ) to divide subjects into the four categories of Feminine, Masculine, Androgynous, and Undifferentiated.

Contrary to her expectations, Imes found no significant differences between males and females in attributional style. They both believed that ability and effort were equally the major causes of their accomplishments. Feminine high-achievers did not differ significantly from Androgynous and Masculine groups in their attribution of success to ability. She also did not find a significant difference in

attributional style between women in the sex-role congruent field (nursing faculty) and those in sex-role incongruent fields (all other departments). She did find that the 24 percent of her sample which fell into the Undifferentiated category was the group most likely to attribute their accomplishments to the impostor-related variables.<sup>4</sup>

Her results suggest that those who lack a strong sense of possessing either positively valued Masculine or Feminine traits are the group most likely to experience the IP. The results did not support the original formulation of the IP which suggested that those who have internalized feminine personality characteristics are more likely to experience the emotional distress associated with the IP.

Because high-achieving black women are seriously under-represented in scientific fields in the United States, Stahl and her colleagues sought to assess the personal and internal characteristics which operate to influence persistence and achievement by young black women interested in science.<sup>5</sup> Based upon the original conceptualization of the IP, the researchers hypothesized that black high school women with demonstrated high academic achievement would deny their high ability and intelligence and attribute their success to non-intellectual characteristics such as hard work or luck.

Initially, the researchers designed a 56 item questionnaire composed of scaled, closed, and open-ended questions to explore the experiencing of the IP in high school students. From a group of over 700 male and female high school seniors, the researchers selected a sample of 41 black females with a mean GPA of 3.0 who intended to major in one of the sciences.

Using this sample, the researchers found that 28 percent believed that their achievement was due to luck 50 to 75 percent of the time. Compared to other students with similar GPAs and major, 24 percent of the subjects believed that they worked harder and longer on their studies. Further, 55 percent did not attribute their achievements primarily to intelligence. Hard work, perseverance, and determination were given as attributions for their achievements. Seventy-nine percent reported that at times teachers overestimated their intellectual abilities and 68 percent believed that their parents overestimated their abilities. When asked directly, "How bright are you?" compared to members of their own and opposite sex and other students with the same major and GPA, 95 percent said they were the same or brighter. However, the strength of the response weakened as it moved from opposite sex to same sex to similar GPA. Only 43 percent believed they were brighter than students in the same major having a similar GPA.

In an earlier pilot study of black female students in their first year of college, Stahl found that 93 percent attributed their success to factors other than intelligence. She wondered why this was so much higher than the 55 percent found among the high school seniors. She posited that moving from the "top position" of high school senior into the "bottom position" of college freshman might cause the experiencing of the IP to increase.

The researchers concluded that ways must be found to convince students that they are intelligent so they will be more likely to complete their career goals in science. Most important, their results suggest that new situations may cause the experiencing of the IP to

increase and that the IP does not necessarily diminish as the student grows older.

Using the work of the earlier researchers as a basis, Harvey added substantially to the research by developing an instrument to measure the IP. Using her newly developed instrument, she examined the discriminant validity of the IP construct and identified some situations in which the intensity of the IP was likely to increase.<sup>6</sup>

Harvey selected 74 male and female graduate students and 72 undergraduate students as her sample. The undergraduates, primarily juniors and seniors majoring in biology and psychology, were further divided into 36 honors students and 36 non-honors students in those majors.

Since objective evidence of high achievement was posited as a necessary condition for the occurrence of the IP, Harvey tested the assumption that the mean IP intensity should be higher in a group of honors students than in a group of non-honors students. The Harvey IP Scale mean for the honors students was 34.56 and the SD was 9.17. The mean and standard deviation for the non-honors students were 29.33 and 11.13 respectively. The results of a one-tailed  $t$  test indicated a significant difference ( $p < .05$ ).<sup>7</sup>

She then tested the assumption that those honors students who scored high on the Harvey IP Scale would attribute their academic achievement to their interpersonal assets, i.e., looks, charm, or mentor-pleasing behavior to a greater extent than the honors students who scored low on the IP Scale. By using a median-split procedure to divide the honors students into high and low groups on the IP, Harvey

found that although the high and low groups did not differ on the basis of ability or effort attribution, they could be differentiated by attribution for success to interpersonal assets ( $p < .05$ ).<sup>8</sup>

The discriminant validity of the IP as a distinct measurable construct, from the theoretically similar constructs of high self-monitoring and self-esteem, was established. Harvey found that six percent of the variance in the IP construct could be accounted for by self-monitoring behavior<sup>9</sup> and nine percent of the variance in the IP could be accounted for by low self-esteem.<sup>10</sup> These results would seem to indicate that the IP is a separate construct from both self-monitoring and self-esteem.

Another purpose of Harvey's investigation was to determine if new roles and situations might influence the intensity of the IP. She predicted that first-year graduate students would be more vulnerable to experiencing the IP than either advanced graduate students or senior honors students. The mean IP intensity, as measured by the Harvey IP Scale, was 42.17 for first year graduates, 30.82 for second year, 36.25 for third year, and 35.86 for fourth year graduates. The mean for the senior honors students was 33.77.<sup>11</sup> These results would seem to support Harvey's prediction.

The results suggest that intervention methods may be effective in alleviating IP symptoms if they are instituted in situations where students are most vulnerable, such as entry into graduate school. The results also support Stahl's finding that those in new roles are more likely to experience the emotional distress associated with the IP than those for whom the roles are most familiar.

To further explore the IP, Harvey addressed the basic issues of gender and race differences in incidences of IP. She collected data from 30 "average achievers," i.e., high school teachers, social workers, counselors, and middle-management administrators. Her subjects had earned bachelor's degrees or were enrolled part-time in undergraduate programs. A two-factor analysis of variance of IP scores revealed no significant differences for either race or gender, and no significant interaction effects. However, by using the median-split procedure to divide her subjects into high and low groups on the IP, she found that if subjects believed they were in a sex-role incongruent career, or if they had surpassed their family of origin in terms of academic achievement, they were more vulnerable to experiencing the IP.

The construct validity of the IP Scale was demonstrated by showing that those who receive public recognition for achievement are more likely to experience the IP than those who do not receive such recognition. Harvey supported the discriminate validity of the IP Scale by providing evidence that it can be differentiated from both self-monitoring and self-esteem. Her results suggest that vulnerability to the IP decreases as years in a program of study increase, and that it varies as a function of different situations. Finally, being in a gender-atypical career and surpassing one's family of origin in educational attainment are two situations which may increase vulnerability to the IP.

In 1982, Hirschfeld explored the IP outside academia.<sup>12</sup> The purpose of her study was to investigate the antecedent variables which could be used to predict vulnerability to the IP in high-achieving



career women. The antecedent variables selected for her study were the discrepancy between the real and ideal characteristics necessary for career success, parental career orientation, tolerance for ambiguity, and attributional style.

Hirschfeld selected as subjects 80 successful career women (psychologists, MDs, dentists) who earned on the average \$38,000 a year. They were white, middle to upper class, with a mean age of 36.2 years. Sixty-three percent were married and 46 percent had at least one child. Subjects were acquaintances of the researcher or of her friends, or were located through professional organizations.

To measure the IP, she used the Modified Expressed Acceptance of Self Scale (MEASS). The instrument was designed to tap self-acceptance in a career context. Hirschfeld based her rationale for using the MEASS to measure the IP on the original theory of the IP, which stated that those who are vulnerable to the IP do not see themselves as successful despite objective evidence to the contrary. Hirschfeld used Factor 1 of the Jackson Personality Inventory to measure the discrepancy between each woman's self-perception of her real characteristics and her perception of the characteristics an ideal person in her career field would possess. Those who score high on Factor 1 are described as self-confident, accepting of diversity, independent, creative, risk-taking, energetic, enthusiastic, self-sufficient, and self-assured. Hirschfeld designed a Likert-type scale to measure the women's "retrospective" perceptions of their parents' attitudes and expectations regarding the women's nontraditional career goals. These attitudes ranged from a woman's perception that her

parents expected that she have a full-time commitment to marriage and family to her perception that her parents expected her to have a full-time career commitment. The Intolerance of Ambiguity Scale was used to measure each woman's tendency to perceive ambiguous situations as a source of threat. A Career Success Attribution Measure was used to determine the importance a woman attributed to internal/external and permanent/temporary causes for her career success. Subjects were also asked to provide demographic data pertaining to educational background, work history, and current employment.

Hirschfeld found that the IP, as measured by the MEASS, was most related to the discrepancy between the woman's self-perception of her real characteristics and the ideal characteristics a woman in her field would possess. In a multiple regression analysis, this variable accounted for 32 percent of the variance in the IP. The woman's retrospective perception of her parents' career orientation accounted for 11 percent of the variance, and tolerance for ambiguity explained less than 1 percent of the variance.<sup>13</sup> In a second, separate, multiple regression analysis, she found that attribution of causality for career success explained 16 percent of the variance in the IP.<sup>14</sup>

By using an extreme group design (bottom third of the MEASS), Hirschfeld found that subjects who did not experience the IP to a great extent attributed their success first to the internal trait of ability, second to the internal/temporary trait of effort, and lastly to the external temporary factor of luck. Hirschfeld stressed that the women in her study did not experience the IP to a great extent. The mean she

obtained on the MEASS was 1.89 on a five-point rating scale, where 5.0 reflected the characteristics of the IP.<sup>15</sup>

Hirschfeld contributed to the construct validity of the IP by showing that those who are vulnerable are not likely to see themselves as possessing the characteristics necessary for career success and do not perceive their parents as having socialized them to pursue non-traditional careers nor to possess non-traditional masculine traits. In addition, they were not likely to attribute their career success to ability. Hirschfeld concluded that impostors had not "identified and internalized the parts of themselves that were responsible for their career success."<sup>16</sup>

With the Harvey IP Scale available to measure the IP, Topping examined the relationships between the IP and sex, sex-role behavior, achievement level, length of time achievement level held, attributional style, self-monitoring behavior, self-esteem, career atypicality, and trait anxiety.<sup>17</sup> With the addition of the State-trait Personality Inventory (trait only) developed by Spielberger et al., Topping's newly developed Sex-Role Behavior Index, and her Demographic Data Form, Topping used the same instruments Harvey used in her 1981 research. Subjects for her investigation were 128 male (69 percent return) and 157 female (83 percent return) university faculty members.<sup>18</sup>

Topping found that the males had a significantly higher Harvey IP Scale score than females. The males had a mean of 27.45 with a SD of 10.50, while the females had a mean of 24.56 with a SD of 11.11.<sup>19</sup> Although she expected that males and females classified as Feminine by her Sex-Role Behavior Index would report the IP to a higher degree than

those classified as Androgynous, Masculine, or Undifferentiated, her results failed to support this expectation. Contrary to Imes, her subjects did not fall evenly across the four sex-role categories. The Harvey IP Scale means of the four groups were: Androgynous (N = 4M, 4F) 24.75, Masculine (N = 80M, 1F) 26.44, Feminine (N = 1M, 71F) 24.22, and Undifferentiated (N = 7M, 4F) 31.79.<sup>20</sup> Because there were only 14 nonwhite and Hispanic faculty members responding, Topping did not test the relationship between the IP and race. Contrary to Harvey she did not find that those who reported a relatively high level of the IP were likely to attribute their success to their interpersonal assets. Also, the expected positive relationships between the IP and career atypicality in relation to sex, age and personal appearance were not found.

In support of Clance and Imes's contention that generalized anxiety is one of the symptoms of the IP, Topping found a tau of .37 for males and .45 for females.<sup>21</sup> More important, for purposes of research and intervention, the IP can be differentiated from trait anxiety.

Topping did find a relationship between the IP and faculty rank, along with a sex difference in relation to position. Full and associate male professors experienced the IP to a greater degree than full and associate female professors. For both sexes, as faculty rank increased from assistant to full professor, the experiencing of the IP decreased. Both Harvey and Stahl also found that those in the lowest rank were more vulnerable to the IP.

To further evaluate the discriminant validity of the IP, Topping examined the relationships between the IP and the theoretically

similar constructs of self-monitoring and self-esteem. By pooling scores across sex, Topping found a negative relationship between self-monitoring and the IP ( $\tau = -.18$ ) and a negative relationship between the IP and self-esteem ( $\tau = -.41$ ).<sup>22</sup> These findings are consistent with those found by Harvey.

Topping recommended further study of the IP in relation to other constructs and its incidence in other populations. She further stressed the need to study the IP in relation to both state and trait anxiety.

In 1984, Edwards et al. examined the construct validity of the Harvey IP Scale by way of factor analysis.<sup>23</sup> Subjects for their investigation were 26 males and 78 females who were either completing their post-graduate training or who had already attained advanced degrees (MS, Ph.D.). They were recruited from several San Francisco Bay Area colleges and universities, a regional VA medical center, and from the private practice community. No sex differences were found in IP scores. The mean Harvey IP Scale score across sexes was 44.02 with a SD of 8.34, and a range from 24 to 67.

Using principal axis factoring, Edwards and his colleagues found three factors which accounted for 54.6 percent of the variance. The first factor, labeled "true impostor" accounted for 32.2 percent of the variance. The six items on the IP Scale that loaded on this factor pertained to subjects' feelings of being discovered for what they really are, of being a "phony," of concealing secrets, and of achieving by luck or accident. The second factor was labeled "unworthiness," and accounted for 12.7 percent of the variance. The "unworthiness" factor

was composed of the items which related to the belief that achievements are not due to true ability, feelings of not deserving honors received, and difficulty accepting compliments. The third factor labeled "inadequacy" accounted for 9.8 percent of the variance and was composed of items pertaining to impression management, inadequacy of accomplishments, and lack of confidence in the future. No significant differences between the sexes emerged on any of the factors.

The investigators then computed Cronbach's alphas for the internal consistency of the full scale and the three derived factors. The alpha score for the full scale was .34. The alpha scores for the "true impostor," "unworthiness," and "inadequacy" factors were .807, .706, and .650 respectively. The results of the factor analysis provided support for the validity of the factor-analyzed Harvey IP Scale as a measure of the IP and thereby support the general construct validity for the IP.

In 1984, Lawler examined the IP from the viewpoint of Jungian personality theory.<sup>24</sup> Through various sampling procedures, 335 sets of questionnaires were distributed. Of the 335 students contacted, 130 (81 women and 49 men) responded for a response rate of 38.8 percent. The mean age of the subjects was 32.7 years and more than half were working toward degrees in psychology.

She used the Harvey IP Scale to determine vulnerability to the impostor phenomenon. The Myers-Briggs Type Inventory (MBTI) was used to determine psychological type according to Jungian theory. The Concentric Circle Method (CCM), a projective technique, was used to determine subjects' self-perception of layers of the self. Lawler also

designed a Personal Data Questionnaire (PDQ) to elicit demographic information and self-perceived atypicality within the family of origin.

