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A STUDY OF NEGATION IN CHILDREN WITH AND WITHOUT PSYCHIATRIC DISORDERS

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by

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ABSTRACT

A STUDY OF NEGATION IN CHILDREN WITH AND WITHOUT PSYCHIATRIC DISORDERS

by

Catherine Mary Lawless Frank

DOCTOR OF EDUCATION

University of Cincinnati, 2004

This study investigated the comprehension of four forms of negation in children with and without psychiatric disorders. The study involved the use of short scenarios involving four of the forms of negation in English; prohibition, nonexistence, rejection and denial. The participants in this study were two groups of ten children between the ages of 9.5 to 12.6 years of age. The first group was children with emotional/behavioral problems, who were labeled by their home school districts as Severely Emotionally Disturbed. The other group was a matched control group from another area school without the label Severely Emotionally Disturbed. The participants meet individually with the researcher and were read 32 short scenarios (5-6 lines each) and asked two yes/no questions after each story. The yes/no questions asked if the subject of the story wanted something (motivation) and if they got something (outcome).

When first examining the results, it does not appear as if there is a noteworthy difference in a child with psychiatric disorders and one without in their ability to understand negation as defined in this study. The overall percent correct was 96.2% with

94.8% for the group with psychiatric disorders and 97.5% for the control group. The average number of mistakes per participant was 3.3 verses 1.6 for the control group.

When the individual results of each form of negation are further analysised, a different picture begins to develop. In rejection, prohibition and nonexistence, the overall scores do not appear to differ greatly between the two groups, but the actually number of participants responding incorrectly does. Consistently in these three forms, the group with psychiatric disorders had greater numbers of participants scoring incorrectly on one or more questions. This was especially true for the negation form of nonexistence. This discrepancy was also apparent in questions regarding the subject's motives (want) especially in instances where the subject's motive did not match their outcome.

The negative form of denial did not appear to exhibit any of these discrepancies with scores of 160 versus 158 and only 20% of the participants scoring incorrectly from both the control group and the group with psychiatric disorders.

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CHAPTER ONE

REVIEW OF THE LITERATURE AND

STATEMENT OF THE PROBLEM

Children with emotional/behavioral disorders face a variety of problems, which impact many aspects of their lives. These problems may affect their relationships with their families, friends and peers, school and community, and can result in referral to the judicial system. Children who face these issues seem to be at a disadvantage. The root of these emotional/behavioral problems often appears to stem from poor choices made by him/her, or to reflect those made by others, which affect the child. These choices often appear to cause problems with their family, friends, classmates, and in schools, community and society at large. However, this may not be the complete picture. Research now indicates that some of these difficulties do not stem simply from an inability or unwillingness to make a pro social choice. Other factors may also be involved that confuse a situation or somehow impede the child's abilities to cognitively interpret aspects of their environment leading to response that may not be considered appropriate. Research is beginning to suggest many such factors (e.g. chemical imbalance) including problems in the area of communication and more specifically with language disorders. The research now seems to indicate a link between emotional/behavioral disorders and communication disorders.

Several million children in the United States have some form of a communication disorder (Jenkins 1978; National Institute of Neurological Disease and Stroke, 1972). The impact of these disorders on both the child and their family is felt in more aspects of their

lives than simply speech and language. Evidence suggests that language impacts areas such as concept development, problem solving, and socialization, play, structuring the environment, establishing self-concept or self-image, learning to read, and getting an education (Cantwell & Baker, 1984). Communication encompasses almost every aspect of a human's life making it probable that a deficit in speech/language is likely to impact other areas of an individual's life as well (Cantwell & Baker, 1991). One area where that impact may be felt is in behavioral and emotional self-regulation. This study will attempt to look at the correlation between language and emotional/behavioral disorders by expanding and refining the research to address one area of language, negation. Negation will be defined for this study as containing, expressing or implying denial, nonexistence, rejection, or issuing a prohibition. Negation was chosen because of the apparent or possible misconceptions and confusions that may exist in comprehending all of its many variations and nuances, especially by children with emotional/behavioral disorders. The overall purpose of this study is to provide a further understanding of the possible correlation between negation and children with psychiatric disorders in an attempt to address and alleviate some of the difficulties children with these co occurring conditions may face.

In order to fully address the issue of children with psychiatric disorders and negation some pertinent facts must be established. Research must be reviewed to first determine if there is an established correlation between communication disorders in general and psychiatric disorders. In determining this, the focus will be on a review of two prominent studies, one by Cantwell and Baker (1991) and the other by Beitchman, Brownlie and Wilson (1996). These two studies evaluated numerous children with communication

disorders in an attempt to establish a correlation between communication disorders and psychiatric disorders. Cantwell and Baker (1991) also examine which and to what degree different psychiatric disorders are present and if other factors also exist that might otherwise explain this co occurrence. Beitchman, Brownlie and Wilson (1996) conducted a longitudinal study where five-year-old children with communication disorders were evaluated and then compared to a control group. A follow up study was conducted seven years later to determine if specific communication disorders correlate with specific psychiatric disorders.

Once this correlation is established, the reverse will be looked at: Do children with a diagnosis of psychiatric disorders have co-existing language disorders? In order to address this issue a variety of studies will be review. These studies will focus on participants from a range of different sources (psychiatric clinic, residential treatment centers…), and while they are smaller in scope, the variety of such studies will help establish great validity in the results.

After both relationships have been recognized, five possible etiological factors will be examined to look at potential origins of this association. These five factors will show that this is not a simple issue with an easy solution but one that is more complex which is not so easily reversed or solved.

Since the research aspect of this study will focuses primarily on one aspect of language, negation, a discussion on how it develops in a typical child will ensue. This again will focus on two primary studies, Bloom and Lahey (1978) and Pea (1980). It will focus on four types of negation: prohibition, nonexistence, denial and rejection. This section will also attempt to provide a rationale for the importance of learning negation

through a look at how prohibition is developed and the possible complications that may arise if it does not. It then establishes a rationale for studying negation in children with psychiatric disorders.

All children produce negation, whether or not they have a psychiatric disorder. This establishes a need for a discussion as to whether a child who is capable of producing negation is therefore fully able to comprehend it. This discussion is centered on the question of whether comprehension always precedes production in language and, if at times, production does proceed comprehension is it true throughout the stages of development.

This chapter ends with a statement of the problem and the research question addressed in this dissertation. It will also provide a brief summary of the literature review but before presenting the literature, a discussion on the terminology of communication disorders and psychiatric disorders will be presented.

Communication Disorder

In ordered to understand what is meant by a communication disorder, one first must understand what is needed to communicate effectively. To communicate effectively an individual must have a command of three basic linguistic processes. First, the individual must have the ability to use speech or be able to produce the sounds needed for a particular language. Secondly, they must be able to encode, formulate, and produce the ideas in a form that follows the rules for their specific language. Thirdly, the individual needs the ability to comprehend, understand and decode a message (Cantwell & Baker, 1991). A disability in any of these processes may alter the way a stimulus or message is

perceived causing some sort of limitation. A limitation in any one of these domains will then affect the way in which the other domains evolve and function (Siegel, 1986).

Communication disorder is a term that encompasses any delay or deviation in acquiring speech and/or language. These disorders can be manifested as a single symptom or several different combinations of symptoms. Distinctions are made between two broad categories: disorders of language (e.g. comprehension and/or production difficulties) and disorders of speech (e.g. difficulties in the production of sounds) (Tannock & Schachar, 1996). In this study communication disorder will be defined as any delay or deviation in acquiring speech and/or language.

Psychiatric Disorder

Two categories of psychiatric disorders that are recognized by most psychiatric diagnostic systems are emotional disorders and behavioral disorders. Emotional disorders are characterized by emotional distress or suffering by the patient who exhibits symptoms such as fear, anxiety, misery, and/or somatic complaints (e.g. anxiety disorder and affective disorder). Behavior disorders are those in which the patient's actions are socially disapproved of and cause disturbance to other people (e.g. attention deficit/hyperactivity disorders, conduct disorder, and oppositional defiant disorder) (Cantwell & Baker, 1991). These disorders may coexist and an individual with a diagnosis of either or both may also be referred to as having an emotional/behavioral disorder.

Most of the current research done in this field is based on participants characterized as having a psychiatric disorder. These children are diagnosed through the medical profession. The educational community has different criteria to classify a child

as having an emotional/behavioral disorder. This criterion is based on the federal law for special education through the Individuals with Disabilities Education Act. Under this definition, a child is classified as emotionally disturbed (ED) when they have a condition exhibiting one or more of the following characteristics: an inability to learn that can not be explained by intellectual, sensory, or other health factors; an inability to build or maintain satisfactory interpersonal relationships with peers and teachers, inappropriate types of behaviors or feelings under normal circumstances; a general pervasive mood of unhappiness or depression; a tendency to develop physical symptoms or fears associated with personal or school problems; and the term includes schizophrenia. This characteristic must be exhibited over a long period of time, to a marked degree, and must adversely affects a student's educational performance

Students that are emotionally disturbed exhibit behaviors, either internalized (e.g. withdrawn) or externalized (e.g. conduct disorder) that interferes with their ability to successfully learn and function academically or socially in a classroom. These behaviors are not behaviors that can be successfully managed in a regular education classroom even after trying various modifications have been tried. They must be long lasting and cannot be based on a child having a bad day, a bad week or a bad quarter.

These children tend to have difficulties academically and/or socially with teachers and/or peers. They may have difficulty following classroom rules, staying on task, completing assignments, and responding to discipline. They may be withdrawn and avoid drawing any attention to themselves. These types of behaviors inhibit them from having successful relationships with teachers and peers (Turnbull, Turnball, Shank, Smith, & Leal, 2002).

Since both psychiatric disorders, emotionally disturbed and emotional/behavioral problems, have similar characteristics to their definitions, the term psychiatric disorder will be used interchangeably with emotional/behavioral disorders and emotionally disturbed throughout this study.

Psychiatric Disorders in Children with Communication Disorders

More and more research seems to point to a positive relationship between language disorders and psychiatric disorders. Two studies, both based on participants with a communication disorder will now be examined. The first one is by Cantwell and Baker (1991) in which they studied 600 children in preschool through high school with new incoming cases of communication disorders. Four significant findings were established in their study pertaining to this correlation: There is a higher correlation between language disorders and psychiatric disorders than between speech disorders and psychiatric disorders; the type of psychiatric disorder experienced by the children with speech/language disorders vary; children with speech/language disorders also had a higher rate of developmental disorders especially ones involving learning; and lastly there was no significant difference between the speech/language group that was psychiatrically well versus the group that was psychiatrically ill on a variety of family and environmental issues. The second study is longitudinal and by Beitchman, Brownlie and Wilson (1996). They looked at 142 kindergartners with speech and language disorders and revisited them seven years later. Their findings while supporting Cantwell and Baker's in establishing a correlation between speech/language disorders and psychiatric disorders, they also focused on whether certain speech/language impairments were related to specific psychiatric outcomes.

Cantwell and Baker (1991)

Cantwell and Baker's (1991) study involved 600 children with new incoming cases for speech/language evaluation between March, 1977 and February, 1980. The participants were divided into the three groups based on their disability type: pure speech disorder (children with impairments in speech production but not in language comprehension, expression, usage, or processing), speech/language disorder (children with impairments in both speech and language), and pure language disorder (children with impairments in some aspect of language functioning but had normal speech production). The pure speech disorder group had 203 participants, the speech and language group had 352, and 45 children were in the pure language disorder group. All of the children had some type of speech and/or language disorder with the majority involving speech production (92.5% or 555 of the participants) and more than half with a language disorder (66% or 397 of the participants). Of the participants in this study, 386 were under the age of six (preschool age), 191were six through eleven years old (elementary school age) and 23 were between 12 and 17 years of age. Their study revealed four significant findings. The first finding revealed higher levels of psychiatric disorders in the two groups of communication disorders involving language than in the one involving only speech. The second one suggests that the type of psychiatric disorder experienced by the children with speech/language disorders vary, but are the same disorders found in the general population but occur at much higher rates. Thirdly, children with speech/language disorders also had higher rates of developmental disorders especially ones involving learning. Lastly there were no significant differences between

the speech/language group that was psychiatrically well versus the group that was psychiatrically ill on a variety of family and environmental issues.

The next four sections are designed to examine these findings in greater detail to establish a clearer picture of the correlations.

Correlation between the Disorders

Cantwell and Baker's (1991) findings reveal higher levels of psychiatric disorders in the two groups of participants with communication disorders involving language than in the one involving only speech. These results are consistent with other studies, which note that children with speech impairments tend to have fewer behavioral problems than children with language impairment (Haynes & Naidoo, 1991). These participants experienced psychiatric illness at a rate of about 50% as compared to 10% in the general childhood population. This seems to indicate a five times greater risk for psychiatric illnesses in children with speech/language disorders than in the general population (Cantwell & Baker, 1991).

The most significant difference between the psychiatrically well and the psychiatrically ill group in Cantwell and Baker's (1991) study was in linguistic functioning. This was true in both developmental milestones and current levels of functioning, and in most areas of speech and language functioning. The psychiatrically well group tended to have more pure speech disorders and fewer language disorders, while the psychiatrically ill group had fewer pure speech disorders and more language disorders. The age of onset for non-language developmental milestones showed no statistical differences between the two groups, but this was not true of the linguistically milestones with the age of the psychiatrically ill group being consistently older than that

of the psychiatrically well group (see Table 1). The psychiatrically well group's mean age for the first spoken word was 16.8 months (SD = 8.8) while the psychiatrically ill groups was 19.5 months (SD = 10.0). The psychiatrically well mean age for a first sentence was 26.8 months (SD = 10.6) as compared to 30.8 months (SD = 12.8) for the psychiatrically ill group. There were also significant differences found in expressive language, with the psychiatrically well group at 0.8 years (SD = 1.5) and the psychiatrically ill group at 1.4 years (SD = 1.7). The psychiatrically ill group had and average delay of 0.9 years (SD = 1.6) in language-comprehension skills as opposed to the 0.3 years (SD = 1.5) found in the psychiatrically well group. There was also a difference in the delay of speech articulation with mean delay of 1.4 years (SD = 1.5) for the psychiatrically well children and 1.8 years (SD = 1.7) for psychiatrically ill children (Cantwell & Baker, 1991).

Children with a language disorder more often had a psychiatric disorder than those with a speech disorder, but children with a pure speech disorders were still more likely to have a psychiatric disorder than the general population. Children with a psychiatric disorder were significantly more likely to have abnormalities in language expression, language comprehension, and/or language processing. Those with abnormalities in more than one of those areas appear to be the most vulnerable. Delays in expressive and receptive language are more strongly associated with psychopathology than delays in articulation but delays in articulation also tended to be more severe in those with psychiatric disorders. These results point to a strong direct etiology between

Table 1

Comparison of Cantwell and Baker's Linguistic Milestones

Linguistic Milestones	Psychiatrically Well	Psychiatrically Ill
First Spoken Word	16.8 months	19.5 months
First Sentence	26.8 months	30.8 months
Expressive Language	0.8 years	1.4 years
Language Comprehension Skills	0.3 years	0.9 years
Speech Articulation	1.4 years	1.8 years

speech/language disorders, especially language disorders, and psychiatric disorders (Cantwell & Baker, 1991).

In addition to delays in acquiring linguistic abilities, there continued to be significant differences in current areas of speech/language functioning. The psychiatrically well group continued to have more disorders in speech while the psychiatrically ill group had more disorders in expression, processing and language comprehension. Fifty percent of the children with psychiatric illnesses had a language-comprehension disorder compared to 28% of the psychiatrically well children. Of the children who were psychiatrically ill, 72% had a language-expression disorder versus 49% of the psychiatrically well children. Only 19% of the psychiatrically well children had a language processing disorder while 48% of the psychiatrically ill children did. Speech production problems were present in each group at significantly different levels

but this time at a rate of 96% in the psychiatrically well group as opposed to 89% in the psychiatrically ill group (Cantwell & Baker, 1991).

In order of prevalence, the speech disorders found were articulation disorder (510 participants), speech dissiliency/stuttering (39 participants), voice disorder (19 participants), undiagnosed speech disorder (6 participants), and rate-of-speech disorder (2 participants). The language disorders, in order of prevalence were expressive language disorders (363 participants), receptive language disorders (237 participants), language processing disorder (154 participants), and pragmatic (language) disorders (63 participants). One hundred twenty-nine of the children were untestable for language processing disorders due to a variety of reasons including age, lack of cooperation, and low levels of linguistic functioning. The results revealed that there was some overlap between pure speech disorders and pure language disorders (Cantwell & Baker, 1991).

These results seem to clearly point to a correlation between communication disorders and psychiatric disorders. The correlation appeared to be stronger in disorders involving language but psychiatric disorders occurred in all three groups at rates greater than those found in the general population. The participants who were psychiatrically ill also tended to reach their linguistic milestones later in life and continued to be behind in current levels of functioning.

Types of Psychiatric Disorders

The results of Cantwell and Baker's (1991) study also suggest the type of psychiatric disorder experienced by children with speech/language disorders vary. While these disorders vary in kind, the psychiatric disorders found in this population were the same types as those found in the general childhood population but at much higher rates.

Most of the types of psychiatric illnesses found in the children with speech/language disorders generally fell into two categories. The most common involved a diagnosis of an externalizing or behavior disorder (ex. attention deficit hyperactivity disorder). These affected 26% of the children. The second type was internalizing or emotional disorders (ex. depression), affecting 20% of the children. In addition, physical disorders and pervasive developmental disorders (PDD) affected 1% of the children and 7% had miscellaneous disorders. The most prevalent disorder was attention-deficit disorder (19%), followed by anxiety disorder (10%), oppositional disorder or conduct disorder (7%), adjustment disorder (5%), parent-child problems (4%), unspecified mental disorders (3%), and infantile autism (1%). Of the children with speech/language disorders only 50% had no form of psychiatric illness. No one specific type of psychiatric disorder was associated as a risk factor for speech/language disorders making the correlation seem to be for a psychiatric illnesses in general and not for any specific type of psychopathology.

Attention deficit disorder (ADD) is the most common type of childhood psychiatric illness found in children through child-guidance clinics (President's Commission on Mental Health of Children, 1980), and is estimated to effect between 3%-6% of the total general childhood population (Cantwell, 1978; Chawla, Sahasi, & Sundaram, 1981; Miller, Palkes, Stewart, 1973). The prevalence rate of ADD in the childhood population in Cantwell & Baker's (1991) study is 19%, well above the 3%-6% found in the general population.

Forty-one of the participants with speech/language disorders (7%) were found to have behavior disorders other than ADD. Twenty-nine of these (5%) were found to have

oppositional defiant disorders (ODD) and twelve (2%) had conduct disorder. This rate again appears to be higher than the rates found in the general population, which is typically about 2% for ODD.

The second most common psychiatric disorder and the most common emotional disorder in the participants with speech/languages disorders was some form of anxiety disorder. Anxiety disorders were found in 61 participants (10%). The subtypes of these disorders were avoidant disorder (29 participants or 5%), separation anxiety disorder (19 participants or 3%), overanxious disorder (12 participants or 2%) and simple phobia (1 participant or less than 1%).

Five percent of the children (31 participants) were diagnosed with some form of adjustment disorders. Adjustment disorders are characterized by a pattern of symptoms that involve maladaptive reactions to a clearly identified psychosocial stressor and occurred within three month of the symptomatology. The participants in this study exhibiting this illness fell in to seven subtypes: with emotional features (11 participants), with disturbance of emotions and conduct (9 participants), with disturbance of conduct (4 participants), with withdrawal (2 participants), with anxious mood (2 participants), with atypical features (1 participant), and with depressed mood (2 participants).

Affect disorder affected 22 children (4%) with four major subdivisions: major depression, single episode (9 participants), cyclothymic disorder (7 participants) dysthymic disorder (5 participants) and bipolar disorders, manic episode (1 participant). Four percent of the children (21 participants) had parent-child problems, which is not considered a true psychiatric disorder but indicates a disturbance in the relationship between the parent and child rather than strictly a psychiatric problem within the child.

Eight of the participants were diagnosed with some form of pervasive developmental disorder (PDD): six had infantile autism and two had childhood-onset PDD. Unspecified mental disorder, which affected 19 children, meant that a psychiatric illness was present but it did not meet the criteria for any specific DSM-III diagnosis. The miscellaneous diagnosis included one participant who was identified as schizoid, one identified with a gender identity disorder, another was considered to have an "other interpersonal problem" diagnosis and a fourth received a child abuse diagnosis. These last two are not considered true DSM-III diagnosis.

From these findings it appears that the correlation between communication disorders and psychiatric disorders is not limited to one specific type or category of psychosis. In this study co-occurrences were found in both behavioral and emotional disorders and in a variety of specific psychiatric disorders.

Developmental Disorders

As a group these participants were found to have higher rates of developmental disorders and specifically developmental disorders in learning. Since the majority of the participants were of preschool age they did not qualified to receive the diagnosis of a developmental learning disorder. The tests of developmental-cognitive factors showed no significant differences between the groups (e.g. did not significantly differ in the onset age of sitting, eating solids...), while cognitive tests revealed that learning disabilities were more common in the psychiatrically ill group (10%) as opposed to the psychiatrically well group (4%). This is consistent with findings that suggest children with learning disabilities are more likely to have psychiatric illnesses than children in the general population.