The mean Harvey IP Scale score for the sample was 31.46 with a SD of 12.25. The scores ranged from 7.00 to 62.00.<sup>25</sup> The females had a mean of 31.90 with a SD of 12.95 and the males had a mean of 31.00 with a SD of 11.11.<sup>26</sup>

Using the MBTI (Form G) as her instrument, Lawler found that those who preferred an introverted attitude toward the world were more vulnerable to experiencing the IP than those who preferred an extraverted attitude. The mean Harvey IP Scale score for introversion was 33.97 and for extraversion 28.75 ( $p < .004$ ).<sup>27</sup>

Lawler hypothesized that introverts would be more vulnerable to experiencing the IP than extraverts because their major strengths (inwardly focused attention and depth of concentration) are hidden. Therefore, their abilities may be underestimated by self and others. According to psychological type theory, those who fall into the introversion category tend to be reticent, reserved, and cautious and describe themselves as shy, apprehensive, anxious and tense.<sup>28</sup>

Lawler used an extreme group design (highest and lowest 20 percent on the Harvey IP Scale) to determine differences between impostors and non-impostors on the projection instrument, the CCM. Lawler hypothesized that high impostors would tend to draw larger outermost circles relative to their innermost circles because they tend to emphasize that part of themselves which they present to the world and deemphasize the part that they shield from the world. She also hypothesized that impostors would place domesticated, non-aggressive

animals on the outermost circle and wild aggressive animals on the innermost circle. Her results failed to support her hypotheses.<sup>29</sup>

In relation to atypicality with their families of origin, Lawler hypothesized that impostors would tend to see themselves as atypically intelligent, hard working, charming, perceptive, and/or lucky compared to other family members. Further, that they would have surpassed their parents and siblings in educational attainment. Contrary to Harvey's 1981 results, Lawler's results suggested a connection, but the relationship was not significant.<sup>30</sup> In a post hoc analysis, the IP Scale score of subjects who grew up with both natural parents present was compared with the mean IP Scale score of students who grew up with one or both natural parents absent and no significant differences were found.<sup>31</sup> The quality of the parenting process was not tested although this could be related to the experiencing of the IP.

Since the difference between the mean IP Scale scores of extraverts and introverts was statistically significant, Lawler performed post hoc analyses to determine if any of the other dimensions (sensing - intuiting, thinking - feeling, and judging - perceiving) interacted with the attitudes (extraversion - introversion). Lawler found that a combination of preferences for focusing attention outwardly, making judgments based on logic, and conducting one's life in an organized manner was related to low susceptibility to the IP. In contrast, a combination of preferences for focusing attention inwardly, making judgments based on values and beliefs, and conducting one's life in a spontaneous manner was related to a high vulnerability to the IP.<sup>32</sup>



Because previous research regarding atypicality and the IP showed mixed results, Grays designed a study to determine if atypicality of race, projected educational attainment, socioeconomic status (SES), and career choice would influence vulnerability to the IP.<sup>33</sup> Subjects for her study were 232 female undergraduate students in psychology, religion and sociology classes. Of the 232 subjects, 105 were students at a predominantly white private college, and 127 were students at a private black college. The mean age of the subjects was 19.93, their mean high school GPA was 3.40, and their mean college GPA was 2.76. More than half the subjects reported pursuing non-traditional majors. They rated their SES as low (15 percent), middle (51 percent) and upper (33 percent). Lower SES was defined by Grays as Lower and Lower-Middle class combined. Upper SES was defined as Upper-Middle and Upper class combined. Characteristically, Grays found as did Lawler that her high-achieving subjects came from academically high-achieving families. The mean Harvey IP Scale score for the 232 subjects was 29.69, with a SD of 9.85. The scores ranged from 9 to 60. The mean for the black students at the black college was 29.87, with a SD of 8.69; for the white students at the white college 28.53, with a SD of 10.07; and for the black students at the white college 32.88, with a SD of 10.98.<sup>34</sup>

Grays hypothesized that the black students at the predominantly white college would have a significantly higher IP Scale scores than either the black students at the black college or the white students at the white college. She hypothesized students, who potentially would exceed one or both parents' educational level by one academic degree,

would have higher IP Scale scores than those who would not exceed their parents' educational level. She further predicted that students at both colleges who were in the lower SES class would have higher IP Scale scores than students at both colleges who were in the Upper SES. She also predicted that students pursuing careers atypical for their gender would be more vulnerable to experiencing the IP than students not pursuing gender-atypical careers.

Grays's results did not confirm the hypotheses. Atypicality of race, projected educational attainment, SES, and nontraditional career choices were not significantly related to vulnerability to the IP. Grays suggested that future research regarding atypicality along the dimensions studied might concentrate on clinical subjects where the incidence of the IP would be higher and the associated feelings more likely to be revealed. She also suggested that research at a large state university might reveal a greater number of subjects who perceive themselves as atypical along one or more of the dimensions studied and that older, returning women may be particularly vulnerable to the IP.

In 1985, Flewelling studied the IP outside academia. Her purpose was to examine the relationship between the IP and the effects of mentoring and career longevity in individuals succeeding in gender-atypical careers.<sup>35</sup> She recruited her subjects from the fields of law, medicine, social work, and nursing. Her final sample included 52 females and 47 males. The mean age of the females was 36.8 and the mean age of the males was 38.8 with the mean career longevity for all subjects 10.4 years. The mean Harvey IP Scale score was 28.31. After examining a correlation matrix of the 14 items on the Harvey IP Scale

and the IP Scale total score, three questions having low correlations with the total IP score were deleted before final scoring of the IP Scale.<sup>36</sup> Contrary to Harvey's 1981 finding that self-perceived gender-atypical career and the IP were related, Flewelling found no correlation between the experiencing of the IP and self-perceived gender-atypical career. Contrary to her hypothesis, Flewelling found that IP Scale scores were higher for subjects whose role models/mentors were of the same sex as the subject and that those with lower IP Scale scores tended to have had an opposite sex mentor, or no mentor at all. She also found as did Harvey in 1981 and Topping in 1983 that the experience of the IP varied significantly and negatively with longevity, i.e., the longer one had been functioning in one's career, the less likely one was to experience the IP.

To explain the results of her study, Flewelling suggested that higher IP Scale scores found in academically-affiliated subjects could be due to a greater concentration of introspective, reflective, and idealistic types in academic settings. In contrast, her subjects from the professional fields of medicine, law, social work, and nursing would seem to be more extraverted because of the requirement for high interpersonal contact in their fields.

Flewelling proposed that the theory of the IP be reformulated to view the impostor as a victim of an introverted personality style and a "heavy handed" superego and less a victim of causal attribution for personal achievement. She stressed the need for further research in the entire area of personality styles as indicated by her reformulation of the IP theory. She also questioned past formulations of the IP

which assumed that high achievement was solely the consequence of ability coupled with a reasonable amount of effort to the exclusion of other factors such as luck, sensitivity to expectations, interpersonal skills, and appearance. She stressed that realistically, these are frequently significant factors in achievement and success along with ability and effort. Her reformulation conflicts with Clance and Imes's original contention that "victims of the IP do not fall into any one diagnostic category."<sup>37</sup> Later Clance viewed impostors as being caught in a vicious cycle/pattern characterized by worry and anxiety that always comes with taking on a new achievement related task.<sup>38</sup> Harvey also contends that impostors tend to develop certain patterns of behavior to hide their "terrible secret."<sup>39</sup> These patterns or personality types involve both behavior and thought which influence the impostor's emotions and feelings about the self. The entire area of personality style as it relates to the IP would seem to warrant further research.

Holmes, in 1986, concluded a study with independently identified impostors and non-impostors.<sup>40</sup> The primary purpose of her study was to provide support for the convergent validity and internal consistency of an additional measure of the IP, Clance's IP Scale. In addition, Holmes sought to establish clinical cutoff scores for both Clance's IP Scale and Harvey's IP Scale. She based her study on the premise that contradictions found in the early research studies regarding vulnerability to the IP were the result of the use of the median-split procedure to place subjects into impostor and non-impostor groups.

Holmes's study was conducted with four groups of selected subjects. From referring clinicians, Holmes received 16 subjects (clinical impostors) who were considered to be experiencing a high level of the IP based upon its clinical indicators. She also received a group of 16 subjects (clinical non-impostors) from these same clinicians who were deemed to be experiencing a very low level of the IP. The two groups were selected from a population with problems severe enough to cause them to seek treatment from a therapist. Subjects' ages ranged from 29 to 47.

Holmes then, on the basis of a semi-structured interview, selected 10 impostors and 20 non-impostors from an undergraduate population with a GPA of 3.0 or better. These subjects ranged in age from 18 to 55.

For the clinician-referred impostor group, Holmes found a mean of 86.87 on the Clance IP Scale and a mean of 75.06 on the Harvey IP Scale. For her group of interviewer-identified impostors (undergraduates) she found a mean of 70.30 on the Clance IP Scale, and a mean of 56.90 on the Harvey IP Scale.

For the clinician-referred non-impostor group, Holmes found a mean of 45.50 on the Clance IP Scale and a mean of 39.31 on the Harvey IP Scale. For her group of non-impostors (undergraduates), Holmes found a mean of 49.65 on Clance's IP Scale, and a mean of 41.05 on Harvey's IP Scale.

A one-way analysis of variance and planned comparisons revealed that both Clance's and Harvey's scales differentiated between the clinician-identified impostors and non-impostors ( $p < .0001$ ).<sup>41</sup> In

addition, Holmes found both scales to have a high degree of internal consistency: For Clance's Scale, alpha equaled .96108; for Harvey's Scale, alpha equalled .91349.<sup>42</sup>

An analysis of covariance indicated that while Clance's and Harvey's scales measure the same attributes, Clance's IP Scale seemed to measure something over and above that measured by Harvey's IP Scale. Holmes suggested that Clance's IP Scale measured feelings not addressed by Harvey's.

This study also provided information for making a tentative determination of an appropriate cutoff score for both Clance's and Harvey's scales. Holmes suggested that a score of 62 or above on either scale indicates that an individual is experiencing a significant degree of the IP.<sup>43</sup> A cutoff score of 62 supports Harvey's contention that a relatively low score on her IP Scale which ranges from 0 to 84, indicates one has a mild case of the IP. A score in the middle range indicates one is more troubled by "impostor" feelings. A score in the upper range indicates the IP is causing significant anxiety and quite likely is preventing one from accomplishing all that one might.<sup>44</sup>

Holmes further found that if she had employed the median-split procedure as was used by previous researchers to differentiate impostors from non-impostors, there would have been five false positives with Clance's scale or eight false positives and two false negatives with Harvey's scale. Her results suggest that replication of some of the previous studies, specifically those dealing with atypicality, might clear up some of the confusion if a cutoff score is used. Her

finding of a cutoff score of 62 also facilitates investigation of the incidence of the IP in both the general and high-achieving population.

Using both Harvey's and Clance's IP scales, Holmes also tested the relationship between the IP and introversion. She found a significant correlation between scores on the Extraversion-Introversion Scale of the MBTI (Form G) and the designation of impostor or non-impostor. As she expected, the Extraversion-Introversion Scale did not differentiate between impostor and non-impostor groups for either the clinical or the non-clinical sample. However, significant negative correlations were found between scores on the E-I Scale and Clance's IP Scale ( $r = -.32$ ) and Harvey's IP Scale ( $r = -.44$ ).<sup>45</sup> Thus, for purposes of research and intervention the IP can be differentiated from introversion as measured by the MBTI (Form G).

#### Summary of IP Research Results

Methodological problems associated with the studies reviewed make generalization of results difficult. Specifically, different instruments were used to measure the IP, the selection of high achievers was often variable and arbitrary, and the use of the median-split procedure to divide subjects into impostor and non-impostor groups may have resulted in a large number of false positive and/or false negatives.

Despite the methodological problems, there is support for the following generalizations regarding the IP construct:

1. The IP can be differentiated from low self-esteem, trait anxiety, self-monitoring, and introversion.

2. The IP can be reliably measured by both the Harvey IP Scale and the Clance IP Scale.
3. There is little evidence that females experience the IP to a greater extent than males or blacks more than whites.
4. The intensity of the IP is likely to diminish as rank or level of experience in an academic program or career field increases.
5. The contention that being somehow atypical from one's family of origin or one's peers leads to vulnerability to the IP has not been supported.
6. Those who are vulnerable to the IP are more likely to be introverts than extraverts.
7. Those who are vulnerable to the IP are not likely to see themselves as possessing the personal characteristics necessary for career success.
8. Those who are vulnerable to the IP are more likely to attribute their high achievement to their interpersonal assets than those who are not vulnerable.
9. Those who receive public recognition for their high achievement are more vulnerable to experiencing the IP than those who do not receive such recognition.

Although the early research has been fruitful, much remains unknown regarding the experiencing of the IP in high-achieving populations. The relationship of the IP to the theoretically similar constructs of state anxiety, fear of success, fear of failure, and test anxiety has not been studied. The incidence of the IP in high-



achieving populations has not been determined. Although personality style has been continually implied, alluded to, or theorized as being the basis for maintaining the experiencing of the IP, it has yet to be fully tested empirically.

### Irrational Beliefs

One theory that can be used to explain the emotional distress experienced by victims of the impostor phenomenon is Rational Emotive Theory (RET).<sup>46</sup> RET assumes humans are biologically predisposed to both rational and irrational thinking. When they are thinking and behaving rationally, they are happy, competent, and effective. Thinking and behaving irrationally results in psychological disturbance and irrational behavior.

It is assumed that irrational thinking has its origin in early illogical learning that children acquire from their parents and their culture. They then perpetuate their emotional disturbance and maintain illogical behavior by internal verbalization (self-talk) of their irrational thoughts. Continuing states of emotional disturbance are not determined by external events, but by the perception and attitudes toward these events that are incorporated in the internalized self-talk about them. Negative and self-defeating thoughts and emotions, thus, must be attacked by a reorganization of perceptions and thinking so that thinking becomes logical and rational rather than illogical and irrational.

Basic to the original and subsequent<sup>47</sup> presentation of RET is the ABC model of emotional distress. Within this approach, the upsetting emotional consequences (C) of the impostor phenomenon do not

follow directly from activating events (A); rather the influence of activating events on emotional consequences is mediated by the subject's beliefs (B). Ellis<sup>48</sup> and Ellis and Harper<sup>49</sup> have outlined the set of beliefs postulated to be the most common source of emotional distress. Many of these beliefs are associated with Clance and Imes's original conceptualization of the impostor phenomenon. Among these beliefs are the need for approval from others, high self-expectations, anxious overconcern, problem avoidance, helplessness for change, and perfectionism.

#### Irrational Beliefs and Anxiety

Goldfried and Sobocinski conducted two studies which focused on the relationship between irrational beliefs and anxiety.<sup>50</sup> The subjects for this study were 77 undergraduate females from an introductory psychology course.

The first experiment consisted of a correlational study between Jones's Irrational Beliefs Test (IBT) and various paper-and-pencil measures of interpersonal, examination, and public speaking anxiety. The results showed that the measures of social anxiety, test anxiety, and speech anxiety all correlated positively with the tendency to think irrationally as reflected in their correlations with total IBT scores ( $p < .001$ ). The three beliefs that consistently correlated with the various anxiety measures consisted of the demand for approval from others, the tendency to hold excessively high self-expectations, and an anxious overconcern regarding future events, quite possibly future failures.

The second experiment focused on the specific irrational belief of the overriding importance of social approval. The researchers investigated the likelihood of emotional arousal occurring among individuals who ascribed to this belief. The subjects consisted of those individuals who scored in the extreme direction on the IBT in the first experiment (top and bottom 18 percent). When asked to imagine themselves in social situations that might be interpreted as involving rejection by others, subjects holding this belief reported feeling significantly more anxious and angry than those who did not. Although anxiety is one of the symptoms of the IP, the relationship of anger to the IP has not been explored.

Zwemer and Deffenbacher also investigated the relationships of irrational beliefs to general anger and anxiety.<sup>51</sup> Subjects for their study were 382 (201 males and 181 females) introductory psychology students. Subjects completed the IBT along with an anger inventory and a trait anxiety inventory. Correlations among irrational beliefs were modest (mean  $r = .17$ ), supporting the relative independence of irrational beliefs. Anxiety was significantly associated with all irrational beliefs except blame proneness and dependency, whereas anger was correlated with all beliefs except dependency. Anxiety and anger were positively correlated,  $r = .32$ , ( $p < .001$ ).