Verbal intelligence (as determined by the Peabody Picture Vocabulary Test) was significantly lower in the psychiatrically ill group (mean score = 92.1; SD = 21.7) as compared to the psychiatrically well group (mean score = 99.5; SD = 21.1) but the mean scores for both groups fell within the normal range. Performance intelligence (as measured by the Wechsler Pre-School and Primary Scale of Intelligence (WPPSI) or the Wechsler Intelligence Scale for Children, Revised (WISC-R), was also significantly lower for the psychiatrically ill group but again the scores were within the normal range for both groups. The performance intelligence for the psychiatrically ill group was 101.9 (SD = 25.2) and the psychiatrically well groups were 108.2 (SD = 24.6).

Children with psychiatric illnesses were significantly older but the actual average difference was only about a six months. The preschool students' rate of psychiatric disorders was similar to those of the older participants but with the younger children having higher rates of behavioral disorders. Gender was not found to be significantly different which was an unexpected since males typically have higher rates of psychopathology in this age range in the general population. This leads to the suggestion that the presence of a speech/language disorder may make females more vulnerable to a development of a psychiatric disorder.

The psychiatrically well and ill groups did not differ in their rates of mental retardation. This again was unexpected since mental retardation is a common cause of speech/language disorders and people with mental retardation are at higher risk for psychiatric illnesses (Rutter, Grahman, & Yule, 1970; Rutter, Tizard, & Whitmore, 1970).

Cantwell and Baker's (1991) findings point to a correlation between communication disorders and developmental disorders. Learning disabilities were more common in children with psychiatric illnesses than those without. The participants with psychiatric disorders tended to score lower on intelligence tests but did not differ in levels of mental retardation. Gender also was not found to be a significant issue.

Correlations in Demographics and Backgrounds

It is known that speech/language disorders are associated with psychiatric illnesses, but the cause of this has not been established. Cantwell and Baker (1991) examined their participants for further correlation that may give insight into this association. Their findings revealed no significant difference between the speech/language group that was psychiatrically well versus the group that was psychiatrically ill in terms of sex distribution; family size; birth order; religious background; maternal or paternal education, occupation, or age; or bilingual or deprived language background. In both groups were approximately 70% males, 50% were from a family with two offspring, and 80% were first or second-born. There was no significant difference between the children that were psychiatrically well and psychiatrically ill in terms of age, ethnicity, and current family structure. The data from the study suggest that demographic and background factors are not significant predictors for the presence of a psychiatric disorder in children with speech/language disorders.

Children with psychiatric illnesses did have a greater rate of and more severe psychosocial stressors present in their lives (e.g. less warm relationship with parents and siblings, less sibling play…) but this could be a consequence of the child's psychiatric disorder rather than an etiological factor. Illness in the family and family discord were the

two strongest psychosocial stressors associated with this group, which is consistent with the findings of the psychiatrically ill population in general. Parental mental illness was not a statistically distinguishing factor, but some types of mental illness (e.g. antisocial spectrum disorder and substance abuse in fathers) were significantly more common in the family structure of the psychiatrically ill group.

Hearing problems occurred at about the same rates between the two groups, as did "brain damage." Psychiatrically well children did perform better on neurological exams and psychiatrically ill children had higher rates of chronic respiratory problems, but how these correlate to speech/language and psychiatric disorders is unknown.

These two groups did not appear to differ significantly on family and environmental issues. The only differences noted were in the rates of severity of psychological stressors and chronic respiratory problems.

Summary of Cantwell and Baker (1991)

Of the three groups of children with communication disorders, those in the speech/language group came from a lower socioeconomic status, were younger at the time they were first evaluated, and had slightly lower means and verbal performance intelligence scores. The three groups had differing rates of psychiatric illness while those with a language disorder had the highest rates, and mainly disruptive behavior symptoms and disorders, especially attention deficit hyperactivity disorder (ADHD). Even with age and intelligence levels controlled for the association between language disorders and psychiatric disorders existed. These children were also more at risk for other developmental and learning problems with the main predictor of psychiatric disorder being in both development milestones and current levels of linguistic functioning.

Beitchman, Brownlie and Wilson's Ottawa Longitudinal Study (1996)

The Ottawa Longitudinal Study, by Beitchman, Brownlie and Wilson (1996), investigated five-year-old English speaking children through a three stage screening process in Ottawa, Canada and attempted to establish patterns and correlations by revisiting them seven years later. Each of the three stages in the initial investigation consisted of a battery of standardized test to determine if and to what extent the participants had communication problems. During Stage I of the testing, the children participated in a language screening interview and those that scored below identified cutoff points were then tested in Stage II by speech/language pathologists. Of all the children tested, one hundred and forty two of them scored below the Stage II cutoff points and were identified as being speech/language impaired. These children then participated in the Stage III tests, and a control sample, matched for age and gender, from the same classroom or school, were also selected and given the same Stage III tests. The parents of each of these participants were interviewed to determine birth, medical, and developmental history. Several measures of behavioral/psychiatric dysfunction were also used: Achenbach's Child Behavior Checklist (CBCL), Conners' Teacher Rating Scale (CTRS), and the Children's Self-Report Questionnaire (CSRQ). Psychiatric interviews were conducted on 85 of the children.

Beitchman et al (1996) divided their participants into four clusters based on scores of articulation, expressive and receptive language, and tests of auditory comprehension and auditory memory. Three of the four clusters represented the children with speech/language disorders and were labeled poor articulation, poor comprehension, and low overall communication scores, respectively. The groupings were based on dominant

linguistic diagnosis of each individual participant. The fourth cluster reflected the children without speech or language disorders and was referred to as the high overall cluster.

The following sections examine the results of Beitchman, Brownlie and Wilson's (1996) study for the correlation between communication disorders and psychiatric disorders, which are then compared to the findings of Cantwell and Baker (1991). The findings of the seven-year follow up are then presented to examine whether this co occurrence continues seven years later and to look for addition trends develop in this relationship.

Correlations in Disorders

The findings from the initial screening revealed that approximately 19% of all the children tested had some sort of speech/language disorders and of those 49% had a diagnosable psychiatric disorder. The 49% co occurrence rate between speech/language disorders and psychiatric disorders is approximately equal to Cantwell and Baker's (1991) findings of 50% co-occurrence. Of the speech/language-impaired children, 30% were diagnosed with ADHD (19% in Cantwell and Baker) and a further 12.5% were found to have an internalizing disorder of anxiety or depression (10% in Cantwell and Baker). The rate of psychiatric disorders in the speech/language-disordered group was found to be significantly greater than the rate of psychiatric disorders in the control group, which again was consistent with the research of Cantwell and Baker.

Correlations over Time

There is considerable evidence that the language disorders that affect children persist over time. Those whose language problems lie in more than one area and continue

past the age of five are at the most disadvantage and the most risk (e.g. Bashir, Wiig, & Abrams, 1987; Tallal, Curtiss, & Kaplan, 1988). Based on these findings, Beitchman et al (1996) conducted a follow up study seven years later. With this longitudinal follow up, it became apparent that besides the evidence of a correlation between language impairments and psychiatric disorder, specific speech/language deficits were shown to be more closely related to specific psychiatric outcomes. When the children were 12.5 years, the association between the speech/language clusters and the specific types of psychiatric disabilities were identified. Children in the poor auditory comprehension cluster exhibited increased levels of teacher reported hyperactivity that did not exist in the other clusters. This cluster was the only one that showed an increase in hyperactivity with the males in this cluster also showed higher levels of aggression. They also appeared to be more vulnerable to developing interpersonal problem-solving difficulties and these difficulties appear to be more resistant to interventions and modifications. Boys from the low overall cluster also had auditory comprehension deficits but did not show the increased levels of aggression found in the auditory comprehension cluster. The five-years-olds that were originally identified as low overall were found to have higher rates of emotional disorders and externalizing behavior disorders though.

Summary of Beitchman, Brownlie & Wilson (1996*)*

The Ottawa Longitudinal study found that the speech/language impairment of five year olds was one of the most important predictors of psychiatric outcome at the seven-year follow up. This supports other researchers whose findings showed that those with language problems that persist past the age of five are most at risk (e.g. Bashir, Wiig, Abrams, 1987; Tallal, Curtiss, & Kaplan, 1988). The participants in this study that

showed early speech/language impairment scored higher on ratings of psychopathology and lower in ratings for global functioning at 12.5 years of age. They also had lower scores on social competence and adaptive functioning, which contributes to the evidence that poor speech/language scores and psychiatric disorders are mediated by poor social skills.

Communication Disorders in Children with Psychiatric Disorders

Children with language disorders appear to be at a greater risk for psychiatric disorders. Studies also suggest that the reverse is true in that children primarily diagnosed with psychiatric disorders are more at risk for language disorders. This co-occurrence is most obvious in infantile autism/pervasive developmental disorder, psychosis, and childhood schizophrenia, but research suggests that children with an array of emotional/behavioral disorders may also have unidentified language disorders. These language disorders may go undiagnosed because the behaviors exhibited by these children may be so severe the language problems may not be apparent or deemed a priority (Beitchman, Brownlie & Wilson, 1996). The studies cited in this section investigate this correlation using a wide range of sources to recruit participants, but the findings agree that there appears to be a significant co-occurrence of language disorders in children primarily diagnosed as having a psychiatric disorder. A brief review of the literature provides a sketch of this relationship.

Children with attention deficit hyperactivity disorder, the most common psychiatric disorder diagnosed in children, are found to have elevated rates of speech/language disorders. Love and Thompson's (1988) study found that 48% of the 200 children receiving psychiatric treatment in their study had co-occurring attention

deficit disorders and oral language deficits. These results seem to agree with those of both Cantwell & Baker (1991) and Beitchman, Brownlie, & Wilson (1996).

McDonough (1989) compared language conversation samples from children with and without behavior disorders and found that students who had behavior disorders had poorer conversation skills with shorter utterances, more difficulty maintaining conversation topics, and less appropriate responses to questions.

A strong relationship was found between low verbal intelligence and juvenile criminal behavior that was not found between low performance intelligence and juvenile criminal behavior. The relationship appears to be between delinquency and verbal ability and not with delinquency and spatial ability (Stattin & Klackenberg-Larsson, 1993).

Listening deficits were found more problematic for antisocial boys in residential treatment than expressive language difficulties (Warr-Leeper, Wright, & Mack, 1994). Language disorders that were previously undetected were found in 80% of these participants. These disorders exist mainly in the areas of understanding abstract language concepts and language that requires rapid processing (Donahue, Cole, & Hartas, 1994).

Many studies on this correlation involve males but Sanger, Hux and Ritzman (1999) conducted a review of research involving studies of communication and language skills of adjudicated female juvenile delinquents. The finding showed three areas of concern: structural and pragmatic language skills, an awareness of pragmatic practice, and communication patterns. Delinquent females were three times as likely to be in need speech and language services as non-delinquent girls (Sanger, Moore-Brown, & Alt, 2000).

Gualtieri, Koriath, Bourgondien, and Saleeby (1983) conducted a study of 40 children admitted in to a psychiatric inpatient facility and found that 50% of them showed moderate to severe disorders in both expressive and receptive language.