The researchers found no significant sex differences for anxiety or anger on seven of the irrational beliefs. Males endorsed more blame proneness and perfect solutions and less dependency than women ( $p < .05$ ). Simultaneous regression analysis revealed no Sex by Belief interactions in the prediction of general anger or anxiety,

suggesting that findings were applicable to both sexes. Regression analyses for both the full distribution of anger and extreme anger groups (upper and lower quartiles) revealed that personal perfection, anxious overconcern, blame proneness, and frustration reactivity were predictors of general anger.

Anxious overconcern, problem avoidance, frustration reactivity and personal perfection were significant regression factors for the full range of general anxiety. Demand for approval replaced personal perfection in this order for the regression on extreme anxiety groups.

Using the Rational Behavioral Inventory to measure irrational beliefs, Himle, Thyer, and Papsdorf investigated the relationship between rational beliefs and anxiety.<sup>52</sup> Two separate correlational studies were conducted. The first used a group of 144 undergraduate psychology students as subjects (69 males and 75 females), the general student group. The clinically test-anxious group consisted of all participants who were enrolled in a university Test Anxiety Program during the previous year ( $n = 34$ ). A state-trait anxiety inventory and a test anxiety inventory were administered to all subjects.

Replicating the observations of Goldfried and Sobocinski who employed a different measure of rationality, Himle et al. found that trait anxiety was associated with the Rational Behavior Inventory total scores in both groups: Clinically Test Anxious  $r = -.48$ , General Student Group  $r = -.50$ . The results showed that approximately 25 percent of the variance in irrationality can be accounted for by trait anxiety. Trait anxiety was also associated with the IP by Topping who found a tau of .37 for males and .45 for females.

### Irrational Beliefs and Depression

Irrational beliefs have also been associated with another symptom of the impostor phenomenon, depression. Nelson examined the hypothesis that certain irrational beliefs would covary with the severity of depression.<sup>53</sup> Subjects for this investigation were 156 volunteer undergraduates (65 males and 91 females). Subjects completed the Beck Depression Inventory and Jones's Irrational Beliefs Test.

Product-moment correlations were computed between depression scores and IBT scores for the entire sample and separately for males and females. A cutoff score of ten or greater on the depression inventory was used to identify the depressed group. All correlations were low to moderate although the large sample size permitted all but one correlation (blame proneness) to reach statistical significance. Sex differences were found only for the Demand for Approval subscale of the IBT ( $r = .468$  for males,  $r = .095$  for females;  $p < .05$ ).

The strongest correlations of depression found by Nelson were general irrationality (measured by the total score), a need to excel in all endeavors in order to feel worthwhile as a person (high self-expectations), the idea that it is terrible when things are not the way one would like them to be (frustration reactivity), obsessive worry about possible misfortunes in the future (anxious overconcern), and the belief that it is impossible to overcome the influences of past history (helplessness). Nelson concluded that these beliefs may offer important targets for modification in cognitive therapy with depressed clients. They may also offer important targets for students who suffer from the IP.

LaPointe and Crandell designed a study to compare normal individuals and persons reporting themselves to be psychologically distressed but not depressed to persons describing themselves as depressed and psychological distressed.<sup>54</sup> Thirty-six subjects (19 females and 17 males) who scored an average of 1.37 on the Beck Depression Inventory and 7.68 on the Neuroticism subscale of the Maudsley Personality Inventory were identified as normals. Twenty-two subjects (9 females and 13 males) who averaged 4.13 on the Beck and 40.3 on the Maudsley were identified as non-depressed but psychologically distressed. Twenty-eight subjects (20 females and 8 males) who averaged 21.46 on the Beck and 42.4 on the Maudsley were identified as depressed and psychologically distressed. Both the depressed and the non-depressed psychologically distressed subjects scored in the range of those seeking outpatient services.

A one-way analysis of variance revealed significant effects for group on total irrationality scores. Scheffe post hoc analysis showed that depressed persons scored significantly ( $p < .01$ ) more irrational than either psychologically distressed or normal persons. In addition psychologically distressed persons scored significantly more irrational than normals ( $p < .01$ ). Ample evidence in the literature supports the fact that IP victims are psychologically distressed in the face of achievement tasks.

Post hoc analysis showed that both depressed and non-depressed psychologically distressed persons scored significantly more irrational than normals on every belief except emotional irresponsibility, dependency, and perfect solutions. Depressed persons scored

significantly more irrational than distressed and normals on frustration reactivity ( $p < .01$ ), high self-expectations, emotional irresponsibility, and problem avoidance ( $p < .05$ ).

As in previous research, persons reporting feeling psychologically distressed whether depressed or not scored as more irrational overall than normals. Also, depressed persons scored as more irrational than other equally distressed persons on total score and on needing to excel in everything in order to feel worthwhile (high expectations) and being terribly upset when things are not as one wishes (frustration reactivity). Depressed subjects also scored higher than normals but not distressed subjects on the belief that there is one right solution to every problem or else a catastrophe will occur. The results suggest that depressed persons may be especially prone to setting such high self-expectations that failure and hence emotional distress are inevitable.

More than their distressed counterparts, depressed subjects endorsed the beliefs that unhappiness is caused by events outside of personal control (emotional irresponsibility) and that problems are best avoided (avoidance). Additionally, depressed persons, more than normals, endorsed needing to rely on others for advice and strength (dependency). Although the IP is associated with depression, there is no evidence that the IP is associated with dependency needs or emotional irresponsibility.

#### Irrational Beliefs and Personality

In 1983, Daly and Burton investigated the relationship between Ellis's theory of irrational beliefs and the psychosocial construct of

self-esteem.<sup>55</sup> Subjects for this study were 251 college students (163 females and 88 males). In a group testing situation, subjects completed Jones's IBT and the Janis-Field Feelings of Inadequacy Scale. Pearson product-moment correlation coefficients were calculated for all variables, and a common multiple regression procedure was used to calculate the standardized parameter estimates for the prediction models.

The researchers found a significant negative correlation between self-esteem and irrational beliefs. The correlation of  $-.51$  accounted for approximately 25 percent of the variance and was statistically significant at the  $p < .0001$  level. It can be recalled that Harvey found that nine percent of the variance in the impostor phenomenon could be accounted for by the construct of self-esteem and that Topping found that approximately 17 percent of the variance of the impostor phenomenon could be accounted for by self-esteem. The results suggest that self-esteem is an underlying variable in both Ellis's rational-emotive theory of irrational beliefs and Clance and Imes's conceptualization of the impostor phenomenon.

The specific irrational beliefs that predicted low self-esteem in this study were demand for approval, high self-expectations, anxious overconcern, and problem avoidance. These specific beliefs also appear in the literature to be associated with the impostor phenomenon although this has not been tested empirically.

Jones studied the personality and maladjustment correlates of irrational beliefs while developing a factorial measure of Ellis's irrational belief system.<sup>56</sup> Subjects for this investigation consisted



of 131 college students in advanced undergraduate psychology courses. A larger heterogeneous sample of 427 subjects was used for cross validation purposes. The selection of the latter group was determined by the need for heterogeneity with respect to major demographic variables, and maximum variance with respect to emotional disorder and maladjustment. Within this group were 72 patients at a mental hospital, and 177 volunteers from a general adult population.

As criteria for the construct validation of the Jones's Irrational Beliefs Test, all 427 subjects were administered the 16PF and a 25-item measure of admitted common psychiatric complaints or symptoms. The relationship of age, sex, and educational level to the IBT was also investigated.

All IBT scales but two correlated highly with admitted symptomatology. A multiple R of .71 was found between symptom admission and IBT scales. The same eight scales correlated highly with the six 16PF factors common to all clinical groups and comprising the second-order questionnaire factor of anxiety. Individual IBT scales varied in their relationship to specific clinical personality factors. Less impressive but significant relationships of IBT scales with nonclinical personality scales of the 16PF were also determined. Differences in IBT scales between the normal adult sample and the mental hospital sample were found to be highly significant for all of the eleven scores, most of them beyond the  $p < .0005$  level.

Age was not found to be significantly related to irrational beliefs as measured by the IBT, but highly significant sex differences were found specific to scales. Females were more inclined to perceive

approval as a need, to over-evaluate unpleasant events, to worry and be anxious, and not to be self-directing. In contrast, males were more inclined to set high standards for themselves, to be blamers, to reject responsibility for their emotions, and to be perfectionists. Total scores on the IBT were not significantly related to sex as the sex effect in the scales tended to cancel out.

The correlation between IBT scales and educational level was significant at the  $p < .05$  level for half the IBT scales and the total score. A t-test of difference between extreme groups showed significance at the  $p < .0005$  level for blame proneness, anxious overconcern, helplessness for change, and perfect solutions.

Jones concluded that the IBT was a reliable and valid measure of irrational beliefs for use in both research and specific clinical needs. Ellis's position with respect to irrational beliefs was substantially confirmed by the results of this study, although due to its nature no causal relationship could be established.

Newmark et al. investigated whether adherence to Ellis's irrational beliefs could be used to differentiate normal, neurotic, and characterologic groups.<sup>57</sup> The neurotic subjects were 77 female and 43 male psychiatric inpatients who obtained admission MMPI profiles suggestive of neurotic symptomatology. The personality disorder subjects were 47 female and 51 male psychiatric inpatients who obtained admission MMPI profiles suggestive of characterologic adjustment patterns. The normal group of subjects was composed of 69 females and 51 males from sophomore level psychology courses. These subjects

obtained scores on the MMPI that were within normal limits. All subjects had at least average intelligence.

The researchers used a formulation of Ellis's eleven irrational ideas stated in a true-false format as the measure of irrational beliefs. Inpatient subjects were tested within one week of admission.

The results of chi-square comparisons between groups showed that neurotic subjects had a significantly ( $p < .001$ ) higher endorsement percentage for irrational beliefs when compared with either of the other two experimental groups. The results suggested that normal and characterologic subjects do not display a high endorsement consensus with regard to any of the irrational beliefs. Neurotic subjects displayed a very high endorsement consensus (70-89 percent) of the irrational beliefs representing high self-expectations, blame proneness, avoidance, and helplessness for change and a remarkably high rejection consensus for irrational beliefs relating to dependency, perfect solutions, and the idea that one should be quite upset over other people's problems and disturbances.

Additional analyses examined the endorsement frequencies as a function of diagnoses. Only obsessive-compulsive subjects within the neurotic group showed high endorsement frequencies on high self-expectations when compared to other neurotic subjects. Differences as a function of diagnoses were more apparent within the characterologic group as paranoid personalities endorsed blame proneness and emotional irresponsibility with significantly greater frequency and alcoholic personalities endorsed avoidance and helplessness for change with greater frequency than other subjects within this group.

The researchers concluded that one possible explanation for the significantly higher endorsement frequencies by neurotic subjects when compared with normal and characterologic subjects is that Ellis's irrational beliefs may be an indirect measure of chronic anxiety that is usually not prevalent among the later two groups.

Forman and Forman examined the relationship between irrational beliefs and normal personality functioning.<sup>58</sup> The Irrational Beliefs Test (IBT) and the Adjective Check List (ACL) were administered to 46 high school students and 50 adults. As no significant differences were found between the two groups, the investigators combined the groups for further data analysis. The 11 IBT scale scores and 15 ACL scale scores (need scales) were subjected to stepwise multiple regression analyses.

The results allowed psychologically meaningful interpretations to be made for each irrational belief scale. The researchers discussed these irrational belief scales with multiple correlation coefficients significant at the .05 level.

The demand for approval scale was positively associated with abasement and succorance, and negatively related to nurturance and change. Thus, persons who are highly motivated to seek approval appear to be submissive and self-effacing. They seek encouragement, sympathy, and support from others but are not likely to reciprocate. They are predictable and look for stability in their environment. They may be somewhat apprehensive about taking risks.

The high self-expectations scale was associated with five need scales. This belief was associated positively to abasement, dominance, and heterosexuality, while it was negatively related to nurturance and

affiliation. Those persons who believe it is essential to be thoroughly competent in all possible respects appear to view themselves as weak and ineffectual while giving the impression of confidence. They are strong-willed and seek leadership positions but attend little to the feelings or wishes of persons with whom they interact. They may appear somewhat aloof socially and lack depth in their interpersonal relationships. Nonetheless, they seek and enjoy relating to members of the opposite sex.

The frustration reactivity scale was significantly related to four scales: abasement, dominance, change, and order. Persons who believe it is awful when events are not as they would prefer may be seen as self-critical and perhaps blame themselves when situations or plans go awry. They are somewhat controlling of others and like to resolve conflicts among others. They opt for stability and continuity in their environment, yet they are themselves disorganized and impulsive.

The problem avoidance scale was significantly and negatively associated with two need scales: autonomy and endurance. The achievement scale was negatively associated with problem avoidance. Hence, persons who avoid or procrastinate about facing problems and responsibilities may be seen as largely unassertive followers. They lack perseverance and patience, and may evidence a moderate degree of impulsivity. Although they tend to be dissatisfied with their social or occupational status, they see little chance of their efforts at change succeeding in bringing about desired results. Therefore no efforts are made.

The helplessness for change scale had significant associations with six need scales. Those having positive relationships were abasement, intraception, and heterosexuality; order, nurturance, and autonomy were negatively associated. Persons who believe that past influences on their behavior are too great to overcome appear to be characterized by sociability, extraversion, and spontaneity. Despite their intellectual talents and interest in understanding the behavior of self and others, they achieve little more than insight and perhaps justification for unchangeability. They may tend to be somewhat insensitive to others and are not likely to be leaders.

Finally, the IBT total score indicating generalized belief irrationality was associated with six ACL need scales. Three were positively related: abasement, dominance, and heterosexuality; three were negatively related: change, nurturance and endurance. Thus, persons who hold numerous irrational beliefs or who employ a generally irrational cognitive style may be described as highly critical of themselves, persevering, and controlling of others. They are patient, avoid taking risks and are generally conservative. These persons are relatively insensitive to the wishes and feelings of others, and although they are interested in socializing with persons of the opposite sex, they seem to be adept at manipulating these relationships to gratify their own desires.

The findings of this study contribute validation evidence to Ellis's model of personality. The results support the position that expected psychological characteristics are associated with irrational beliefs.

Smith and Brehm also studied the relationship of irrational cognitions to a specific personality behavior pattern, the Type A Coronary-Prone Behavior Pattern.<sup>59</sup> The Type A behavior pattern is characterized by competitiveness, achievement striving, impatience, hostility, and over-commitment to work. With the exception of hostility, these characteristics have also been associated with the IP.

Subjects for this study were 77 female and 72 male undergraduates enrolled in introductory psychology. The instruments used included the student version of the Jenkins Activity Survey, the activity scale of the Thurstone Temperament Survey, the IBT test, and a measure of private and public self-consciousness.

The correlation matrix for the full sample revealed a negative relationship between the Type A pattern measures and problem avoidance. Individuals displaying the Type A pattern tended to disagree with the idea that it is easier to avoid difficulties and responsibilities than to face them. Subjects tended to endorse a more active, mastery oriented attitude about coping. The Type A pattern was positively correlated with the beliefs that people should be severely blamed and punished for their misdeeds (blame-proneness) and that people should be terribly concerned about the possibility of dangerous or unfortunate events occurring in the future (anxious overconcern). The findings are consistent with behavioral components of the pattern and suggest that cognitive variables may be a useful target for attempts to alter the behavior pattern.

Impostors have been described in the literature as being introverted, i.e., reticent, reserved, and cautious. It may be that

they suffer from a lack of assertiveness. Alden and Safran investigated the relationship between endorsement of irrational beliefs and nonassertiveness.<sup>60</sup> Specifically, the researchers predicted that individuals strongly agreeing with Ellis's irrational beliefs would perform less well and feel greater discomfort in assertive situations than non-endorsers. A second question addressed by the study was whether endorsement of irrational beliefs was associated with a lack of knowledge about appropriate assertive behavior. Thirty college-based individuals who described themselves as "very unassertive" and who could identify at least two problem situations in which they were not assertive were judged appropriate subjects for inclusion in the study.

After completing a measure of irrational beliefs, subjects were divided into a high-endorsement group (ten subjects receiving the highest total scores) and a low-endorsement group (the ten subjects receiving the lowest total score). The high- and low-endorsement groups then completed an assertion inventory and an assertion information form which was designed to assess the subject's knowledge of appropriate assertive behavior. Subjects then role-played eight assertive situations. The role-playing was videotaped and rated by trained judges on two five-point scales, one measuring assertion, the other anxiety. Also subjects rated their level of anxiety on a 10-point scale while role-playing each situation.

The results of the investigation showed that nonassertive individuals who endorsed Ellis's irrational beliefs were observed to be less assertive during role-playing than individuals who did not agree with these beliefs. The nonassertive subjects also reported



experiencing greater anxiety during role-playing. In addition, high-endorsers described themselves as less frequently assertive in real life and as far more uncomfortable when confronted with an assertive situation.

The results also provided some support for the idea that for some individuals, nonassertiveness may involve cognitive factors such as perfectionistic standards and an overconcern with the feelings of others. It was interesting that such differences existed in cognitive factors even within a group of subjects seeking help for nonassertiveness.

Nonassertive subjects reported concern with competence, with being loved and approved of by others, and a tendency to become overly upset when things were not going as planned. In this sample, less effective individuals were most concerned with others becoming upset. It is easy to see how this concern might decrease assertiveness.

In addition, for this college-based sample, deficits in assertion appeared less likely to stem from a lack of social knowledge than from a perfectionistic, other-oriented cognitive set. These findings might also be taken to suggest that irrational beliefs did not result from a lack of social knowledge.

Following Alden and Safran, Lohr and Bonge extended knowledge concerning assertiveness by specifying the irrational beliefs that are associated with assertiveness deficits.<sup>61</sup> Subjects were 241 introductory psychology students. Of these 177 were male and 40 were female, with 24 subjects not reporting sex.

Pearson product-moment correlations were computed between the IBT subscale scores and an assertion measure. The following irrational beliefs were negatively correlated with the self-reported assertive behavior: Demand for Approval  $r = -.35$  ( $p < .001$ ), High Self-Expectations  $r = -.24$  ( $p < .0001$ ), and Problem Avoidance  $r = -.34$  ( $p < .001$ ). The multiple correlation relating the above three subscale scores with self-reported assertive behavior scores was .46.

Because the variance in assertiveness scores accounted for by irrational beliefs was not large, the researchers suggested that other factors such as social demand, social desirability, or lack of assertive skills could also determine self-reported assertive behavior. They also suggested that assessment for assertiveness training should emphasize the measurement of both skill and cognitive components. Cognitive procedures should probably focus on Demand for Approval, High Self-Expectations, and Problem Avoidance beliefs that may inhibit assertive skills.

Lohr et al. designed a study to determine the association of irrational beliefs to assertiveness in a sample of 146 female subjects from introductory psychology courses.<sup>62</sup> Subjects completed the IBT and a validated measure of assertive behavior. Eight weeks later, 61 subjects were randomly selected and recruited by telephone to participate in an ostensibly unrelated study. At this time each subject was individually administered 52 tape-recorded situations that required a verbal role-play response. Responses were recorded verbatim and scored by two independent raters to one of eight categories representing various levels of aggressive, assertive, and submissive responses.

A multiple regression analysis of IBT scores upon the role-play measures of assertion provided support for the hypothesis that unassertive behavior is mediated by exaggerated, excessive, and irrational appraisal about the significance of interpersonal conflict. The global role-play score was best predicted by total IBT score and the subscales of Demand for Approval and Dependency. The proportion of the variance accounted for by irrational beliefs included in the regression analysis was 26 percent. The relationship of the IP to assertiveness has not been tested although the research of both Lawler and Holmes relates the IP to introversion and suggests that impostors would not be assertive individuals.

Most recently, Wicker, Richardson, and Lambert sought to determine how specific irrational beliefs are related to particular symptoms.<sup>63</sup> Toward this purpose, the researchers related irrational beliefs to a battery of 37 measures pertaining to emotion, motivation, personality, and values in a nonclinical population. One hundred ten university students participated in this study to help fulfill a research requirement in an educational psychology course.

Correlates and canonical composites showed a general relationship between irrational beliefs and emotional difficulty, and the specific pattern differed for subgroups of IBT scales. The canonical variates for which  $p < .001$  were named Emotional Well-Being, Alienation, and Extreme Socialization.

The first canonical composite was called Emotional Well-Being because it related directly to positive affects and inversely to negative ones. It had a strong negative relationship to the IBT scales

of Frustration Reactance and Anxious Overconcern. Thus, tendencies to catastrophize and to worry seem to augment negative emotions. Blame Proneness and Helplessness for Change related most strongly to the composite called Alienation. Tendencies to blame others, to avoid problems and to feel trapped by past history seemed to reflect beliefs most incompatible with the lifestyle of activeness, commitment, and meaningfulness characteristic of the hardy non-alienated personality.

The third composite was called Extreme Socialization because the need to be approved of by others, high standards for the self, and avoidance of exploration and play suggested strong conformity to societal norms. That this composite is rigid and extreme is suggested by a negative relationship to playful flexibility and the association with anxiety and neuroticism.

The researchers suggest that it may be helpful to consider combinations of IBT scales rather than the total IBT score in diagnosis. In summary, the study gives evidence for the construct validity of the IBT and suggests a rich intrapsychic network in which each belief is embedded. It is consistent with the view that beliefs do not exist as separate entities but are inextricably interwoven with processes typically described in the terminology of motivation, emotion, values and personality characteristics.

#### Summary of IBT Research Results

The studies suggest that our understanding of the IP may be increased through the identification of cognitive factors associated with such behavior. Essentially, Ellis suggests that self-defeating feelings, behaviors, and emotional distress stem from the beliefs held

by, or the cognitive set of, the vulnerable person. Those who suffer from the IP are viewed as adhering to any of a number of so-called irrational beliefs which are distorted, highly idealized, and perfectionistic by nature. Victims of the IP actualize such beliefs in overt behavior, often striving to attain impossible goals. They not only ensure failure by establishing impossible standards for themselves but then overreact with excessive anxiety, depression, and frustration, due to their inability to meet these same standards. One of the purposes of the present study is to determine if impostors can be differentiated from non-impostors on the basis of irrational beliefs as measured by Jones's IBT.

#### ENDNOTES

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<sup>2</sup>Ibid., 242.

<sup>3</sup>Suzanne Imes, The Impostor Phenomenon as a Function of Attribution Patterns and Internalized Femininity/Masculinity in High Achieving Women and Men (Ann Arbor, MI: University Microfilms International, 1983) pub. no. 8013056.

<sup>4</sup>Ibid., 51

<sup>5</sup>Jeanne M. Stahl et al., "The Impostor Phenomenon in High School and College Science Majors," Paper presented at the American Psychological Association Meeting, Montreal (September 1980).

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<sup>8</sup>Ibid., 44

<sup>9</sup>Ibid., 56

<sup>10</sup>Ibid., 57

<sup>11</sup>Ibid., 106

<sup>12</sup>Madeline M. Hirschfeld, The Impostor Phenomenon in Successful Career Women (Ann Arbor, MI: University Microfilms International, 1982) pub. no. 8223604.

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<sup>14</sup>Ibid., 99.

<sup>15</sup>Ibid., 100.

<sup>16</sup>Ibid., 112.

<sup>17</sup>Mary E. Topping, The Impostor Phenomenon: A Study of Its Construct and Incidence in University Faculty Members (Ann Arbor, MI: University Microfilms International, 1983) pub. no. 8316534.

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<sup>21</sup>Ibid., 90.

<sup>22</sup>Ibid., 87.

<sup>23</sup>Patrick W. Edwards et al., "A Validation Study of the Harvey Impostor Phenomenon Scale," Paper presented to the Department of Psychology, University of Georgia, Athens (1983).

<sup>24</sup>Norma K. Lawler, The Impostor Phenomenon in High Achieving Persons and Jungian Personality Variables (Ann Arbor, MI: University Microfilms International, 1984) pub. no. 8424597.

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<sup>26</sup>Ibid., 110.

<sup>27</sup>Ibid., 111.

<sup>28</sup>Ibid., 16.

<sup>29</sup>Ibid., 135.

<sup>30</sup>Ibid., 137.

<sup>31</sup>Ibid., 140.

<sup>32</sup>Ibid., 124.

<sup>33</sup>Linda A. Grays, "The Relation Between the Impostor Phenomenon and Atypicality of Race, Educational Attainment, Socioeconomic Status, and Career in College Women," (M.A. thesis, Georgia State University, 1985).

<sup>34</sup>Ibid., 56.

<sup>35</sup>Ann L. Flewelling, "The Impostor Phenomenon in Individuals Succeeding in Self-Perceived Atypical Professions: The Effects of Mentoring and Longevity," (M.A. thesis, Georgia State University, 1985).

<sup>36</sup>Ibid., 28.

<sup>37</sup>Clance and Imes, "The Impostor Phenomenon in High Achieving Women," 242.

<sup>38</sup>Pauline R. Clance, The Impostor Phenomenon: Overcoming the Fear that Haunts Your Success (Atlanta: Peachtree Publications, Ltd., 1985) 49.

<sup>39</sup>Joan C. Harvey with Cynthia Katz, If I'm So Successful, Why Do I Feel Like A Fake? (New York: Random House, Inc., 1985) 35-58.

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<sup>42</sup>Ibid., 43.

<sup>43</sup>Ibid., 44.

<sup>44</sup>Harvey with Katz, If I'm So Successful, 114.

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## CHAPTER III

### METHODOLOGY

The purpose of this investigation was to determine if impostors could be differentiated from non-impostors on the basis of selected demographic, personality, and cognitive variables. In this chapter, the research design, selection of subjects, instrumentation, and study procedures are described.

#### Research Design

This study was designed as an ex post facto investigation<sup>1</sup> of the Impostor Phenomenon (IP) in honors English students enrolled in grades nine through twelve at a middle to upper-middle class suburban high school in Southeastern Virginia. Ex post facto research is a systematic, empirical inquiry in which the researcher does not have direct control of the independent variable(s) because the manifestations have already occurred or because they are inherently not manipulable. The interpretation of the results of ex post facto research requires considerable caution. Due to the lack of randomization, manipulation, and other types of control characteristic of experimental studies, it is difficult to establish cause-effect relationships.

The basic ex post facto design involves selecting two groups differing on some independent variable and comparing them on some dependent variable(s). An important consideration is that the two

groups are similar with respect to critical variables other than the independent variable. The independent variable was the IP as measured by the Harvey IP Scale. The following dependent variables were selected for study: (a) gender, (b) grade level, (c) GPA, (d) personality characteristics as measured by the ACL, and (e) irrational beliefs as measured by the IBT.

### Sampling Procedure

#### Population

For this study, the domain of the IP construct was limited to high-achieving English students on the secondary educational level. The population was further limited to middle and upper-middle class suburban high schools.

#### Sample

The sample consisted of 105 honors English students from a large (N = 1,564 - 80 percent white, 17 percent black, and 3 percent Asian) suburban high school in Southeastern Virginia. Honors English students were selected for study because English is the only subject required of all students throughout their secondary educational experience. To be selected for honors English, students must have met three of the following criteria: (a) be reading two years above grade level, (b) score in the 90th percentile or above on the Science Research Association's (SRA) standardized English achievement test, (c) have a tested educational ability level in the 90th percentile or above on the Science Research Association's standardized educational ability test (EAS score), (d) receive a teacher recommendation.

There were 14 honors English classes available for testing at the participating high school. Students select their English class on a basis similar to the standard collegiate registration procedure. After those students enrolled in special education and work study programs are registered, the remaining students are assigned a registration time based on grade level and the random selection of alphabetical clusters.

From the resulting 14 intact classrooms of honors English students, four classes were randomly selected for testing, one from each grade level. The final sample consisted of 26 ninth graders, 27 tenth graders, 30 eleventh graders and 22 twelfth graders resulting in a total sample size of 105. Of this total, 38 were males and 67 were females. Subjects' ages ranged from 14 to 18.

### Instrumentation

This section includes the instruments used in this study, a Demographic Data Form, Gough and Heilbrun's Adjective Check List (ACL),<sup>2</sup> Jones's Irrational Beliefs Test (IBT),<sup>3</sup> and Harvey's Impostor Phenomenon Scale (IP Scale).<sup>4</sup>

### Informed Consent

Since all subjects were age 18 or under, informed consent was required from a parent or guardian. In this study, all Informed Consent statements were returned. All procedures and instruments used in this study were approved by the Committee for Research with Human Subjects at Old Dominion University. A copy of the Informed Consent Statement can be found in Appendix A.

### Demographic Data Form

A Demographic Data Form was designed by the researcher to collect information on the subject's gender, grade level, and GPA. A copy of this instrument can be found in Appendix A.

### Adjective Check List (ACL)

The ACL is a standardized 300-adjective list widely used in normal personality assessment and psychometric research.<sup>5</sup> The ACL has 37 possible scales including Need Scales developed by Kathryn Williams. The ACL can be used to describe the self, ideal self, a future or past self, a historical person, a commercial product, an idea, belief or theory. It allows one to select relevant adjectives reflecting personality characteristics or attributes, and choosing one adjective does not influence subsequent selections. A copy of the ACL scales and their description can be found in Appendix B.

The ACL has recently been revised by Gough and Heilbrun. The latest 1980 edition of the ACL was normed on a sample of 5,238 males and 4,144 females.<sup>6</sup> High school and college level students were included in the sample and therefore the norms are applicable for working with student groups.

The ACL has adequate reliability. The alpha coefficients' median values in the mid-seventies support the generally adequate reliability for most of the scales.<sup>7</sup> Six-month test-retest correlations were derived from a sample of 199 males with a median value of .65. Twelve-month test-retest correlations were derived from a sample of 45 female college students with a median value of .71.

Factor analysis of the 37 scales resulted in a similar six-factor solution for both males and females.<sup>8</sup> The results of the factor analysis suggest that the scales are highly correlated and that they probably should be interpreted in clusters rather than as 37 independent variables. The six resultant factors were potency, assertiveness, sociability, individuality, dissatisfaction, and constriction.

Validity information is provided in the manual in terms of correlations between ACL scales and several tests including the scales of the CPI and MMPI.<sup>9</sup> Recently, Lazzari and Gough supported the validity of the ACL as a personality measure by showing it could be used to differentiate three groups of psychiatric outpatients classified as neurotic, psychotic, or indeterminate.<sup>10</sup> Bessmer and Ramanaiah have also provided empirical evidence supporting the convergent and discriminant validity for the need scales of aggression, autonomy, dominance, and exhibition.<sup>11</sup>

Both acquiescence and social desirability have been adequately controlled in the ACL. Acquiescence was handled through the conversion of raw scores into standard scores while low correlations were found between ACL scales and Edwards's 39-item Social Desirability Scale.

The ACL can be given to high school students in 15 minutes. The ACL was selected for use in the study because it is a standardized, non-threatening instrument that possesses adequate reliability and validity.

#### Irrational Beliefs Test (IBT)

The IBT developed by Jones is a standardized 100-item self-report inventory consisting of statements of beliefs to which a person

rates the degree of agreement on a 5-point scale, ranging from strongly agree to strongly disagree.<sup>12</sup> The IBT generates ten scale scores (ten items each) corresponding to Ellis's irrational beliefs as well as an overall score for general irrational thinking. The ten scales include irrational beliefs concerning need for approval, high self-expectations of achievement, blame proneness, frustration reactivity, emotional irresponsibility, anxious overconcern, problem avoidance, dependency, fatalism, and perfectionism. Each of the ten belief scales is defined by an orthogonal factor and is thus independent of the others. A copy of the IBT scales and their description can be found in Appendix B.