A survey of 20 boys with chronic behavior disorders living in a psychiatric institute found that as a group their language skills were significantly lower than the normal population in just over half the tests given. Subtests that required more complex linguistic knowledge (e.g. multiple meanings and abstract vocabulary) were significantly more difficult for these children and clinically significant language impairments were found in 80% of these children, a rate ten times the estimated rate for the general school population (Mack & Warr-Leeper, 1992).

Children age 5-12 who was referred to a child psychiatric outpatient clinic showed a moderate to severe language disorder in 28% of those who were referred for strictly psychiatric problems (Cohen, Davine, & Meloche-Kelly, 1989: Cohen et al., 1993). These children were found to be different from those referred for both psychiatric and language disorders in that they were younger and more likely to have externalizing behavior problems (Stevenson, 1996).

The co-occurring language problems do not seem to affect only the children with externalizing behavior problems. Children who are withdrawal have also been found to differ from other children in the quality of their verbal interactions and communication strategies. They tend to have a smaller less sophisticated repertoire for participating in conversations (Donahue, Cole, & Hartas, 1994). Depressed children were found to have problems producing a coherent narrative, making relative comments, and differentiating old and new information (Baltaxe & Simmons, 1990).

The studies presented so far in this chapter all point to a correlation between psychiatric disorders and communication disorders. The co occurrence does not seem to be dependent on whether the primary diagnosis is a communication disorder or a psychiatric one. The co occurrence also does not seem to be dependent on specific types of psychiatric disorders and effects both speech and language disorders but with a greater prevalence in language disorders. Theories as to why this correlation exists and what the etiology and risk factors may be are presented in the following segment.

Risk Factors and Etiology

It is clear that psychiatric disorders and language impairments often co-occur and this correlation exists whether the sample is taken from the psychiatric population or from the language impaired population (Beitchman, Brownlie & Wilson, 1996) but why this relationship exists is not clear. Both of these disabilities share a series of risk factors, which include pre-term birth, (Aram, et al, 1991) child abuse, (Burl & Kamhi, 1992; Cicchetti & Beeghly, 1987) and peer rejection (Asher & Coie, 1990; Gottman & Parker, 1986; Hadley & Rice, 1991). These common risk factors alone do not fully explain this correlation and not all children develop these impairments when confronted by these risk factors (Donahue, Cole, & Hartas, 1994).

Even though speech/language disorders are a dominant risk factor in the development of psychiatric illness, not all children with speech/language disorders are equally as vulnerable. The development of emotional and behavioral self-regulation is a long and complex process meaning that the cause of a breakdown can be internal, external or a combination of both (Dale, 1996). Five theories attempt to explain this correlation. One theory suggests that the psychiatric disorders directly or indirectly lead

to or cause speech/language disorders. A second says that speech/language disorders directly or indirectly leads to or causes the psychiatric disorders. The third theory is that speech/language disorders and the psychiatric disorders arise independently from each other due to possible common etiological factors (Cantwell & Baker, 1977). The fourth theory is that speech/language disorders may lead an intermediate problem, which is then associated with the development of a psychiatric disorder. A final theory suggests that the difficulties may be due to a broader problem where information is stored linguistically incorrectly in a child's memory system causing them to react and behave in inappropriate ways. These theories will now be reviewed individually.

Behavior Disturbances Cause Language Disorders

The first theory is that behavior disorders cause language disorders. This theory is deemed to be unlikely because the language disorders typically have an earlier onset making them unlikely to be caused by psychiatric disorders (Rutter, 1972). The only known example of where this theory may apply is with mutism. In elective mutism the child's psychiatric disorder directly impairs their communication. The child has the language ability though but for some psychological reason is not using it, which leads it to not fully support this theory (Rutter, 1987).

Language Problems Cause Behavior Problems

The second theory states that language problems cause behavior problems. This appears more logical because language is important in both cognitive development and social relationships and therefore is likely to be implicated in the cause, and reflect or intensify behavioral and emotional problems (Dale, 1996). Behavior problems may reflect an impaired social relationship with parents and peers, social stressors, or

difficulties that are caused by communication problems (Rutter, 1987; Donahue, Cole & Hartas, 1994). It may also be that these difficulties may be caused by their frustration in being unable to communicate effectively at times and under certain situations (Stevenson, 1996). These children may lack some of the abilities needed to make their needs and wants known causing them to be less persuasive in making requests resulting which results in them being less successful in manipulating their environment. According to Dukes (1981), being unable to successfully manipulate the environment may cause children to resort to physical aggression in order to meet their needs and wants. It may also lead to frustration and repeated failures resulting in lower levels of self-confidence (Cantwell & Baker, 1991).

Researchers have suggested that self-image and self-confidence are acquired and developed through communication and verbal interactions. One of the main functions of language is social use including the ability to form social relationships. This ability is thought to have a considerable impact on self-image (Gemelli, 1983) because being able to say the right thing at the right time is crucial for establishing and maintaining friendships (Cantwell & Baker, 1991). Many children with psychiatric disorders appear to have difficulties in these areas. They lacking self-confidence and having difficulties maintaining friendships and successful peer and adult relationships all of which tend to be related to issues in communication.

Language is also used to self regulate behavior. Behavioral self-regulation involves thinking and one characteristic of psychopathology is irrational thinking. Thinking cannot be directly observed but is instead inferred from one's language and behavior (Crittenden, 1996). In their longitudinal study, Beitchman, Brownlie and Wilson

(1996) attribute the link between auditory comprehension difficulties and aggression in males to an interpersonal problem-solving deficit. They believe that a five years old child with an auditory comprehension deficit is at a disadvantage in terms of linguistic proficiency, cognitive abilities and academic performance which continued to be a problem seven years later. These deficits and disadvantages may cause children to feel "inept or out of step with their peers" (pg 495). The children may believe themselves to be the subject of ridicule and/or criticism more often than those without auditory comprehension deficits, which in turn may expose them to more conflicts settled with aggression rather than language. These aggressive behaviors may be an attempt to act out their frustration and sense of inequity in the face of a real and/or perceived public ridicule. Other studies have linked aggressive children to problem-solving deficits, and difficulties in understanding the thoughts, feelings and perspective of others, (Chandler, 1973; Chandler, Greenspan, & Barenboim, 1974). They are more likely to see another person's intents as aggressive and to look at aggressive solutions to resolve conflicts (Dodge, 1991; Rubin, Bream, & Rose-Krasnor, 1991).

While some researchers suggest a possible link between language difficulties causing or exacerbating psychiatric disorders, others disagree. Some researchers believe language and emotional factors are so intertwined across development that they cannot be isolated from each other in any meaningful way. Since the two are so intertwined they can not be separated into a cause and effect relationship making it incorrect to say language impairments cause emotional/behavioral disorders or vice versa (Donahue, Cole, & Hartas, 1994).

Different Aspects of an Underlying Problem

It may be possible that language disorders and psychiatric disorders arise independently from each other and represent different aspects of an underlying problem. Language is a tool used for emotional and cognitive self-regulation and social communication that requires the user to possess certain knowledge in order to use it effectively. This knowledge has its origins within the individual and is also developed outside the individual though their experiences (Dale, 1996). Sameroff and Chandler (1975) thus hypothesized a transactional model, which states that whether a child with a speech/language disorder develops a psychopathology may depend on their degree of vulnerability to the disorders and to the transactional effects of the child and their environment and experiences over time. Language disorders and psychiatric disorders may therefore have a common underlying factor like brain dysfunction, family discord or specific cognitive skills. Cantwell and Baker (1991) investigated this hypothesis in regards to the correlative factors and background information in their participants with psychiatric disorders and speech/language disorders but found few factors that were significant between the two groups.

An Intermediate Problem

The fourth theory is that speech/language disorders may lead to an intermediate problem, which then leads to a psychiatric disorder. This is also thought to be plausible because it is known that children with speech/language disorders are at risk for developing a learning disability and children with learning disabilities are at risk for developing psychiatric illnesses (Cantwell & Baker, 1991). The problem is that this is only a possible risk factor in some of the children but not all of them.

A Broader Risk Situation

Other researchers feel that there may be a broader risk situation than the ones examined by Cantwell and Baker (e.g. parental neglect) from which these two disorders both may arise (Rutter, 1987). One such risk factor may be in how experiences and information are storied in memory. Language is used to represent and communicate information, but the structure and maturity of the brain determines the nature of that information, experiences, and content. A child with a severe psychological disturbance may eliminate and/or falsify information regarding these experiences in their minds and store this falsified experience in their memories. This may cause them to negotiate in an environment in which important information has often been manipulated in a way so it no longer means what it appears to mean (Crittenden, 1996). Their language impairment may then be the result of their difficulty or inability to create "true" contexts for remembering (Coggins, 1998).

Summary

Whatever the etiological cause may be, the relationship exists. Higher levels of psychiatric disorders exist in individuals with language disabilities and higher levels of language disabilities exist in children with psychiatric disorders. These rates of co-occurrence are greater than what would be expected in the general population. This relationship appears to be true for language in general. Does this relationship exist in specific aspects of language (e.g. negation) or simply broader categories of it (e.g. pragmatics)? Would there be a difference in how a child with a psychiatric disorder perceives a specific aspect of language, more specifically one involving negation? Does adding negation to a situation make the situation more difficult for a child with a psychiatric disorder to comprehend compared to a child without a psychiatric disorder?

In order to investigate these questions, we first need to understand what negation is, how it typically develops, and possible consequences if it does not fully develop. Negation is believed to be an essential part of our lives, and by studying it and its development we can clarify some cognitive aspects of language (Bloom & Lahey, 1978).

Negation

Most of what human beings say are affirmations and based on the truth. We talk about actual events, objects, feelings, and things that exist or have happened. These assertions are such a part of our lives that it is not necessary to mark them as the truth. Typically there is no need to say, “I want ice cream, and yes “because the yes provides no information that could not be obtained from” I want ice cream.” Instead of marking the truth, we mark its opposite or the negation (Bloom & Lahey, 1978). Negation is containing, expressing or implying denial, nonexistence, rejection, or issuing a

prohibition, but no matter the semantics of a particular negation, there is a common element in all in that they are likely to be expressed by the words *no* or *not*, the primary articles of negation in English (Pea, 1980).

Originally it was believed that there were three semantic categories of negation: nonexistence, rejection and denial, which developed in that same chronological order. Further research into negative forms determined that these three categories were too general and they have since been broken down into more specific forms. There is disagreement among researchers about the specific types and categories of negation although most agree on at least four specific types: rejection, prohibition, nonexistence and denial. This study will focus on these four types since they are the ones that are generally accepted by most researchers. The categorization and definitions used in this article are based on those put forth by Bloom and Lahey (1978). They are defined as follows (also see Table 2):

Rejection occurs when an action or object is present or about to become present and the speaker is opposed to that action or object ("No, I do not want to watch a movie."). It also includes action or object that the speaker does not want another to do ("Don't leave yet.").