The IBT possesses adequate reliability. Jones reported test-retest reliability coefficients ranging from .67 to .87 for scales and .92 for full scale over 24 hours.<sup>13</sup> Trexler and Karst found coefficients ranging from .48 to .95 for scales and .88 for full scale over two weeks.<sup>14</sup> As a part of their validation study, Lohr and Bonge found test-retest correlations over eight weeks ranging from .804 to .576.<sup>15</sup>

Concurrent validity with regard to psychopathology was derived by Jones from correlation with a 25-item self-report measure of maladjustment symptoms (multiple R was .72).<sup>16</sup> Further validation evidence is provided in the literature presented as tests of the Rational-Emotive Theory. These studies have consistently demonstrated that irrational beliefs as measured by the IBT reliably correlate with anxiety, depression, low self-esteem, deficits in assertiveness, as well as other maladaptive conditions. As a self-report measure, the IBT has been adequately controlled for social-desirability bias.<sup>17</sup>

The IBT has been criticized by Smith and Zurawski as being a measure of general emotional distress rather than a measure of mediating cognitions as postulated by Rational-Emotive Theory.<sup>18</sup> Smith, Houston, and Zurawski also challenged the construct validity of the IBT and by implication Rational-Emotive Theory by showing a measure of the fear of negative evaluation (FNE) was more frequently associated with a measure of emotional distress than were irrational beliefs.<sup>19</sup> They suggest that FNE is equivalent to and perhaps a more parsimonious measure of emotional distress.

#### Harvey IP Scale

The Harvey IP Scale is a 14-item self-report instrument developed by Harvey in 1981 to validate the IP as a psychological construct.<sup>20</sup> The IP Scale measures the degree to which a person experiences the IP. Items for the scale were generated from the observations of previous researchers and Harvey's own investigation. She initially composed 21 statements related to the IP and administered a 21-item questionnaire to 74 graduate students and found the average inter-item reliability to be .71. By eliminating seven items, the average inter-item reliability rose to .85. Harvey then cross-validated the 14-item questionnaire with a sample of 72 undergraduate students. Using Cronbach alphas, Topping found a measure of internal consistency of .75 with university faculty members as subjects<sup>21</sup> whereas Holmes found an alpha of .91 using subjects identified independently of the IP instrument.<sup>22</sup> No test-retest reliability information is currently available. A factor analysis of the 14-item



scale resulted in a three-factor solution with the three resultant factors labelled "true impostor," "inadequacy," and "helplessness."<sup>23</sup>

Regarding validity, Harvey demonstrated the convergent validity of the scale with several indicators of the IP including high achievement<sup>24</sup> and attributional style.<sup>25</sup> Topping demonstrated the discriminant validity of the scale with trait anxiety,<sup>26</sup> self-monitoring behavior and self-esteem.<sup>27</sup> Holmes demonstrated the concurrent validity of the scale with a clinical population of independently identified impostors and non-impostors while at the same time validating an additional measure of the IP, the Clance IP Scale.<sup>28</sup>

The Harvey IP Scale was selected for this investigation because it has been widely used in past research and because it possesses adequate reliability and validity. The instrument can be completed by high school students in five minutes and the directions are clear and concise. A copy of the instrument can be found in Appendix B.

### Procedures

A high school in Southeastern Virginia was selected for this research proposal. The researcher met with the Director of Research and Development of the school system and then with the assistant principal of the selected high school to explain the procedures necessary to complete the research as proposed. A series of short meetings followed which resulted in the selection of the classrooms to be tested and the development of a procedure for the dispensing and collection of Informed Consent Statements. A testing schedule was also arranged. Being fully informed as to the nature and purpose of this investigation, the assistant principal secured the cooperation of the

classroom teachers involved. All Informed Consent Statements were signed and returned by the parents/guardians of the subjects two weeks prior to testing.

#### Testing and Data Collection

All testing took place on October 3, 1987, in the students' regular classrooms. After the investigator was introduced by the regular classroom teacher, the teacher left the room and a standardized testing procedure was initiated.

#### Data Analysis

Data from the Demographic Data Form, Harvey IP Scale, Adjective Check List, and the Irrational Beliefs Test were recorded and transferred to a Fortran Coding Form for data processing at the Old Dominion University Computer Center. One participant's Adjective Check List profile was invalid and this subject was dropped from the data analysis. In three cases subjects failed to complete one item on the Irrational Beliefs Test and in each case a neutral response of "neither agree nor disagree" was assigned.

Descriptive statistics were computed for all variables. Separate chi-square analyses were performed to evaluate the differences between impostors and non-impostors on gender and grade level. A one-way analysis of variance was used to evaluate the difference between impostors and non-impostors on the basis of GPA.

Discriminant analysis<sup>29</sup> was selected to evaluate differences between impostors and non-impostors on the ACL and the IBT. This method was chosen over the more traditional regression procedures since

it allows direct estimation of differences between groups which regression analysis does not. Also, a linear function is defined that allows direct examination of the independent variables. The quality of the discriminant function is determined by examining Wilks's lambda (a test of multivariate significance) and the canonical correlation coefficient. Standardized discriminant function coefficients are also examined to determine the magnitude and direction of the effects of the independent variables. In the discriminant analysis, independent variables were entered using step-wise procedures with Wilks's lambda employed as the inclusion criterion for entry of variables into the equation.

The data were examined to ensure that the necessary criteria and assumptions for the use of discriminant analysis were met. Frequency distributions were evaluated as well as standard descriptive statistics relating to each of the research variables (i.e., mean, median, mode, standard deviation, skewness, kurtosis, etc.). The Box's M Test was used to determine the equality of the variance-covariance matrices. All statistical tests were performed by means of SPSS-X on the IBM 4381.

ENDNOTES

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<sup>5</sup>James V. Mitchell, ed., Ninth Mental Measurement Yearbook, vol. 2 (Buros Institute of Mental Measurements, Lincoln, NB: University of Nebraska Press, 1985), 49-53.

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<sup>8</sup>Ibid., 35-38.

<sup>9</sup>Ibid., 103-108.

<sup>10</sup>Renato Lazzari and Harrison G. Gough, "Adjective Check List: Self and Ideal Self Correlate of MMPI Profiles Classified According to the Meehl-Dahlstrom Rules," Journal of Clinical Psychology 36, no. 4 (October 1980): 905-10.

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<sup>17</sup>Jeffery M. Lohr, Dennis Bonge, and Celeste Jones, "Social Desirability and Endorsement of Irrational Beliefs," Psychological Reports 53 (October 1983): 395-97.

<sup>18</sup>Timothy W. Smith and Raymond M. Zurawski, "Assessment of Irrational Beliefs: The Question of Discriminant Validity," Journal of Clinical Psychology 39, no. 6 (November 1983): 976-79.

<sup>19</sup>Timothy W. Smith, B. Kent Houston, and Raymond M. Zurawski, "Irrational Beliefs and the Arousal of Emotional Distress," Journal of Counseling Psychology 31, no. 2 (April 1984): 190-201.

<sup>20</sup>Joan C. Harvey, The Impostor Phenomenon and Achievement: A Failure to Internalize Success (Ann Arbor, MI: University Microfilms International, 1981) pub. no. 8210500, 30-37.

<sup>21</sup>Mary E. Topping, The Impostor Phenomenon: A Study of Its Construct and Incidence in University Faculty Members (Ann Arbor, MI: University Microfilms International, 1983) pub. no. 8316534, 80.

<sup>22</sup>Sarah W. Holmes, "The Impostor Phenomenon: A Validity Study of Clance's IP Scale," (M.A. thesis, Georgia State University, 1986), 43.

<sup>23</sup>Patrick W. Edwards et al., "A Validation Study of the Impostor Phenomenon Scale," Paper presented to the Department of Psychology, University of Georgia, Athens (1983), 6-9.

<sup>24</sup>Harvey, The Impostor Phenomenon and Achievement, 39.

<sup>25</sup>Ibid., 44.

<sup>26</sup>Topping, The Impostor Phenomenon, 90.

<sup>27</sup>Ibid., 87.

<sup>28</sup>Holmes, "The Impostor Phenomenon," 41.

<sup>29</sup>Marija J. Norusis, SPSS-X Advanced Statistics Guide (Chicago, IL: SPSS Inc., 1985), 73-121.

## CHAPTER IV

### RESULTS

The subjects for this investigation were 104 honors English students (37 males and 67 females) aged 14-18, in grades nine through twelve of a suburban high school in Southeastern Virginia. Prior to the testing of the hypotheses, descriptive statistics were computed for all variables under study. There were no obvious departures from normality or linearity and there were no missing data.

#### Descriptive Statistics for Harvey IP Scale

Table 1 presents the descriptive statistics for the Harvey IP Scale. The total sample had a mean of 32.08 with a standard deviation of 9.40. Group 1, the 83 subjects scoring 39 or below, had a mean IP score of 28.63 with a standard deviation of 6.71. Group 2, the 21 subjects scoring equal to or above the cutoff score of 40, had a mean IP score of 45.71 with a standard deviation of 5.10. Those scoring above the cutoff score have more impostor-related tendencies and characteristics. However, their scores do not reach the clinical cutoff score of 62. For ease of discussion, hereafter Group 1 will be referred to as non-impostors and Group 2 as impostors.

For the total sample, 20.2 percent scored at or above the cutoff score of 40. The IP scores ranged from 7-56 with none scoring 62 or

above on the Harvey IP Scale. Scores above 62 indicate the subject is experiencing a clinical level of IP.

Table 1.--Descriptive Statistics of Harvey IP Scale Scores

Statistic	Total (N = 104)	Group 1 (N = 83)	Group 2 (N = 21)
Mean	32.08	28.63	45.71
SE Mean	.92	.74	1.11
Median	31.00	29.00	44.00
Mode	29.00	29.00	41.00
Standard Deviation	9.40	6.17	5.10
Kurtosis	.06	.17	-.94
SE Kurtosis	.47	.52	.97
Skewness	.23	-.62	.55
SE Skewness	.28	.26	.50
Range	49.00	32.00	16.00
Minimum	7.00	7.00	40.00
Maximum	56.00	39.00	56.00

N = 104

#### Analysis by Gender for Total Sample

A t test was computed to determine if male and female students differed significantly on mean Harvey IP Scale scores. Table 2

presents the means, standard deviations and t-test for the Harvey IP Scale by gender.

The 67 females in the sample had a mean Harvey IP Scale score of 31.97 with a standard deviation of 8.56. The 37 males had a mean IP score of 32.27 with a standard deviation of 10.89. The analysis resulted in a  $t$  value of .16 ( $df = 102$ ;  $p = .877$ ) indicating that male and female subjects did not differ on mean Harvey IP Scale scores. Based on this result, hypotheses were tested for the total sample rather than each gender separately.

Table 2.--Harvey IP Scale Scores by Gender

	N	Mean	Standard Deviation	t value	p
Females	67	31.97	8.56	.16	.877
Males	37	32.27	10.89		

N = 104

#### Analysis by Gender and IP Scale Category

A 2 x 2 contingency table was analyzed for gender differences by Harvey IP Scale category as shown in table 3. Of the 67 female subjects 80.6 percent ( $N = 54$ ) were in the non-impostor group whereas 19.4 percent ( $N = 13$ ) were in the impostor group--those scoring equal to or above the cutoff score of 40. Of the 37 males in the sample, 78.4 percent ( $N = 29$ ) were in the non-impostor group while 21.6 percent



(N = 8) were in the impostor group. The analysis resulted in a chi-square value of .0002 (df = 1; p = .988) indicating that the proportion of males and females who could be classified as impostors and non-impostors remained constant across gender.

Table 3.--Frequency Distribution and Percentage of Impostors and Non-Impostors Across Gender

Gender	Harvey IP Scale Category				X <sup>2</sup>	p
	Non-Impostor		Impostor			
	N	%	N	%		
Females	54	80.6	13	19.4		
Males	29	78.4	8	21.6	.0002	.988
Total	83	79.8	21	20.2		

N = 104

#### Analysis by Grade and IP Scale Category

A 2 x 4 contingency table was analyzed for grade differences by Harvey IP Scale category as shown in table 4. For the 26 ninth graders 76.9 percent (N = 20) were classified as non-impostors and 23.1 percent (N = 6) fell into the impostor group. Of the 27 tenth graders 85.2 percent (N = 23) fell into the non-impostor category while 14.8 percent (N = 4) were classified as impostors. Of the 30 eleventh graders 76.7 percent (N = 23) were non-impostors and 23.3 percent (N = 7) were impostors. For the 21 twelfth graders 81.0 percent (N = 17) fell into the non-impostor category while 19.0 percent (N = 4) were impostors. The analysis resulted in a chi-square value of .819 (df = 3; p = .845)

indicating that the proportion of impostors and non-impostors remained constant across grade level.

Table 4.--Frequency Distribution and Percentage of Impostors and Non-Impostors Across Grade Level

Grade Level	Harvey IP Scale Category				X <sup>2</sup>	p
	Non-Impostor		Impostor			
	N	%	N	%		
9	20	76.9	6	23.1		
10	23	85.2	4	14.8	.819	.845
11	23	76.7	7	23.3		
12	17	81.0	4	19.0		

N = 104

#### Analysis by GPA and IP Category

A one-way analysis of variance was computed to determine if there was a significant difference in the mean GPA of impostors and non-impostors and the results are presented in table 5. The total sample of 104 subjects had a mean GPA of 3.33 (A = 4, B = 3, C = 2, D = 1) with a standard deviation of .494. The 21 subjects scoring equal to or above the cutoff score of 40 (impostor) had a mean GPA of 3.37 with a standard deviation of .40. The 83 students scoring below the cutoff score of 40 had a mean GPA of 3.33 with a standard deviation of .517. The one-way analysis of variance resulted in a F value of .145 (df = 1,102; p = .704) indicating impostors and non-impostors did not differ significantly in mean GPA.

Table 5.--Analysis of Variance by GPA and Harvey IP Scale Category

Source	df	Sum of Square	Mean Square	F	p
Between groups	1	.0357	.0357	.145	.704
Within groups	102	25.1197	.2463		
Total	103	25.1554			

N = 104

#### ACL Descriptive Statistics by IP Category

Table 6 presents the means, standard deviations, and univariate F-Ratios (df = 1; 102) for the ACL scales by the impostor and non-impostor groups. The non-impostor mean on the A-1 (Origence - Intellectence) scale was above 60 and showed the greatest variability for this group. The impostor group also had a mean above 60 on the A-1 scale and Adapted Child but had means below 40 on Favorable Adjectives, Military Leadership, and Adult scales. Five additional scales were borderline below average for the impostor group--Order, Intraception, Self-Control, Nurturing Parent, and A-4.

#### Stepwise Discriminant Analysis of ACL Need Scales

A stepwise discriminant analysis of the ACL Need Scales was computed. Variables were examined for entry or removal on the basis of their partial F values; in this analysis the inclusion value was 1.000. The tolerance level for significance was .001.

Table 7 presents the need scales entered at each step, the resulting Wilks's lambda and the standardized discriminant function

Table 6.--Means, Standard Deviations and Univariate F-Ratios  
of ACL Scales for Non-Impostors and Impostors

Variable	Non-Impostors (N=83)		Impostors (N=21)		F
	$\bar{X}$	SD	$\bar{X}$	SD	
<b>Modus Operandi</b>					
Number Checked	45.54	9.97	49.48	8.42	2.76
Favorable	48.86	7.16	39.76	6.62	27.80***
Unfavorable	49.96	7.09	57.66	7.79	18.99***
Commonality	45.06	9.45	42.33	9.43	1.40
<b>Need Scales</b>					
Achievement	46.48	7.22	42.43	7.99	5.05
Dominance	50.64	7.67	47.38	6.49	3.20
Endurance	46.71	6.84	41.62	7.65	8.85**
Order	44.22	7.04	40.14	9.25	4.94*
Intracception	46.16	7.19	40.38	9.18	9.61**
Nurturance	51.12	8.35	46.10	8.89	5.92
Affiliation	50.96	7.80	44.38	7.63	12.04***
Heterosexuality	55.90	8.79	53.52	10.86	1.11
Exhibition	54.58	8.35	55.10	9.71	.00
Autonomy	50.42	7.67	52.71	7.81	1.49
Aggression	51.99	8.31	55.95	8.81	3.72
Change	52.54	7.51	53.38	9.99	.18
Succorance	47.20	8.20	56.67	7.91	22.63***
Abasement	47.90	7.49	51.90	10.04	4.13*
Deference	46.16	8.44	42.62	10.20	2.70
<b>Topical Scales</b>					
Counseling Readiness	46.94	8.52	51.48	10.55	4.30*

Table 6.--Continued.

Variable	Non-Impostors (N=83)		Impostors (N=21)		F
	$\bar{X}$	SD	$\bar{X}$	SD	
Self-Control	43.72	9.43	40.57	12.89	1.60
Self-Confidence	51.54	8.63	44.14	8.14	12.59***
Personal Adjustment	50.04	7.79	44.71	8.01	7.73**
Ideal Self	51.13	7.70	41.86	6.42	25.89***
Creative Personality	50.66	8.30	44.76	10.43	7.61**
Military Leadership	42.76	7.54	35.33	10.21	13.97***
Masculine Attributes	50.07	8.89	45.81	8.90	3.85
Feminine Attributes	48.60	7.80	49.85	7.45	.44
Transactional Scales					
Critical Parent	47.30	9.08	53.00	8.14	6.87**
Nurturing Parent	49.00	8.38	40.04	7.10	20.26***
Adult	44.00	7.13	35.14	6.91	26.16***
Free Child	54.58	9.63	50.00	11.55	3.49
Adapted Child	51.58	7.41	61.19	7.10	28.66***
Origence-Intellectence					
A-1 (HO-LI)	60.43	11.59	62.67	9.64	.66
A-2 (HO-HI)	49.90	8.39	54.33	10.99	4.10*
A-3 (LO-LI)	48.75	9.53	43.29	8.11	5.82
A-4 (LO-HI)	42.67	8.88	40.05	9.09	2.45

\*\*\*  $p < .0001$ ; \*\*  $p < .01$ ; \*  $p < .05$

N = 104

coefficients. The results show that Succorance entered the equation first, Deference entered second, with Intraception entering last.

Table 7.--Stepwise Discriminant Analysis of ACL Need Scales

Step	Need Scale	Wilks's Lambda*	Discriminant Coefficient
1	Succorance	.818	.918
2	Deference	.755	-.387
3	Intraception	.744	-.296

\*  $p < .00001$

N = 104

The three scales combined to form one discriminant function explaining 100.0 percent of the variance of which approximately 26 percent was attributable to between-group differences. The discriminant function had an eigenvalue of .344 and a canonical correlation of .506. The eigenvalue is the ratio of the between-group to within-group sum of the squares. In this two-group analysis, the canonical correlation is the Pearson correlation between the discriminant score and the group variable.

The non-impostor group mean on the discriminant function was -.292 whereas the impostor group mean was 1.160. The largest weight in the discriminant function was assigned to Succorance (.918) with lower weightings assigned to Deference (-.387) and Intraception (-.296). Based on this combination of variables, the discriminant function was

named "Dependent" and it represented 26 percent of the total variance in the Harvey IP Scale scores. The Wilks's lambda of .743 yielded a chi-square value of 29.726 ( $df = 3$ ;  $p < .00001$ ) indicating a significant difference between impostors and non-impostors on the mean of the discriminant function. As a result, the null hypothesis was not supported.

Based on the coefficients in table 7, it is possible to calculate the discriminant score for each subject in the sample by multiplying the standardized coefficient by the values of the need scales, summing the products, and adding the constant. A probability level of .50 was selected for classification purposes.

The results of the classification of the 104 subjects are presented in table 8. For the 83 subjects in the non-impostor group, 74.7% were predicted accurately, while 21 were assigned incorrectly to the impostor group. For the 21 impostors, 76.2 percent were correctly classified, while five were assigned incorrectly to the non-impostor group. The overall percentage of subjects correctly classified was 75 percent.

Table 8.--Classification Results using ACL Need Scales

Actual Group	N	Predicted Group Membership	
		Non-Impostor	Impostor
Non-impostor	83	62 74.7%	21 25.3%
Impostor	21	5 23.8%	16 76.2%

N = 104

### Factor Analysis of ACL Scales

To reduce the personality dimension for further analysis, a principal component factor analysis was performed on the 37 ACL scales. The results of the procedure revealed six factors with eigenvalues greater than one, accounting for 79.3 percent of the variance. These six factors were rotated to simple structure using the varimax criteria. Based on this analysis, composite factor scores were generated from the major loadings of the six rotated factors and variables with weights greater than .50 were included in the factor score. Table 9 presents the loadings of the ACL scales after rotation on six factors.

Factor 1 accounted for 32.4 percent of the variance and included the personality variables pertaining to attentiveness to others. Highest positive loadings for Factor 1 were found on the scales of Affiliation, Nurturance, Nurturing Parent, Ideal-Self, Favorable, Personal Adjustment and A-3. The highest negative loadings were on the scales of Unfavorable, Critical Parent, Counseling Readiness, Adaptive Child, and Aggression. This factor was labeled "Sociability" and high scorers are characterized as gregarious, compassionate, optimistic, contented, and attentive to others.

Factor 2 explained 23.4 percent of the variance and was defined by high positive loadings on Free Child, Exhibition, Dominance, Aggression, Self-Confidence, Creative Personality, Heterosexuality, and Masculinity with high negative loadings on Deference and Self-Control. This factor was named "Self-Centered" and subjects scoring high on this factor are characterized as being ascendent, demanding, strong-willed,



Table 9.--Factor Loadings of Personality Variables from the ACL Scales

Factor (Label)	Loading	ACL Scale
Factor 1 (Sociability)	.89	Affiliation
	.85	Nurturance
	.82	Nurturing Parent
	.78	Personal Adjustment
	.78	Ideal-Self
	.77	Favorable
	-.77	Unfavorable
	-.66	Critical Parent
	-.62	Counseling Readiness
	-.56	Adapted Child
-.54	Aggression	
Factor 2 (Self-Centered)	.86	Exhibition
	.84	Free Child
	.81	Dominance
	.77	Self-Confidence
	.64	Creative Personality
	.58	Heterosexuality
	.55	Critical Parent
	.52	Masculinity
	-.78	Self-Control
	-.72	Deference
Factor 3 (Rigidity)	.87	Order
	.84	Endurance
	.81	Military Leadership
	.78	Adult
	.77	Achievement
	.75	A-4
	-.63	Adapted Child
Factor 4 (Submissive)	.66	Femininity
	.60	Commonality
	.55	Succorance
	-.56	Creative Personality
	-.52	Ideal-Self
Factor 5 (Unimaginative)	-.57	Change
	-.55	A-2
Factor 6 (Impulsive)	.87	Number Checked

N = 104

self-indulgent, and rebellious.

Factor 3 explained 11.7 percent of the variance and was defined by high positive loadings on Order, Endurance, Military Leadership, Achievement, Adult, and A-4 with a moderate negative loading on Adapted Child. This factor was named "Rigidity." Subjects scoring high on Factor 3 are best characterized by their fastidiousness, persistence, self-discipline, diligence, and rationality. Setbacks and distractions are not easily endured, nor are change and variety welcome.

Factor 4 explained 5.3 percent of the variance and was characterized by moderately positive loadings on Femininity, Commonality, and Succorance with moderately negative loadings on Creative Personality and Ideal-Self. Subjects scoring high on Factor 4 are best characterized by reliability, sympathy, and considerateness. They are likely to seek the support, sympathy, and affection of others. They may be easily dominated, give up in the face of adversity, delay action, and be self-defeating and worrying. Factor 4 was labeled "Submissive."

Factor 5 explained 3.7 percent of the variance and was defined by moderate negative loadings on Change and A-2. Subjects who score high on Factor 5 describe themselves as practical, ordinary, and predictable. They are constricted, emotionally bland, seek certainty, avoid risks, and delay gratification. Based upon the above characterizations, Factor 5 was labeled "Unimaginative."

Factor 6 explained 2.8 percent of the variance and was defined solely by an extremely high positive loading on Number Checked. This factor was named "Impulsive" based on the subjects' tendency to describe themselves as attractive, expressive, eager to explore,

flirtatious, versatile and spontaneous while at the same time being self-seeking and lacking in responsibility.

Table 10 presents the means, standard deviations, univariate F-Ratios, and standardized discriminant function coefficients of the factor-analyzed ACL scales for the impostor and non-impostor groups. From table 10 it can be observed that the non-impostor group had a significantly higher mean on the factors labeled "Sociability," "Self-Centered," and "Rigidity" whereas impostors had a significantly higher mean than non-impostors on the factor labelled "Impulsive."

The factors were then submitted to a stepwise discriminant analysis. The factors of "Impulsive" and "Sociability" combined to form one discriminant function with an eigenvalue of .385 and a canonical correlation of .527. The Wilks's lambda of .722 yielded a chi-square value of 32.90 (df = 2;  $p < .00001$ ). Thus, it is highly unlikely that impostors and non-impostors have the same mean on the discriminant function. The non-impostor group mean on the discriminant function was  $-.309$  whereas the mean for the impostor group was  $1.22$ . Based upon the weights in table 10 the discriminant function was labelled "Sociability" and it accounted for 28 percent of the variance in the Harvey IP Scale scores.

Detailed information on the results of the classification of the 104 subjects is available in table 11. For the 83 subjects in the non-impostor group 75.9 percent were predicted accurately while 20 were assigned incorrectly to the impostor group. For the impostor group 76.2 percent were classified correctly while five were assigned incorrectly to the non-impostor group. Figures in table 11 are based

Table 10.--Means, Standard Deviations, Univariate F-Ratios and Standardized Discriminant Coefficients for Factor-Analyzed ACL

Factor (Label)	Non-Impostor $\bar{X}$	SD	Impostor $\bar{X}$	SD	F	Discriminant Coefficient
Factor 1 (Sociability)	48.20	3.56	44.28	3.89	20.18**	-.66
Factor 2 (Self-Centered)	49.77	2.32	48.33	2.19	6.55*	---
Factor 3 (Self-Discipline)	50.84	4.64	48.15	3.82	6.00*	---
Factor 4 (Submissive)	47.43	3.59	47.88	4.09	.25	---
Factor 5 (Unimaginative)	49.17	4.68	50.02	6.55	.46	---
Factor 6 (Impulsive)	46.37	5.96	53.08	4.98	22.43**	.70

\*\*  $p < .00001$ ; \*  $p < .05$

N = 104

on a prior probability level of .50. The total percentage of cases correctly classified was 75.96 percent.

#### Stepwise Regression Analysis of ACL Scales

Pearson product-moment correlation coefficients were calculated for the entire sample as presented in table 12. From table 12 it can be observed that the ACL Scales of Unfavorable, Succorance and Adapted Child are positively and significantly related to the IP ( $p < .0001$ ). The ACL Scales of Favorable, Achievement, Endurance, Order,

Table 11.--Classification Results of Factor-Analyzed ACL

Actual Group	N	Predicted Group Membership	
		Non-Impostor	Impostor
Non-Impostor	83	63 75.9%	20 24.1%
Impostor	21	5 23.8%	16 76.2%

N = 104

Affiliation, Self-Confidence, Personal Adjustment, Ideal-Self, Military Leadership, and the ego-functioning scales of Nurturing Parent and Adult are negatively and significantly related to the IP ( $p < .0001$ ).

A stepwise multiple regression analysis was computed using the ACL Scales as the independent variables and the Harvey IP Scale as the dependent variable. Only one ACL scale met the PIN limit of .05, Adapted Child. The multiple correlation with the IP variable was .539 indicating that 29 percent of the variance in the IP was accounted for by this scale and that it was the best single predictor of the IP.

#### Stepwise Discriminant Analysis of the IBT

A stepwise discriminant analysis was performed on the Irrational Beliefs Scales. Evaluation of the assumptions of linearity, normality, multicollinearity or singularity, and homogeneity of variance-covariance matrices revealed no threat to multivariate analysis.

Table 13 presents the means, standard deviations, univariate F-Ratios and standardized discriminant coefficients of the IBT scales for

Table 12.--Correlation Coefficients Between Harvey IP Scale and ACL Scales

Scale	Correlation Coefficient	p*
ACL Scale		
Number Checked	.126	.100
Favorable	-.508	.000
Unfavorable	.401	.000
Commonality	-.156	.057
Need Scales		
Achievement	-.348	.000
Dominance	-.217	.014
Endurance	-.403	.000
Order	-.346	.000
Intracception	-.299	.001
Nurturance	-.197	.023
Affiliation	-.346	.000
Heterosexuality	-.107	.139
Exhibition	.068	.247
Autonomy	.173	.040
Aggression	.189	.027
Change	.105	.144
Succorance	.374	.000
Abasement	.191	.026
Deference	-.267	.003
Topical Scales		
Counseling Readiness	.214	.014
Self-Control	-.214	.015
Self-Confidence	-.348	.000
Personal Adjustment	-.336	.000
Ideal-Self	-.455	.000
Creative Personality	-.224	.011
Military Leadership	-.404	.000
Masculinity	-.234	.008
Femininity	-.009	.460

Table 12.--Continued

Scale	Correlation Coefficient	p*
Critical Parent	.182	.032
Nurturing Parent	-.416	.000
Adult	-.518	.000
Free Child	-.146	.070
Adapted Child	.539	.000
Origence Intellectence		
A1	.025	.401
A2	.293	.001
A3	-.238	.007
A4	-.189	.027

\* 1 - tailed significance

N = 104

the impostor and non-impostor groups. Excessively high self-expectations, the demand for approval, anxious overconcern for future events, and helplessness for change are the irrational beliefs whose means are significantly higher for the impostor group. It should be noted that all means for the non-impostor group fell into the average range (5th and 6th stens) on the IBT whereas impostors had above average means on three IBT scales: High Self-Expectation, Anxious Overconcern, and Problem Avoidance.

The four irrational beliefs for which a standardized discriminant function coefficient was provided for in table 13 combined to form one discriminant function explaining 100 percent of the variance with an eigenvalue of .230 and a canonical correlation of .432. The

Table 13.—Means, Standard Deviations, Univariate F-Ratios,  
and Discriminant Coefficients for IBT Scales

Irrational Belief	Non-Impostor (N = 83)		Impostor (N = 21)		F	Discriminant Coefficient
	$\bar{X}$	SD	$\bar{X}$	SD		
Demand for Approval	29.40	7.02	33.95	5.75	7.54**	-
High Self- Expectation	30.82	5.33	35.38	5.94	11.74***	.671
Blame Proneness	31.20	5.36	32.38	5.03	.82	-
Frustration Reactivity	30.76	4.83	32.48	5.36	2.03	-
Emotional Irresponsibility	25.82	5.64	28.67	6.07	4.14*	.262
Anxious Overconcern	32.66	6.23	36.24	4.71	6.02*	.453
Problem Avoidance	29.82	5.40	32.53	6.84	3.75	-
Dependency	31.23	5.08	29.14	4.25	3.00	-.424
Helplessness	27.89	6.07	30.95	5.78	4.34*	-
Perfect Solutions	26.91	5.28	26.71	5.40	.02	-

\*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$

N = 104

discriminant function was named "Perfectionism" and it accounted for 19 percent of the variance in Harvey IP Scale scores. Wilks's lambda was computed at .813 which resulted in a chi-square value of 20.10 (df = 10;  $p = .028$ ) indicating a significant difference between impostors and non-impostors on the mean of the discriminant function. Group centroids for the two groups were calculated to be -.231 for impostors and .916 for non-impostors.