Prohibition is denying permission or stating opposition to an action someone else is intending to do ("You may not go out in the rain"). It differs from rejection in that the person forbidding the action perceives himself or herself as an authority figure.

Nonexistence occurs when an object, action, or attribute does not exist in the present context but there is some reason to expect it to be there or a reason to look for it (after picking up her juice glass and finding it empty, the child says "no juice.").

Denial transpires when the truth of a statement is negated by another individual ("Those are not my shoes").

Table 2

Types of Negation, Definitions, and Examples

Type	Definition	Example
Rejection	When an action or object is present or about to become present and the speaker is opposed to that action or object. It also includes action or object that the speaker does not want another to do.	"No, I do not want to watch a movie." "Don't leave yet."
Prohibition	Someone in authority denies another permission or states opposition to an action someone else is intending to do.	"You may not go out in the rain."
Nonexistence	An object, action, or attribute does not exist in context but there is some reason to expect it to be there or a reason to look for it	After picking up her juice glass and finding it empty, the child says "no juice."
Denial	An individual negates the truth of a statement.	"Those are not my shoes,"

Children tend to express a specific semantic negation based on the expressions used by others in the child's environment in similar situations. They seem to be

environmentally influenced in how they state a negation (ain't, don't…), but while children may vary on the way they express negation, the different semantics of negation seem to emerge in a consistent sequence (Pea, 1980). This paper will examine two that look at the emergence of negation, one by Bloom (1991) and the other by Pea (1980).

Bloom's Theory (1991)

Bloom (1991) views the development of negation in a child as existing in two phases. During phase one the first verbal form of negation appears and the child expresses their first negation. The first form is typically nonexistence (the object of negation was not in the context where it was expected to be) and originates as a single word statement, typically *no*. This single word ("no") will eventually evolve into a simple sentence ("no milk"). The structure of these simple sentences consists of a negative marker ("no") placed before a nominal or predicate form ("drink"), or in other words, a negation plus another word ("No drink"). Since the sentence is negated, it increases the syntactic complexity and causes the child or developing speaker to reduce its surface structure. Sentences containing affirmations are more developed at this time so a child may be able to produce a two or three words affirmation but only a one or two word negation. The underlying structure may be as complex, but the structure of the utterance is not. Sentences-subjects and verb-objects are not present in these early utterances even though they may be present in affirmative sentences, due to the complex syntax of negation. In these early negative forms, a negative was not simply added to an affirmative statement, but by adding the negation; it seems to have a limiting affect on the structural complexity and length of early negative forms.

During this primary stage, Bloom (1991) found that her subjects used *no* as a single word to signal rejection most often, and the earliest negative sentences most often expressed nonexistence. Towards the end of this phase the subjects were able to verbally express forms of nonexistence, rejection, and occasionally denial and seemed to know something about the semantic features of each. All the forms were typically produced using the same single word expression used by nonexistence, typically *no.* In phase one, children are able to verbally produce simple syntactic sentences that signaled nonexistence, but only expressed rejection and at times denial with a single word ("*no").* Nonexistence then transforms from a single word to a simple sentence near the end of this phase.

In phase two children begin to develop different syntax for the different semantics of negation. While in phase one this was true only of nonexistence ("No milk"), it now becomes true for rejection ("No sleep") and denial ("No Mommy's"). They are beginning to develop their own syntactic forms but nonexistence is still the most commonly used. The ability to produce more structurally complex negation follows the same developmental order: nonexistence, rejection and finally denial. When first rejection and then denial begin taking the form of simple sentences, they take on the syntactic form that had been previously used by nonexistence and nonexistence then moves on to more complex sentences. New negative functions are originally used with previously learned and used forms. New forms are then developed to express old functions.

Pea's Theory (1980)

Pea's (1980) theory on the developmental stages of negation also begins during the single word stage but his beliefs and rationale differ from Bloom's. He notes that in early uses of verbal negation there appears to be a great range of context where a single word negation is used before it is ever combined with other words to form sentences. Children rapidly generalize this single word negation into a variety of different situations, rather than starting with nonexistence and proceeding developmentally from there, making it difficult to determine specifically the real psychologically semantic categories. This lead Pea to suggest using families of negative meanings, rather than specific categories since it was not possible to absolutely attribute specific psychological intentions to all of a child's negative forms during the early developmental stages. The families of negation are then determined and grouped according to the child's behavior and the context of the negating situation before meaning is attributed to them.

Pea (1980) bases his theory on the idea that in order for children to comprehend the different meanings of negation, more and more forms of abstract cognitive thinking are required. Humans' progress developmentally from concrete thinkers to abstract ones and that plays an important role in the semantic development of negation. Rejection negations are concrete. The child is rejecting something in the here and now and there is no need for an internal representation since what is being rejected is present. Nonexistence, which Pea referred to as disappearance negation, requires more abstract processing because the item being rejected has disappeared from sight and now needs an internal cognitive representation. During this stage, negations are also often used to reject a parent's prohibition or commands. Pea therefore hypothesizes that rejection negation is

the first meaning of negation that children express. Pea's research found that all his subjects expressed rejection negation first and did so nonverbally with headshakes before doing so verbally. A nonverbal headshake to express rejection was typically found around one year of age but when the initial correlating verbal expression developed varied from subject to subject. It was also typically found to be the first negation verbally encoded.

Pea's (1980) research found that all his subjects expressed rejection negation first and did so nonverbally with headshakes before doing so verbally. A nonverbal headshake to express rejection was typically found around one year of age but when the initial correlating verbal expression developed varied from subject to subject. It was also typically found to be the first negation verbally encoded. When the child develops rejection, it then fosters the development of nonexistence, which requires an abstract cognitive representation. Denial, which Pea referred to as truth-function negation, requires even more abstract cognitive processing and a different logical order causing it to appear developmentally after both rejection and nonexistence.

Four of the six participants in his study then went on to express nonexistence with the word "gone". This was predominately used immediately after the object disappeared. They also expressed transitional forms of negation while progressing from concrete rejection to the more abstract nonexistence. This transitional time when "gone" referred to something that had disappeared in the immediate past until "gone" could also refer to objects that disappeared in the more remote past suggests the need for cognitive development in formulating the disappearance or nonexistence of abstract referents.

Denial was the last form of negation to appear in the four subjects that expressed it. Two of these subjects never reached this stage during the course of the study. Denial was typically not first expressed nonverbally by a headshake but in speech around the age of two.

Pea (1980) uses his cognitive interpretation of the semantic development of negation to systematically predict its developmental sequences. Accordingly then the first meaning of negation expressed by a person is rejection and this rejection is based on items concretely present in the immediate environment. The child transcends this here and now several months later with negations that mark nonexistence. In nonexistence the topic has just recently gone out of view and therefore requires some form of abstract cognitive representation. By using this developmental information it becomes possible to predict the future developments of semantic negations based on their distance from the speaker and their abstractedness. Pea, supported by research from Bloom (1973), found this to be true only some of the time but no child produced any form of negation referencing existence or location negations before disappearance (Pea, 1980).

The negation that young children are most predominately acquainted with is prohibition. Prohibition by adults is usually expressed with "No!" and possibly a nonverbal gesture like a headshake. They increase in frequency between nine months and one year of age as the child becomes ambulatory and it is often intended and used to constrain a child's activities. In the beginning children halt their actions due to the loudness, pitch, duration, and sudden onset of "no" rather than its meaning since they do not yet comprehend its meaning (Pea, 1980). "No" becomes one of the first words children learn to speak and one that is most consistently used throughout the single word

stage (Bloom, 1973). Since negation is used to constrain a child's actions, the importance of learning it becomes apparent to the development of pro social self-regulating behaviors.

The Importance of Learning the Semantics of Negations

Children learn the cognitive meaning for negation through a process and prohibition provides a clear example of this. When an adult first prohibits a child's actions, he/she typically physically constrains the child and issues a prohibition verbally. The prohibiting adult may say "no" and lift the child up and away from the forbidden object or action. This process is repeated many times and soon the adult wants the child to comply with verbal prohibition and gestures alone. Within a month of physically constraining the child, the child shows signs of understanding "no" and the headshake in a prohibited situation. Leopold and Lewis (1939, as cited in Pea, 1980) found that children begin to comprehend "no" for prohibition at nine to ten months of age, but when an adult first uses prohibition without constraint, the child ignores it due to their inability to comprehend the semantics of prohibition. If the prohibition is made persistent through repetition, a louder voice, or physical constraint, the child may effectively heed it (Pea, 1980).

Through the process of learning to comprehend prohibition, the child learns to react in two divergent ways. The first way is by compliance or when the child heeds the expressed prohibition. The second way is through defiance when the child displays their autonomy from the adult's wishes and the prohibition is then not heeded. By learning to comply with a prohibition and its constraining nature, the child is learning to inhibit their

actions in a socially acceptable way. When a child does not comply with a prohibition, he/she is learning how to inhibit others power over them through defiance.

Most children eventually spontaneously inhibit actions that have been frequently forbidden. This suggests the child internalizes the prohibition and it constrains on their actions and develops a generalization so that the prohibition need not be current to be effective. There are important social consequences to a child's internalization of prohibition. The first is the internalization of social norms involving what are permissible and unpermissible acts in society. Another consequence is that *no* becomes internally represented as a negative and prohibiting form. This early constraint of a child's actions provides an early source of word meaning and it becomes a real psychological aspect of the child's meaning of negation.

But what if a child does not reach the stage where they spontaneously inhibit their own action in regards to something forbidden? What happens if prohibition is not internalized and *no* does not become a comprehendible abstract negation? Some children do not learn or comply with social norms and this result causes them many difficulties. These children may be labeled as being emotionally and/or behaviorally disabled or suffering from a psychiatric disorder and in society considered delinquent. Is it fair then to say that these children do not understand negation? Is there a correlation? These children typically seem to be able to produce negations, but does that mean they understand it? This next section focuses on the issue of production and comprehension and if the ability to produce ensures comprehension.

Production versus Comprehension

The semantics and development of negation have enjoyed the benefits of extensive research, but much of this research is based on a child's ability to produce negations and the assumption appears to be that the ability to freely product a negation implies comprehension, but this may not be the case. Some children may not comprehend negation and especially ones involving abstract thoughts, ideas, or objects. Could it be that some of the difficulties experienced by a child with a psychiatric disorder are due to their inability to comprehend the nuances of negation? If that is the case, it may influence the way behavior issues are dealt with and intervened upon by parents, teachers, judicial systems and society at large.