The results of the classification of the 104 subjects using a prior probability level of .50 are presented in table 14. For the 83 subjects in the non-impostor group, 73.5 percent were predicted correctly while 22 were assigned incorrectly to the impostor group. For the 21 impostors, 76.2 percent were correctly classified, while five were assigned incorrectly to the non-impostor group. The overall percentage of subjects correctly classified was 74.04 percent.

Table 14.--Classification Results using IBT Scales

Actual Group	N	Predicted Group Membership	
		Non-Impostor	Impostor
Non-impostor	83	61 73.5%	22 26.5%
Impostor	21	5 23.8%	16 76.2%

N = 104

#### Stepwise Regression Analysis of IBT Scales

A stepwise multiple regression analysis was performed with the IP as the dependent variable and the IBT scales as the independent variables. As the first step in the analysis, Pearson product-moment correlation coefficients were calculated between Harvey IP Scale scores and the IBT Scales as presented in table 15. The IBT scales of Problem Avoidance and High Self-Expectation are the IBT scales most significantly and positively related to Harvey IP Scale scores ( $p < .0001$ ).

As the next step in the analysis a stepwise multiple regression analysis was performed with the IP as the dependent variable and the IBT scales as the independent variables. Table 16 shows the final

Table 15.--Correlation Coefficients Between Harvey IP Scales  
and IBT Scales

IBT Scale	Correlation Coefficient	p
Demand for Approval	.273	.002
High Self-Expectation	.343	.000
Blame Proneness	-.014	.444
Frustration Reactivity	.287	.002
Emotional Irresponsibility	.258	.004
Anxious Overconcern	.281	.002
Problem Avoidance	.389	.000
Dependency	-.189	.027
Helplessness	.273	.002
Perfect Solution	-.186	.029

N = 104

descending order in which two of the independent variables contributed to the prediction of scores on the Harvey IP Scale. Examination of the results of the stepwise multiple regression analysis shows that the IBT scale of Problem Avoidance entered the equation first with IBT High Self-Expectation being the only other IBT Scale to meet the PIN limit of .05. Table 16 contains the increase in  $R^2$  and the significance test for the contribution of each variable to the prediction of the IP from a combination of IBT Scales. The final multiple correlation with the IP variable was .469 indicating that 22 percent of the variance in the IP was accounted for by the combination of the two independent variables.

Table 16.--Contribution of IBT Variables to the Prediction of the Impostor Phenomenon

Variables Entered	Multiple	R <sup>2</sup> <sub>R</sub>	R <sup>2</sup> change	Simple	B r	Beta	F	Significance
Problem Avoidance	.389	.15	.15	.389	.632	.389	18.246	.0000
High Self-Expectation	.469	.22	.22	.343	.441	.269	14.280	.0000

N = 104

Stepwise Regression Analysis of  
Combined ACL and IBT Scales

A stepwise multiple regression analysis was performed on the data using the IP scale, the ACL and IBT scales. Table 17 shows the final descending order in which four of the independent variables contributed to the prediction of scores on the IP Scale.

The analysis shows that the ACL scale of Adapted Child entered the equation first, the IBT scale Helplessness for Change entered second, with the IBT scale High Self-Expectations entering third, and IBT Dependency entering last. Table 17 also contains the increase in  $R^2$  and the significance test for the contribution of each variable to the prediction of scores on the IP.

The final multiple correlation with the IP variable was .62 indicating that 38 percent of the variance in the IP was accounted for by the combination of the four independent variables.

The Adapted Child scale of the ACL accounted for 29 percent of the prediction value of the equation, and as shown in table 17, it was the best single predictor of the score on the Harvey IP Scale. The IBT scales of Helplessness, High Self-Expectation, and Dependency accounted for approximately three percent each.

Contained in this chapter has been a presentation of the findings. A discussion of these and recommendations for future study are included in Chapter V.

Table 17.--Contribution of ACL and IBT Variables to the Prediction of the Impostor Phenomenon

Variables Entered	Multiple R	R <sup>2</sup>	R <sup>2</sup> change	Simple r	B	Beta	F	Significance
Adapted Child	.539	.290	.290	.539	.510	.449	27.843	.000
Helplessness	.596	.323	.310	.274	.251	.163	4.083	.046
High Self-Expectation	.583	.352	.333	.343	.293	.178	4.493	.036
Dependency	.617	.378	.354	-.189	-.311	.165	4.288	.041

N = 104

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

In the first four chapters, the statement of the problem, review of the literature, methodology, and data analysis were presented. In this chapter, a summary of the previous chapters, conclusions from the data analysis, problems and limitations of the study's results, practical implications of the study, and suggestions for further research are discussed.

#### Summary of Preceding Chapters

This study was designed as an ex post facto investigation of the Impostor Phenomenon (IP) in high-achieving students on the secondary educational level. The purpose of the study was to ascertain if impostors could be differentiated from non-impostors on the basis of gender, grade level, grade point average (GPA), personality characteristics and irrational beliefs. A cutoff score of 40 on the Harvey IP Scale was selected a priori to divide subjects into impostor and non-impostor groups.

Subjects for this investigation consisted of 104 honors English students in grades nine through twelve from a large ( $N = 1,564$  - 80 percent white, 17 percent black, and 3 percent Asian) suburban high school in Southeastern Virginia. Of the total sample, 38 were males and 67 were females. Subjects' ages ranged from 14 to 18. Since all

subjects were age 18 or under, informed consent was obtained from a parent or guardian. Each subject completed the following instruments: the Demographic Data Sheet, the Harvey IP Scale, the Adjective Check List (ACL) and Jones's Irrational Beliefs Test (IBT). All testing took place on October 3, 1987, in the subjects' regular classrooms.

The five null hypotheses developed for study and statistical analysis were as follows:

Hypothesis #1. There is no significant difference in the proportion of males and females classified as impostors or non-impostors.

Hypothesis #2. There is no significant difference in the proportion of impostors and non-impostors across grade level.

Hypothesis #3. There is no significant difference between the mean GPA of impostors and non-impostors.

Hypothesis #4. There is no significant difference between the impostors and non-impostors on the Need Scales of the ACL.

Hypothesis #5. There is no significant difference between the impostors and non-impostors on the IBT.

Separate chi-square analyses were computed to determine the differences between impostors and non-impostors on the gender and grade level variables. A one-way analysis of variance was used to evaluate the difference between impostors and non-impostors on the basis of GPA. Separate stepwise discriminant analyses were performed to evaluate differences between impostors and non-impostors on the Need Scales of the ACL and the Irrational Beliefs Scales of the IBT.

Data were examined to ensure that the necessary criteria and assumptions for the use of each analysis were met. Frequency

distributions were calculated as well as standard description statistics relating to each of the research variables. The Box's M Test was used to determine the equality of the covariance matrices.

### Hypotheses, Findings and Conclusions

#### Hypothesis #1

Hypothesis one stated that there would be no significant difference in the proportion of males and females classified as impostors and non-impostors. A 2x2 contingency table was analyzed for gender differences by Harvey IP Scale groupings. A cutoff score of 40 on the Harvey IP Scale was selected to divide subjects into impostor and non-impostor groups. The analysis resulted in a chi-square value of .0002 (df = 1; p = .988) indicating that the proportion of males and females classified as impostors and non-impostors remained constant across gender. The null hypothesis that there would be no significant difference in the proportion of males and females classified as impostors and non-impostors was supported by the data.

#### Hypothesis #2

Hypothesis two stated that there would be no significant differences in the proportion of impostors and non-impostors across grade level. A 2x4 contingency table was analyzed for grade differences by Harvey IP Scale category. Those scoring above 40 were classified as impostors while those scoring 39 or below were classified as non-impostors. The analysis resulted in a chi-square value of .819 (df = 3; p = .845) indicating that the proportion of impostors and non-impostors remained constant across grade level. The null hypothesis



that there would be no significant difference in the proportion of impostors and non-impostors across grade level was supported.

#### Hypothesis #3

Hypothesis three stated there would be no significant difference in the mean grade point average (GPA) of impostors and non-impostors. The one-way analysis of variance resulted in a  $F$  value of .145 ( $df = 1; 102; p = .704$ ) indicating that impostors and non-impostors did not differ significantly in mean GPA. The null hypothesis that there would be no significant difference between impostors and non-impostors on mean GPA was supported.

#### Hypothesis #4

Hypothesis four stated that there would be no significant difference between impostors and non-impostors on the Need Scales of the ACL. Univariate F-Ratios of ACL Need Scales for non-impostors and impostors indicated that the impostor group had significantly lower means on the Endurance, Intraception, Order, and Affiliation scales and significantly higher means on the Succorance and Abasement scales than their non-impostor peers. The results of the stepwise discriminant analysis revealed that the scales of Succorance, Deference, and Intraception combined to maximally separate the two groups. The impostor group mean on the discriminant function was 1.160 whereas the non-impostor group mean was -.296. The Wilks's lambda of .743 yielded a chi-square value of 29.726 ( $df = 3; p = .00001$ ) indicating a significant difference between impostors and non-impostors on the mean of the discriminant function. The null hypothesis that there would be no significant

difference between impostors and non-impostors on the Need Scales of the ACL was not supported.

#### Hypothesis #5

Hypothesis five stated there would be no significant difference between impostors and non-impostors on the IBT. Based on the univariate F-Ratios, High Self-Expectation, Demand for Approval, Anxious Overconcern, and Helplessness were the irrational beliefs whose means were significantly higher for impostors when compared with their non-impostor peers. The results of a stepwise discriminant analysis revealed that the IBT Scales of High Self-Expectation, Anxious Overconcern, Dependency, and Emotional Irresponsibility combined to maximally separate the groups. Wilks's lambda was computed at .813 which resulted in a chi-square value of 26.02 ( $df = 3$ ,  $p < .00001$ ) indicating a significant difference between impostors and non-impostors on the mean of the discriminant function. The null hypothesis that there would be no significant difference between impostors and non-impostors on the IBT was not supported.

#### Additional Findings and Conclusions

##### Gender

A  $t$  test was computed to determine if male and female subjects differed significantly on mean Harvey IP Scale scores. The analysis resulted in a  $t$  value of .16 ( $df = 102$ ;  $p = .877$ ). It was concluded that males and females do not differ on mean Harvey IP Scale scores.

### Personality and the IP

A principal component factor analysis was computed on the 37 scales of the ACL and six factors emerged accounting for 79.3 percent of the variance. The factors were entered in a stepwise discriminant analysis and two factors labelled "Sociability" and "Impulsive" combined to significantly separate the impostor and non-impostor groups ( $p < .00001$ ). It was concluded that impostors could be differentiated from non-impostors on the basis of the ACL.

A stepwise multiple regression analysis was computed using the ACL scales as the independent variable and the Harvey IP Scale as the dependent variable. It was concluded that the Adapted Child scale was the best single predictor of scores on the Harvey IP Scale. The multiple correlation with the IP variable was .539 indicating that 29 percent of the variance in Harvey IP Scale scores was accounted for by the variable.

### Irrational Beliefs and the IP

A stepwise multiple regression analysis was performed with the Harvey IP Scale scores as the dependent variable and the IBT scales as the independent variables. The data showed that the IBT scales of Problem Avoidance and High Self-Expectation were significant predictors of Harvey IP Scale scores. The final multiple correlation with the IP variable was .469 indicating 22 percent of the variance in the IP could be accounted for by the combination of these two independent variables. It was concluded that scores on the Harvey IP Scale could be predicted from the IBT.

### Combined ACL and IBT and the IP

A stepwise multiple regression analysis was performed on the data using the Harvey IP Scale and the ACL and IBT scales. The Adapted Child scale of the ACL was the best single predictor of the IP followed by the IBT scales of Helplessness, High Self-Expectation, and Dependency. The final multiple correlation with the IP variable was .62 indicating that 38 percent of the variance in the IP could be accounted for by this combination of variables. It was concluded that scores on the Harvey IP Scale could be predicted from a combination of ACL and IBT scales.

### Discussion of the Findings

#### Prevalence and Intensity of the IP

The mean of 32.08 of this sample was most similar to the mean of 34.56 found by Harvey with a sample of collegiate honors students,<sup>1</sup> the mean of 31.56 found by Lawler with her sample of combined graduates and honor undergraduates,<sup>2</sup> and with the mean of 32.88 found by Grays in her sample of black students at a white college.<sup>3</sup> The non-impostor group mean of 28.63 was similar to the mean of 28.31 found by Flewelling in her sample of professionals,<sup>4</sup> and to the mean of 25.86 found by Topping in her sample of university faculty members.<sup>5</sup>

The impostor group mean of 45.71 was most similar to the mean of 44.02 found by Edwards et al. in their combined sample of subjects completing post-graduate training and Ph.D.s in the field<sup>6</sup> and to Harvey's first year graduates whose mean was 42.17.<sup>7</sup> The data suggest that the impostor group, representing 20.2 percent of the sample, experiences a level of the IP similar to that of post-graduate students

on the collegiate level. This would seem to be somewhat high in that these students are not likely to be dropped from honors English or to be told that they cannot proceed with their studies. The data further suggest that 20.2 percent of the population under study are troubled by impostor symptoms and may be in danger of withdrawing from their achievement goals, or be otherwise limited from accomplishing all that they might.

#### Gender and the IP

The theory behind the IP suggests that, due to early sex role socialization, females may be more vulnerable to experiencing the emotional distress associated with the IP than males.<sup>8</sup> However, Topping in a study of 285 university faculty members found that males reported experiencing the IP to a significantly greater degree than females.<sup>9</sup> In a sample of 30 more "average achievers," Harvey found that both sexes are equally vulnerable to the IP.<sup>10</sup> In agreement with Harvey, Edwards et al. in their validation study of the Harvey IP Scale found no gender differences in IP Scale scores for their sample of mixed graduate students and professionals.<sup>11</sup> Lawler also found no gender differences in her collegiate population.<sup>12</sup>

In agreement with the majority of the research studies and contrary to the original assumption of Clance and Imes, the findings of this study support a hypothesis that the experiencing of the IP is not related to gender. The finding of no gender differences in Harvey IP Scale scores held true over the full distribution of IP Scale scores (see table 2) and for the impostor and non-impostor categories (see table 3). Furthermore, subjects in this study did not differ

significantly in their description of themselves as possessing either masculine or feminine attributes as measured by the ACL (see table 6).

#### Grade Level and the IP

The results of the pilot study showed that juniors experienced the IP to a significantly greater extent than seniors.<sup>13</sup> Earlier, Harvey found that as years in an academic program increase, the IP decreases.<sup>14</sup> Topping also found that as faculty rank increased, the experiencing of the IP decreased.<sup>15</sup> Likewise, Flewelling found in her population of professionals that vulnerability to the IP varied significantly and negatively with career longevity.<sup>16</sup>

In contrast, the results of this study indicated that the number and percentage of subjects vulnerable to the IP (those scoring 40 or above on the Harvey IP Scale) remained constant across grade level (see table 4). Furthermore, there was no significant relationship between grade level and the IP over the full range of Harvey IP Scale scores ( $r = .09$ ;  $p = .18$ ). Why the entering class of ninth graders did not show a situational increase in vulnerability to the IP is unknown. Perhaps they were exposed to an adequate orientation program. Another explanation is that they have been "tracked" in honors English since grade school and are therefore confident in their ability to succeed. Possibly, the IP is a trait variable and therefore stable over time.

#### GPA and the IP

GPA was selected for testing because it was assumed that those with the highest GPAs would have more to lose in the event of failure and thus would be more likely to experience the psychological distress

associated with the IP. Contrary to expectation, the data showed that there was no significant difference between the mean GPA of impostors and non-impostors (see table 5). In addition, the association of GPA to the full range of Harvey IP Scale scores was not significant ( $r = -.076$ ;  $p = .220$ ). Although carrying a high GPA is a necessary condition for the occurrence of the IP, it does not appear to be sufficient.

#### Personality Characteristics and the IP

The data from this study show that impostors and non-impostors share some personality characteristics which are probably common to most high-achieving students at this educational level, e.g., seeking leadership roles, seeking interaction with opposite sex peers, eliciting the immediate attention of others, taking pleasure in change and variety, and expressing a desire to act independently (see table 6).

However, compared to their non-impostor peers, impostors were significantly more likely to describe an unfavorable image of themselves, to be less self-disciplined and orderly, to place less emphasis on being attentive to the thoughts and feelings of others, to express a need for sympathy and emotional support from others, and to experience difficulty in setting and attaining goals.

In the Transactional Analysis section of the profile, non-impostors scored significantly higher than impostors on the Nurturing Parent and Adult scales whereas impostors scored significantly higher on the Critical Parent and Adapted Child scales. Thus, non-impostors described themselves as significantly more likely to respond to others in a supportive and nurturing manner and to be more attentive to their

duties and obligations. In contrast, impostors were significantly more likely to describe themselves as being indifferent to the thoughts and feelings of others and as being irritated by outside interference. Impostors were also significantly more likely than their non-impostor peers to characterize themselves as lacking in independence, as feeling unsure about coping with the demands of life, as fearing and avoiding confrontation, as being easily disorganized by stress and trauma, and as possessing a brittle defense system. In general, the impostor profile is supported by the clinical observations of Clance and Imes.<sup>17</sup>

When the ACL Need scales were submitted to a stepwise discriminant analysis, the scales of Succorance, Deference, and Intrareception combined to significantly differentiate the impostor and non-impostor groups (see table 9). The discriminant function was labelled "Dependent" and it explained 26 percent of the variance in Harvey IP Scale scores. This finding is consistent with Clance's description of the interpersonal behavior of IP victims.<sup>18</sup> As others attempt to meet the impostor's need for emotional support, they are met with irritated resistance and rejection. As a result, others may feel helpless and withdraw from the relationship.

When the whole ACL was factored, impostors compared to non-impostors had significantly lower means on the factors labelled "Sociability," "Self-Centered," and "Self-Disciplined" and a significantly higher means on the factor labelled "Impulsive." The two groups did not differ significantly on the factors labelled "Submissive" and "Unimaginative." When the six factors were submitted to a stepwise



discriminant analysis, the two factors labelled "Impulsive" and "Sociability" combined to significantly separate the two groups.

This combination of factors characterized impostors as being expressive individuals who are somewhat inconsistent and capricious in their reactions. Others may see them as attractive and quickly enthusiastic while at the same time somewhat self-seeking and lacking in responsibility. In addition, an underlying current of anxiety makes their wholehearted participation in social interactions with others difficult.

The data do not support Lawler's finding that impostors are more likely to be introverts than extraverts.<sup>19</sup> The impostor group in this study did not characterize themselves as being humorless, dull, reserved, aloof, introspective, or unable to express aggression. Perhaps the conflicting results can be attributed to the use of different instruments to measure personality characteristics; Lawler used the MBTI whereas this study used the ACL.

Finally, data from the stepwise multiple regression analysis show that the Adapted Child scale of the ACL is the best single predictor of the IP. The correlation of this scale with the IP variable was .539 indicating that 29 percent of the IP variance was accounted for by this scale. Basically, subjects scoring high on this scale are characterized by a set of conforming and compromising behaviors resulting from parental programming in the "plastic years" (ages 2-6).<sup>20</sup> This finding is consistent with the clinical observation of Clance and Imes that the IP begins in early childhood.<sup>21</sup>

### Irrational Beliefs and the IP

One of the major purposes of this study was to determine if impostors could be differentiated from non-impostors on the basis of irrational beliefs. Data from testing (see table 15) suggest impostors are significantly more likely than non-impostors to endorse the following irrational beliefs: (a) High Self-Expectations--one should be thoroughly competent and achieving in all possible respects if one is to consider oneself worthwhile; (b) Demand for Approval--it is a dire necessity to be loved and approved of by friends, family, and peers; (c) Anxious Overconcern--if something is fearful, one should be terribly concerned about it and should keep dwelling on the possibility of its occurring; and (d) Helplessness--one is helpless and has no control over what one experiences or feels.

This set of beliefs was associated in the literature with anxiety,<sup>22</sup> depression,<sup>23</sup> and psychological distress.<sup>24</sup> The lack of an endorsement for Blame Proneness suggests impostors are not like to be Type A's.<sup>25</sup> The data also suggest that impostors are likely to be less assertive than their non-impostor peers.<sup>26</sup>

The findings from a stepwise discriminant analysis of the IBT scales show that a combination of High Self-Expectations, Anxious Overconcern, Dependency, and Emotional Irresponsibility significantly separated the impostor and non-impostor groups ( $p = .028$ ). The discriminant function was named "Perfectionism" and it accounted for 19 percent of the variance in Harvey IP Scale scores (see table 15).

It appears impostors strive to attain perfection. Perhaps they ensure failure by establishing impossible standards for themselves and

then overreact with excessive anxiety. The results may be self-blame for inevitable failure, lowered self-esteem, and paralysis and fear at attempting anything.

Results from a multiple regression analysis of IBT scores upon Harvey IP Scale scores provided support for a hypothesis that vulnerability to the IP is mediated by excessive, exaggerated beliefs. The IP was best predicted by the IBT scales of Problem Avoidance and High Self-Expectations (see table 16). The proportion of variance accounted for by these two independent variables was 22 percent. However, this does not demonstrate a causal relationship.

To a limited extent the results support a hypothesis that disordered cognitive processes mediate IP symptoms and behaviors. The results are not inconsistent with the hypothesis that modification of such cognitions may lead to remission of IP symptoms and behaviors.

#### Combined ACL and IBT Scales

Finally, the ACL and IBT scales were combined and a stepwise multiple regression analysis was performed with the Harvey IP Scale as the dependent variable. The ACL scale of Adapted Child entered the equation first followed by the IBT scales of Helplessness, High Self-Expectations, and Dependency. The final multiple correlation with the IP variable was .62 indicating that 38 percent of the variance in the IP was accounted for by this combination of variables. The Adapted Child scale of the ACL accounted for 29 percent of the predictive value of the equation and was the best single predictor of the Harvey IP Scale score. Therefore, in the personality domain, the impostor is best described as an Adapted Child.

### Problems and Limitations of the Study

The major problem associated with this study was the selection of a cutoff score to divide subjects into impostor and non-impostor groups. The selection of 40 as a cutoff score suggests subjects are experiencing at least a moderate level of the IP which may limit their achievement.

This study was limited to one middle to upper-middle class high school and the results may not be applicable to honors English students in rural or inner city schools. The results may also not generalize to honors students in other fields of study, e.g., honors students enrolled in advanced math or science classes.

### Practical Applications of the Study

Although further research is needed on the cognitive mediation of the IP, the results of this study offer some direction for counselors, teachers, and administrators who try to help students reduce the personal and social consequences of the IP. Groups or programs for alleviation of IP symptoms should target cognitive restructuring of excessively high self-expectations, anxious overconcern with the possibility of harm, and the idea that it is easier to avoid than to face life's difficulties and responsibilities. Given there were no differences between male and female students in Harvey IP Scale scores, mixed sex programming would seem appropriate.

Such programming could be provided remedially for those with identified IP symptoms and behaviors or preventively by screening honors students with an instrument like the Harvey IP Scale and offering intervention to those with a greater probability of IP

problems even though such problems may not have surfaced. Programs could include school workshops on academic stress or could be integrated into the classroom in courses dealing with such topics as stress, psychology of adjustment, or interpersonal relations.

#### Recommendations for Further Research

The findings of this dissertation suggest a number of investigations which, if completed, would further the understanding of the IP in high-achieving student populations. The results of this study showed the incidence of identified impostors (those scoring 40 or above on the Harvey IP scale) was 20.2 percent. Because the experiencing of the IP is believed to be chronic and to begin in early childhood, it is recommended that future studies be undertaken to determine the incidence of identified impostors on lower educational levels. And because this study concentrated solely on honors English students, studies to determine the incidence of identified impostors with expertise in other skill areas, e.g., mathematics, art, music, or athletics would contribute further to the research area. This study also indicated the incidence of identified impostors remained constant across grade level. A longitudinal study is needed to determine if identified impostors evidence certain behaviors associated with the IP such as selecting courses below their ability level or withdrawing from their achievement-related goals. An observational study is also suggested to identify the behavioral correlates of the IP in the classroom.

Another major finding of this study indicated that identified impostors endorsed a set of cognitive beliefs characterized by exaggerated self-expectations, anxious overconcern with future harm,

avoidance of problems, and helplessness for change. A future study is needed to determine if a program designed to modify such cognitions would lead to remission of IP symptoms.

The findings of this study further suggest that in the personality domain, the identified impostor is best described as an "Adapted Child." Adapted children lack independence, avoid evaluation and confrontation, are easily disorganized by stress and trauma, and tend to seek satisfaction in daydreams and fantasy. An empirical investigation which seeks to explore the familial background of identified impostors would add to the field of knowledge developing around the IP Syndrome.

Taken together, the findings of this study indicate that identified impostors suffer from a sub-clinical level of anxiety, the major symptom of the IP. A future study which seeks to relate specific measurable levels of anxiety to Harvey IP Scale scores would increase researcher confidence in the future use of this instrument.

## ENDNOTES

<sup>1</sup>Joan C. Harvey, The Impostor Phenomenon and Achievement: A Failure to Internalize Success (Ann Arbor, MI: University Microfilms International, 1981), pub. no. 8210500, 7.

<sup>2</sup>Norma K. Lawler, The Impostor Phenomenon in High Achieving Persons and Jungian Personality Variables (Ann Arbor, MI: University Microfilm International, 1984), pub. no. 8424597, 81.

<sup>3</sup>Linda A. Grays, "The Relation Between the Impostor Phenomenon and Atypicality of Race, Educational Attainment, Socioeconomic Status, and Career in College Women," (M.A. thesis, Georgia State University, 1985), 56.

<sup>4</sup>Ann L. Flewelling, "The Impostor Phenomenon in Individuals Succeeding in Self-Perceived Atypical Professions: The Effects of Mentoring and Longevity," (M.A. thesis, Georgia State University, 1985), 28.

<sup>5</sup>Mary E. Topping, The Impostor Phenomenon: A Study of Its Construct and Incidence in University Faculty Members (Ann Arbor, MI: University Microfilm International, 1983), pub. no. 8316534, 74.

<sup>6</sup>Patrick W. Edwards et al., "A Validation Study of the Harvey Impostor Phenomenon Scale," Paper presented to the Department of Psychology, University of Georgia, Athens (1983), 6.

<sup>7</sup>Harvey, The Impostor Phenomenon and Achievement, 106.

<sup>8</sup>Pauline R. Clance and Suzanne A. Imes, "The Impostor Phenomenon in High Achieving Women: Dynamics and Therapeutic Interventions," Psychotherapy: Theory, Research, and Practice 15, no. 3 (Fall 1978): 241-47.

<sup>9</sup>Topping, The Impostor Phenomenon, 74.

<sup>10</sup>Harvey, The Impostor Phenomenon and Achievement, 108.

<sup>11</sup>Edwards et al., "A Validation Study," 6.

<sup>12</sup>Lawler, The Impostor Phenomenon in High Achieving Persons, 26.

<sup>13</sup>Cromwell, "Pilot Study."

- <sup>14</sup>Harvey, The Impostor Phenomenon and Achievement, 106.
- <sup>15</sup>Topping, The Impostor Phenomenon, 84.
- <sup>16</sup>Flewelling, "The Impostor Phenomenon in Individuals Succeeding in Self-Perceived Atypical Professions," 34.
- <sup>17</sup>Clance and Imes, "The Impostor Phenomenon in High Achieving Women, 245.
- <sup>18</sup>Pauline R. Clance, The Impostor Phenomenon: Overcoming the Fear that Haunts Your Success (Atlanta: Peachtree Publications, Ltd., 1985), 113-25.
- <sup>19</sup>Lawler, The Impostor Phenomenon in High Achieving Persons, 111.
- <sup>20</sup>Kathryn B. Williams and John E. Williams, "The Assessment of Transactional Analysis Ego States Via the Adjective Checklist," Journal of Personality Assessment 44, no. 2 (April 1980): 120-29.
- <sup>21</sup>Clance and Imes, "The Impostor Phenomenon in High Achieving Women, 242.
- <sup>22</sup>Marvin R. Goldfried and Donald Sobocinski, "Effect of Irrational Beliefs on Emotional Arousal," Journal of Consulting and Clinical Psychology 43, no. 4 (August 1984): 391-93.
- <sup>23</sup>Eric R. Nelson, "Irrational Beliefs and Depression," Journal of Consulting and Clinical Psychology 45, no. 6 (December 1977): 1190-91.
- <sup>24</sup>Daren A. LaPointe and Cathy J. Crandell, "Relationship of Irrational Beliefs to Self-Reported Depression," Cognitive Therapy and Research 4, no. 2 (June 1980): 247-50.
- <sup>25</sup>Timothy W. Smith and Sharon L. Brehm, "Cognitive Correlates of the Type A Coronary-Prone Behavior Pattern," Motivation and Emotion 5, no. 3 (1981): 215-23.
- <sup>26</sup>Jeffery M. Lohr and Dennis Bonge, "Relationship of Assertive Behavior in Women and a Validated Measure of Irrational Beliefs," Cognitive Therapy and Research 8, no. 3 (September 1984): 287-97.



**APPENDIX A**

**STUDY FORMS**

## INFORMED CONSENT

I understand that I am agreeing to participate in a research study that seeks to understand why high-achieving English students differ in the degree to which they experience comfort and satisfaction in their achievement endeavors. I further understand that I am under no obligation to participate and that I can terminate my participation at any time.

I realize that as part of this research I will be asked to complete a Personal Data Questionnaire and three instruments, the ACL, the IBT, and the I-P Scale. I understand that the researcher and a Committee for the Protection of Human Subjects of Old Dominion University have determined that these instruments are non-threatening and will pose no risk to my physical or psychological health.

I agree to participate with the clear understanding that as an individual I cannot be identified as having participated in this study. I further understand that the results of this study will be in group form and will be used for educational and research purposes only.

---

Signature of participant

---

Signature of parent/guardian if under 18

Code Number \_\_\_\_\_

DEMOGRAPHIC DATA FORM

For each of the following items please circle the appropriate choice or fill in the blank as indicated.

1. Grade level \_\_\_\_\_
2. Sex:   Male       Female
3. Estimate your current grade point average \_\_\_\_\_.

APPENDIX B  
INSTRUMENTS

PLEASE NOTE:

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These consist of pages:

Appendix B

I-P Scale 124-125

The Adjective Check List 126

Jone's IBT Scale Descriptions 127

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#### AUTOBIOGRAPHICAL STATEMENT

Barbara H. Cromwell was born in Alba, Michigan, on December 18, 1933. She graduated summa cum laude from Central Michigan University in 1955, earning a B.S. in Education. In 1977, she graduated from Old Dominion University with a M.S. in Education. Barbara completed a Certificate of Advanced Study in Education at Old Dominion University in 1982. She has 15 years of combined teaching experience on the elementary, junior and senior high school levels. She has also served as Adjunct Faculty in Counseling at Old Dominion University.

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