It is often assumed that children do understand the nuances of negation since the assumption tends to be that comprehension of words and phrases precedes the ability to produce them. "No" is one of the first words a child learns to speak and the one most consistently used throughout the single word stage, and throughout their lives, in a variety of situations and settings (Bloom, 1973). It often becomes assumed that since a child uses "no" or any negation that they therefore fully comprehend it. This implies that at every stage of development comprehend language proceeds production. Studies show this assumption not always true. Children have differing levels of comprehension and production abilities and these levels do not necessarily correlate. Production and comprehension seem to follow a similar developmental sequence but discrepancies between them exist and these discrepancies vary across children and points of development (Bloom & Lahey, 1978, McLean & Snyder-McLean, 1978, Owens, 1992, Snyder, Bates, & Bretherton, 1981).

Children as young as one and two years of age may respond appropriately to complex statements and directions including those involving negation, but are only able to do so because these statements and directions are referred to in their current environment and require no abstract reasoning (Bloom, 1973). Children have developed a script that helps them become aware of certain sequences and routines (e.g. getting ready for bed) (Nelson, 1985), and while a parent may assume their children understands the words, they are actually following a script of the routine that has previously been established. Chapman, Kohl, and Lawrence (1978) examined infants and toddlers and found that they actually comprehend a little of what they hear. They instead rely on strategies learned from experience to determine the message of adult speech and children appear to be able to comprehend the language but are actually attempting to respond appropriately to the situation.

The discrepancies between production and comprehension do not end at the single word stage. Studies in grammar constructions (Chapman & Miller, 1975), and comprehension and production (Goldin-Meadows et al, 1976, Huttenlocher, 1974, Snyder, Bates, & Bretherton, 1981) have found that in typically developing children's language comprehension does not always come before or surpass production at any stage of development. This means that a child may not be able to understand the multiple situational meanings of a negation even though they can produce the words. Again and again children are found to produce words, including negative forms, which they do not fully understand (Fenson et al, 1994; Leonard, Newhoff, & Fey, 1980).

Huttenlocher and Weiner (1971) research on comprehension in older children and adults shows this discrepancy continues past childhood. They consistently found that the

comprehension in older children and adults of a statement, defined by demonstrating the ability to follow directions and arrange objects in a specific way, is influenced by variations in context and the environment in which the statement was presented. This suggests that the ability of an individual to comprehend is dependent on environmental or situational cues and that the arrangement or availability of those cues affects one's ability to comprehend.

Statement of the Problem

The research suggests a strong positive correlation between language disorders and psychiatric disorders with evidence of psychiatric problems in children primarily diagnosed with language problems and language problems in children primarily diagnosed with psychiatric problems. While there are numerous hypotheses, why exactly this relationship exists has not been determined. The language and psychiatric problems that exist in this population vary but are the same types that are experienced by the general population but at much greater percentages. Since this relationship exists in general, is it possible that it also exists in a specific aspect of language?

Negation is a specific aspect of language and a major component and regulator of an individual's life. It has many meanings that are determined by the context in which it is used rather than the syntax or word choice. It involves many abstract cognitive processes and the appropriate cognitive use often requires more than simply comprehending the words. It often requires the ability to infer the beliefs of another person that may be very difficult for some because their abstract knowledge about physical properties of objects, social relationships, and event contingencies in interactions may not be developed. (Pea, 1980) This is especially true of negations especially ones

involving events, actions, objects, and such that are not immediately present and requires an abstract cognitive representation.

One of the most important functions of language, including negation, is to regulate emotions and behavior. A child's ability to comprehend, encode, and express language are critical to their understanding, encoding, organizing and retrieval of rules to effect appropriate levels of self control and emotional regulation (Gallagher, 1999). Children with emotional/behavioral issues often lack that ability. This lack of ability may be mistakenly seen as defiant behavior and attributed to the child's choice to behave oppositionally or defiantly. The child may actually have failed to internalize language and fail to comprehend it. If a child with a psychiatric disorder does not comply it may be due to their inability to understand directions, instructions or what is being asked of them, even though they appear to have the ability to verbally produce directions and instructions. These children may also lack the ability to seek clarification when they are confused about directions, instructions or language in general leading to further problems and misunderstandings (Sanger, Maag, & Shapera, 1994).

Negation has been shown to help regulate behavior and help a child learn to behave in socially appropriate ways. Different forms of negation have different meanings that are only discernible by comprehending the situation in which they occur. The ability to infer and think abstractly is needed to fully comprehend many situations involving negation and children with psychiatric disorders often have difficulty thinking abstractly and making these inferences. It seems possible then that a child with a psychiatric disability would have difficulty understanding the nuances of situations involving negation. This study looks at this possibility by asking the question: Do children with

emotional/behavioral problems comprehend situations involving one of four forms of negation (prohibition, nonexistence, denial, and rejection) when compared to children without emotional/behavioral problems?

CHAPTER TWO

METHOD

Purpose

The purpose of this project was to examine the comprehension of four forms of negation in children with and without psychiatric disorders. The study involved the use of short scenarios involving four of the forms of negation in English: prohibition, non-existence, rejection and denial.

Participants

The participants in this study were two sets of children. One set were children with emotional/behavioral problems, who were labeled by their home school districts as Severely Emotionally Disturbed. The other set was a matched control group from another area school; none of them were labeled Severely Emotionally Disturbed. The genders and ages of the control participants were matched to the genders and ages of the group with emotional/behavioral problems. An attempt was made to match the groups in terms of minority status. Due to the limited number of students in the pool of potential participants, it was not possible to do so. There were a total of 20 participants, between the ages of 9.5 to 12.6 years of age, ten with an emotional/behavioral disorder and a matching ten without. This age range was selected because it is believed that the ability to correctly use negation is fully developed by this time so maturation would not be an issue.

The participants who are emotionally disturbed were selected mainly from an alternative behavioral school and all receive some form of services from a Speech and Language Pathologist at their school. All eligible participants were given informed consent forms and ten of the students whose forms were returned completed were

randomly selected to participate. Of these ten participants, nine were males and one was a female, seven of the ten were Caucasian and three were African American (three minority students). The average age of this group was 10.85 years with an age range of 9.5 to 12.4 years. Once the age, gender, and minority status of the chosen participants with an emotional/behavioral disorder was determined, a matched group was recruited using a similar format from an area elementary school. In the matched group, nine of the participants were male and one as a female, eight were Caucasian, one was African American and one was a Pacific Islanders (two minority students), and none of the children were currently identified as having an Emotional Disturbance or in need of speech and/or language services. The average age of the control group was 10.86 years with an age range of 9.7 to 12.6 years.

All the participants were informed that their participation was voluntary and that they had the right to withdraw at anytime. They were also informed that participation or non-participation would not influence their grades in any way.

Setting

The study took place at the respective schools the children were currently attending and at a time deemed appropriate by that individual participant's teacher. For the group with emotional/behavioral disorders, the study took place in an empty office in the school building and for the control group in a corner of the auditorium when it was not otherwise in use. In both settings the environment was secluded in an attempt to eliminate any outside distractions.

Procedures

After voluntary consent was given from both the participants and the participants' guardian, the participants met individually with the researcher and were read 32 short scenarios (5-6 lines each) and asked two yes/no questions after each story. The yes/no questions asked if the subject of the story wanted something and if they got something. The participants sat in a chair next to the researcher and were allowed to see the scenarios and/or read along with them if they so desired. This was to help accommodate the different learning styles participants may have and eliminate some possible oral comprehension difficulties due to environmental noise distractions. Scenarios were also repeated at the participant's request. The scenarios were presented in differing orders and are based on the four different forms of negation (prohibition, nonexistence, denial, and rejection). Halfway through the survey the participants were offered a candy mint and asked if they needed a break. If a break was requested, the researcher and participant talked for a few minutes before returning to the survey. This was to help alleviate any attention problems or fatigue the participants may have experienced.

Data Collection and Analysis

Frequency data were tabulated to determine if there is a difference in a child with an emotional/behavioral disorder and without an emotional/behavioral disorder ability to comprehend these four differing forms of negation. The study also investigated whether there is a difference in their ability to determine whether the subject in the scenarios wanted something and if they got something. This was to examine whether there is a difference in the two groups on the evaluation of an abstract concept (want) verses a more concrete one (got).

Instrument

The instrument was designed by the researcher and consists of a survey of 32 short scenarios (five to seven sentences in length) each with two accompanying yes/no questions (see Appendix A). They were intended to illustrate the physical, social and event context of the situations, and were designed to investigate if the participants comprehended whether the subject of the story wanted something and if they got something. The survey was originally tested on adults and modified until the questions were answered with 100% accuracy. It was again modified after a pilot study, when a set of scenarios that had a disproportion number of incorrect responses was reworded. The reworded story originally involved the subject and his peer and was changed to the subject and his father. The belief was that the peer relationship made it more difficult for the participants to comprehend the negation as opposed to a relationship based on less equal grounds.

Eight of the 32 scenarios focuses on each of the four forms of negation (rejection, prohibition, nonexistence, and denial) and was presented in a random order to each of the participants. Two of the eight different scenarios for each negative form implied that the subject wanted to do something and did do it (answer combination Yes/Yes). Another two suggested the subject wanted to do something and did not do it (answer combination Yes/No). Two indicated that the subject did not want to do something and did it (answer combination No/Yes), and the last two insinuated that the subjects did not want to do something and did not do it (answer combination No/No). After each story two yes/no questions were presented. The first question asked whether the subject of the story wanted something (referred to throughout as **want**) and the second asked if he got that

something (referred to throughout as **get**). The **want** question sought to ascertain whether the participant understood the motivation of the child performing the action; while the **get** question investigated their recognition of the outcome of the subject's actions.

The scenarios are based on one of two main characters, John or Bobby. Half the scenarios of each form of negation are about John and the other half about Bobby. This allowed for greater reliability in the results and the possibility of comparing whether incorrect answers were due to an inability to comprehend that form of negation or due to a problem with the story itself. The process of reading the 32 short scenarios and answering the questions lasted approximately 20 minutes per participant. The researcher recorded in writing the participants' answers to all the questions.

Pilot Study

A pilot study was conducted in 2002 following the same format, and focused on the difference between third and fifth grade males' without psychiatric disorders ability to comprehend the nuances of these same negation situations. In the original study ten third grade males and ten fifth grade males were randomly selected to participate from all of the consent forms received. Their homeroom teachers reported that they all had typically developing language ability and behavioral skills, and were all recruited from the same urban public elementary school. The study took place in the participant's school at a desk outside their classroom during the school day at a time deemed appropriate by their teacher.

The purpose of the pilot study was to investigate if age or the type of negation was a factor in determining a child's ability to comprehend a situation where negation was involved. Frequency data were tabulated and a T test was preformed to evaluate any

overall age difference in the participant's ability to comprehend the nuisances of the four differing forms of negation. The results of each type of negation were also investigated, as were trends in responses. The findings showed that neither age nor type of negation had a significant statistical difference between the two groups. What was revealed though was that in general the participants had more difficulty determining the wants of an individual (motivation) as opposed to determining if the individual got something (outcome).

The instrument used in the pilot study has been modified to for use this current study. One set of scenarios based on the subject and his peer, had a disproportion number of incorrect responses and was thus reworded to include his father rather than the peer. It was then retested on a separate group of participates until the questions were answered with 100% accuracy. This modified version was the instrument used in this research.

CHAPTER THREE

RESULTS

The Results chapter is divided into four main sections. The first section, titled Overall Results, provides a general look at the results of the study. In the second section, Results of Individual Negative Forms, the findings are further broken down into four subsections, one for each of the four types of negation; rejection, prohibition, nonexistence and denial. The third section, Categories of Questions, takes an overall look at the findings for each of the two categories of questions: Did the subject of the story want something (referred to as **want**), and did the subject of the story get something (referred to as **get**). These three sections begin by showing an overview of the results and then are broken down into the findings for the group with psychiatric disorders and those for the control group. The last section, Summary, provides a brief synopsis of this study's results.

The results in the first three sections are presented in Table form to offer an alternative way to efficiently examine how the participants answered the story questions. In the three Tables presented in the first section, the far left –hand column lists the four types of negation and is labeled "Negative Form." The middle two columns show the number of correct responses out of the number of possible correct responses to the question of whether the subject wanted something, label "Want," and for whether the subject got something, labeled "Get." The bottom row and the last column show the totals for that particular column or row by showing the number of correct responses over the number possible correct. In the second and third sections, the far left-hand column of each table lists the four answer combinations: Yes/Yes, Yes/No, No/Yes and No/No. In

the second section (Tables 6-17), the middle column shows the number of correct responses out of the number possible correct to the question of whether the subject wanted something ("Want"). The last column shows the number of correct responses out of the number possible for whether the subject got something ("Get"). The totals for both the Want and the Get column are listed in the bottom row that is titled "Total." In the first two sections and for each of the four negative forms the first table shows the overall findings, the second table shows the finding specific to the group with psychiatric disorders and the third tables shows the results for the control group. The tables in the third section (Tables 18-19) compare the results of either the **want** or the **get** categories between the group with psychiatric disorders and the control group. Again, the results are presented as the number correct over the number possible with the totals presented in the last row.

Overall Results

Of the 1280 survey questions asked of the twenty participants, 1231 of them were answered correctly, which is equivalent to 96.2% correct (see Table 3). Of the 20 total number of participants, 16 (80.0%) had one or more incorrect responses. Mistakes were made in each of the four negative forms and on both the **want** and the **get** categories.

The findings show that the negative form of rejection had a total of 312 correct responses or 97.5%. There were four incorrect responses in both the **want** and the **get** categories (97.5% correct for each category). The findings involving prohibition had a score of 94.7% with 303 of the responses answered correctly, 145 in the **want** category (90.6%) and 158 in the **get** (98.8%). There were a total of 298 accurate replies and a score of 93.1% in the nonexistence section, 140 of them were from the **want** category

Table 3

Overview of Total Results

Negative Form	Want	Get	Total
Rejection	156/160	156/160	312/320
Prohibition	145/160	158/160	303/320
Nonexistence	140/160	158/160	298/320
Denial	160/160	158/160	318/320
Totals	601/640	630/640	1231/1280

(87.5%) and 158 (98.8%) from the **get.** Denial had only two incorrect replies total, 99.4%, which were both from the **get** category (98.8%). Of the 640 questions asked in each the **want** and the **get** categories, 601 were answered accurately in the **want** category, 93.9%, and 630 in the **get** category, 98.4%. 16 or 80.0% of the participants in the want category and seven or 35.0% in the get category made incorrect responses. Four of the participants had a perfect score in all parts of their survey.

The ten participants in the group with psychiatric disorders answered 607 of the questions correctly (see Table 4) producing an overall score of 94.8%. All ten of the participants missed one or more questions in the survey, with a range of incorrect replies of one to six with an average rate of incorrect responses of 3.3 answers per participant. Of the 160 questions answered by this group for each negative form, errors were made in

three out of the four of them with only denial earning a perfect score of 160 correct responses. The score for rejection was 95.6% with 153 correct replies, 77 in the **want** category (96.3%) and 76 in the **get** (95.0%)**.** In prohibition there were 152 correct responses, 95.0%, with 72 from the **want** category (90.0%) and 80 from the **get** (100%). There were 142 correct replies made in the nonexistence section with 64 in the **want** category (80.0%) and 78 in the **get** (97.5%). Overall for the group with psychiatric disorders there were 293 questions answered correctly in the **want** category (91.6%) and 314 in the **get** (98.1%).

Table 4

Overview of Results for Group with Psychiatric Disorders

Negative Form	Want	Get	Total
Rejection	77/80	76/80	153/160
Prohibition	72/80	80/80	152/160
Nonexistence	64/80	78/80	142/160
Denial	80/80	80/80	160/160
Totals	293/320	314/320	607/640

The control group (see Table 5) had 624 out of 640 accurate replies, 97.5%, with incorrect responses coming from six of the ten participants. Participants missed between zero and six responses with the average number of incorrect replies being 1.6 answers per participant. Questions were missed in all four of the negative forms and in both

Table 5

Overview of Results for Control Group

Negative Form	Want	Get	Total
Rejection	79/80	80/80	159/160
Prohibition	73/80	78/80	151/160
Nonexistence	76/80	80/80	156/160
Denial	80/80	78/80	158/160
Totals	308/320	316/320	624/640

categories of answer. There was only one incorrect response in the rejection section with 159 correct, totaling a score of 99.4%. The incorrect reply came from the **want** category (98.8%). Prohibition had a score of 151 or 94.4% with 73 correct responses in the **want** category (91.3%) and 78 in the **get** (97.5%). In the nonexistence section there was an overall score of 156 (97.5%) with 76 from the **want** category (95.0%) and 80 from the **get** (100%). There was a score of 158 or 98.8% in the denial section with both mistakes coming from the **get** category (97.5%). Of the 320 possible correct responses, the **want** category had 306 correct (96.3%) and the **get** 316 (98.8%).

Results of the Individual Negative Forms

For each of the four forms of negation examined in this study, rejection, prohibition, nonexistence and denial, there were 320 questions, 160 from the group with psychiatric disorders and 160 from the control group. There were a total of 160 **want**

questions and 160 **get**, 80 of which came from each group. The results of those findings are presented in the following section and in Tables 6-17.

Rejection

A sample story from the study's instrument for the negative form of rejection is:

Bobby went into the kitchen. He saw some cookies that he thought he might like. Bobby asked his mom for a snack. She offered him carrots. Bobby said, "No, I would rather have a cookie." Bobby's mom gave him some cookies.

Did Bobby want a cookie?

Did Bobby get a cookie?

In this example, Bobby rejects his mother's offer of carrots. He wants a cookie and eventually he does get one (Yes/Yes answer combination).

Overall, the total number of incorrect responses for both the group with psychiatric disorders and the control group for negative form of rejection (when an action or object is present or about to become present and the speaker is opposed to that action or object) was not great (see Table 6). There were a total of eight incorrect responses leading to a score of 152 with a percentage correct of 97.5%. Seven of the twenty total participants answered incorrectly in one or more of the questions regarding rejection.

Table 6

Rejection Combined Total – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	39/40	38/40
Yes/No	39/40	40/40
No/Yes	39/40	38/40
No/No	39/40	40/40
Total	156/160	156/160

The participants with psychiatric disorders performed slightly poorer than the control group in both categories regarding rejection (see Tables 7 and 8). Seven of the eight incorrect responses came from this group. Six of the ten participants (60.0%) in the group with psychiatric disorders replied incorrectly to one or more of the questions leading to a total score of 153 correct (95.6%). Three questions were missed in the **want** category by three separate participants for a total of 77 correct answers (96.3%). Four questions were missed in the **get** category by three participants leaving a score of 76 correct (95.0%). The total number of incorrect answers in any one area of answer combinations was not extreme. One question was missed in each of the following **want** answer combinations; Yes/Yes, Yes/No, and No/Yes and in the **get** category, two responses were incorrect in both Yes/Yes and No/Yes answer combinations.

Table 7

Rejection Psychiatric Disorder – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	19/20	18/20
Yes/No	19/20	20/20
No/Yes	19/20	18/20
No/No	20/20	20/20
Total	77/80	76/80

The control group's results were stronger. There was only one incorrect response from one participant in this entire survey section on rejection leading to a total score of 159 out of 160 responses (99.4%). The incorrect response was from the **want** category, 79 out of 80 correct responses (98.8%) with the answer combination No/No while the **get** category had no incorrect responses (100%).

Table 8

Rejection Control Group – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	20/20	20/20
No/Yes	20/20	20/20
No/No	19/20	20/20
Total	79/80	80/80

Prohibition

A sample story from the study's instrument in the prohibition section is:

It was raining. John does not like to play in the rain. John's mother told him not to go out in the rain. She left to go to the store. John stayed in the house.

Did John want to go out in the rain?

Did John go out into the rain?

Here John's mother prohibits him from going out in the rain. John does not like to play in the rain and therefore does not want to go outside. John stays in the house and follows his mother's prohibition (No/No answer combination).

The tabulation of the prohibition (denying permission or stating opposition to an action someone else is intending to do) section is detailed in Tables 9-11. The results indicate that there were some difficulties in certain areas of prohibition in both the group with psychiatric disorders and the control group. Of the 320 possible response, 302 were answered correctly, 94.4%. Thirteen of the twenty participants missed one or more questions. In the **want** category, 145 out of 160 questions were answered correctly (90.6%) and 158 in the **get** category (98.8%). Eleven of the participants replied incorrectly in the **want** category and two in the **get**.

Table 9

Prohibition Combined Total – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	40/40	40/40
Yes/No	40/40	39/40
No/Yes	28/40	39/40
No/No	37/40	40/40
Total	144/160	158/160

The group with psychiatric disorders (see Table 10) answered 152 questions accurately with all eight incorrect responses coming from seven of the participants and all in the **want** category (90.0%). There were no incorrect responses made by any of the participants in the **get** category (100%). Of the eight incorrect responses, seven of them were from the two scenarios with the No/Yes answer combination (65.0%). These results were consistent in both the set of scenarios involving John and the ones involving Bobby. The other incorrect response was in the No/No answer combination (95.0%).

Table 10

Prohibition Psychiatric Disorders – Number Correct/Total Number Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	20/20	20/20
No/Yes	13/20	20/20
No/No	19/20	20/20
Total	72/80	80/80

The control group (see Table 11) had a total score of 151 or 94.4%. Four of the participants in this group missed at least one and as many as three questions in this section. Of the nine incorrect responses, seven were in the **want** category resulting in a score of 73 correct (91.3%) while the remaining two were in the **get** category (97.5%) with 78 correct. Of the seven incorrect **want** questions five were in the No/Yes answer combination (75.0%) and two were in the No/No answer combination (90.0%). The incorrect responses were made by four of the participants and were also consistent in both the scenarios involving John and Bobby. In the **get** category, two questions were answered inaccurately by two separate participants with one in the Yes/No answer combination (95.0%) and one in No/Yes (95.0%) answer combination.

Table 11

Prohibition Control Group – Number Correct/Total Number 0f Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	20/20	19/20
No/Yes	15/20	19/20
No/No	18/20	20/20
Total	73/80	78/80

Nonexistence

A sample nonexistence short story is from the study's instrument is:

John was thinking about some apples. He went to the refrigerator to get some. There were no apples. He told his mother he could not find the apples. She said there were no more apples. John went outside to play.

Did John want an apple?

Did John get an apple?

Here John wants an apple but there were not any. They do not exist in his home so he was unable to fulfill his desire for an apple (Yes/No Answer Combination).

Of the 320 questions in the nonexistence (when an object, action, or attribute does not exist in the present context but there is some reason to expect it to be there or a reason to look for it) section, 298 were answered accurately, 93.0%, the lowest overall score for any of the negative forms (see Table 12). Twelve of the twenty participants incorrectly answered one or more of the questions from this section. The **want** category had 140

questions answered correctly (87.5%) with incorrect responses made by twelve of the participants and the **get** category had 158 correct responses (98.8%) with incorrect replies coming from two different participants.

Table 12

Nonexistence Combined Total – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	40/40	40/40
Yes/No	39/40	38/40
No/Yes	30/40	40/40
No/No	31/40	40/40
Total	140/160	158/160

As seen in Tables 13 and 14, the group with psychiatric disorders did substantially poorer in the scenarios involving nonexistence than the control group. The group with psychiatric disorders had a total score of 142, 88.8%. Of the 18 questions answered inaccurately, 16 were in the **want** category (80.0%) and two were in the **get** (97.5%). Nine of the ten participants in this group missed at least one and as many as four questions in this section, only 10% of the participants had a perfect score. The greatest difficulty came in the No/Yes answer combination. Nine of the sixteen incorrect answers, made by seven of the ten participants, came from this answer combination and all nine of the mistakes were made in the **want** category (55.0% correct). There were no incorrect replies made in the **get** category of this answer combination. The incorrect replies were

made in both the scenarios about John and about Bobby. The No/No answer combination for this group had six incorrect responses (85.0% correct), again all in the **want** category (70.0%) and zero in the **get** (100%)**.** These six incorrect responses were made by five of the participants. The other incorrect response made in the **want** category, along with the two incorrect responses in the **get** category was in the Yes/No answer combination.

Table 13

Nonexistence Psychiatric Disorders – Number Correct/Total Number Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	19/20	18/20
No/Yes	11/20	20/20
No/No	12/20	20/20
Total	64/80	78/80

The control group performed much better in this section. This group had a total of only four incorrect responses (97.5%) made by three of the participants. All four of the incorrect responses were in the **want** category (95.0% correct); with one in the No/Yes answer combination (97.5% correct) and three in the No/No (92.5% correct). There were no incorrect responses made by any of the control group members in the **get** category (100%).

Table 14

Nonexistence Control Group – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	20/20	20/20
No/Yes	19/20	20/20
No/No	17/20	20/20
Total	76/80	80/80

Denial

A sample of a denial short story from the instrument is:

Bobby was playing with his toys. His sister asked him to play dolls. Bobby said "No." His sister cried. Bobby played dolls with his sister.

Did Bobby want to play with the dolls?

Did Bobby play with the dolls?

In this story Bobby denies that he has a desire to play dolls but ends up playing dolls anyway presumably to keep his sister happy (No/Yes Answer Combination).

Participants in both the group with psychiatric disorders and the control group by far received the highest scores on the denial (when the truth of a statement is negated by another individual) section (see Tables 15-17). The group with psychiatric disorders answered every question correctly (100%) in both the **want** and the **get** categories. The control group had just two incorrect responses (98.8%) with both incorrect replies

coming from the **get** category, one with a Yes/Yes answer combination and one with a Yes/No.

Table 15

Denial Combined Total – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	40/40	39/40
Yes/No	40/40	39/40
No/Yes	40/40	40/40
No/No	40/40	40/40
Total	160/160	158/160

Table 16

Denial Psychiatric Disorders – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	20/20
Yes/No	20/20	20/20
No/Yes	20/20	20/20
No/No	20/20	20/20
Total	80/80	80/80

Table 17

Denial Control Group – Number Correct/Total Number of Responses

Answer Combinations	Want	Get
Yes/Yes	20/20	19/20
Yes/No	20/20	19/20
No/Yes	20/20	20/20
No/No	20/20	20/20
Total	80/80	78/80

Categories of Questions

Want

In the **want** category (see Table 18) there were a total of 640 questions asked with 601 answered correctly (93.8%). As a whole, the control group performed better than the group with psychiatric disorders in this category. The group with psychiatric disorders answered 293 out of 320 of the questions correctly (91.6%) while the control group accurately answered 308 (96.3%). All ten of the participants in the group with psychiatric disorders answered at least one and as many as six questions incorrectly as compared to six of the ten participants in the control group with a range of incorrect replies from one to four. The average number of incorrect responses made by each participant in the group with psychiatric disorders was 2.7 and was 1.2 for the participants in the control group.

Table 18

Want Combined Total – Number Correct/Total Number of Responses

Answer Combination	Psychiatric Disorders	Control
Yes/Yes	79/80	80/80
Yes/No	78/80	80/80
No/Yes	67/80	74/80
No/No	73/80	74/80
Total	293/320	308/320

The group with psychiatric disorders had incorrect responses in the **want** category for all four of the answer combinations with 17 of the 27 incorrect replies, 63.0% of them, coming from the No/Yes answer combination and seven or 25.9% coming from the No/No answer combination. There was one incorrect reply made in the Yes/Yes answer combination and two in the Yes/No.

The control group had incorrect responses in two of the answer combinations with Yes/Yes and Yes/No both having a perfect score. There were six incorrect responses made in both the No/Yes (92.5%) and No/No (92.5%) answer combinations.

Get

There were 630 out of 640 (98.4%) correct responses in the **get** category, 314 of them from the group with psychiatric disorders and 316 from the control group (see Table

19). While the group with psychiatric disorders had as many or more incorrect responses in each of the four answer combinations when compared to the control group, the difference between the two was only one incorrect reply. Four of the participants in the group with psychiatric disorders had incorrect responses in this category as compared to three in the control group. Of the six incorrect responses made by the group with psychiatric disorders, two were from each of the following answer combinations: Yes/Yes, Yes/No, and No/Yes. In the control group, there was one incorrect response made in the Yes/Yes answer combination, two in the Yes/No, and one in the No/Yes.

Table 19

Get Combined Total – Number Correct/Total Number of Responses

Answer Combination	Psychiatric Disorders	Control
Yes/Yes	78/80	79/80
Yes/No	78/80	78/80
No/Yes	78/80	79/80
No/No	80/80	80/80
Total	314/320	316/320

Summary

Looking at Overall Results, it does not appear as if there is a noteworthy difference in a child with psychiatric disorders and one without in their ability to understand negation as defined in this study. The overall percent correct was 96.2% with 94.8% for the group with psychiatric disorders and 97.5% for the control group. The average number of mistakes per participant was 3.3 verses 1.6 for the control group.

When the individual results of each form of negation are examined a different picture begins to develop. In rejection the overall scores again do not appear too different (153 versus 159) but the actually number of participants responding incorrectly is. The group with psychiatric disorders had 60% of their participants responding incorrectly to one or more questions is this category while this is true of just 10% of the control group. Prohibition provided a similar situation. Here again the overall scores were similar (152 versus 151) but the number of participants responding incorrectly again provides a different picture (70% versus 40%). Also with prohibition 87.5% of the incorrect responses were made in the No/Yes answer combination for the group with psychiatric disorders and 55.6% for the control group. The difference was even more vivid for the negative form of nonexistence. Here the difference in scores was 142 versus 156 with 90% of the group with psychiatric disorders missing one or more of the questions as compared to 30% in the control group. In the No/Yes answer combination the difference is similar with 56.3% of the incorrect replies made by the group with psychiatric disorders and 25% by the control group. Denial did not seem to exhibit any of these discrepancies with scores of 160 versus 158 and only 20% of the participants scoring incorrectly and both from the control group.

CHAPTER FOUR

DISCUSSION

One of the most important functions of language, including negation, is to regulate emotions and behavior. A child's ability to comprehend, encode, and express language is critical to their understanding, encoding, organizing and retrieving the rules to effect appropriate levels of self control and emotional regulation (Gallagher, 1999). There are several million children in the United States that have some form of a communication disorders (Jenkins, 1978; National Institute of Neurological Disease and Stroke, 1972) and children with language disorders are significantly more likely, up to 50% more likely, to have co-occurring psychiatric disorders (Cantwell & Baker, 1991; Beitchman, Brownlie, & Wilson, 1996). Children with a psychiatric disorder are also significantly more likely to have difficulties in linguistic functions, which include abnormalities in language expression, language comprehension, and/or language processing (Cantwell & Baker, 1991). Considering the implications and numbers of children possibly afflicted with these co-occurring disorders there is a need for greater and more detailed research in this area.

The purpose of this research project was to expand upon previous research findings that link communication disorders and psychiatric disorders by comparing the levels of comprehension of four forms of negation in children with and without psychiatric disorders. The children with psychiatric disorders in this study all received language services through their school while those without psychiatric disorders did not and are not presently diagnosed with any form of speech or language disorder. The research presented here was conducted by using 32 short scenarios each involving one of

four forms of negation: prohibition, nonexistence, rejection and denial. The scenarios considered whether the participant could determine if the subject wanted something (**want**) and if they got something (**get**). The study produced some interesting findings. There did not appear to be an overall substantial difference in the total scores, but the group with psychiatric disorders earned lower scores throughout most of the study with a greater number of their participants providing incorrect answers. The results appeared more noteworthy after further analysis.

To facilitate this closer look the discussion chapter is divided into sections. The results for each form of negation will first be examined first by looking at each form individually and discussing their different categories and answer combinations. The second section discusses the findings from each of the two categories and their related answer combinations. After the discussion of the results is presented, the limitations found in this and similar types of studies are presented. The chapter's final section looks at the need for further research in this and related fields.

Forms of Negation

This section examines the results for each of the four forms of negation. The results are discussed in term of overall scores, categories, answer combinations, other research, and/or other contributing factors while comparing the results of the group with psychiatric disorders with the control groups.

In the portion of the study devoted to rejection, the group with psychiatric disorders had 60% of their participants missing one or more questions with the control group having just 10%. While the difference in the number of participants responding accurately is 50%, the difference in the total scores was not great (153 versus 159). It is

interesting to note though that the control group had a perfect score in the **get** category and only one incorrect response by one participant in the **want** category for this entire section while six of the ten participants in the group with psychiatric disorders incorrectly answered one or more of the questions, three from the **want** and three from the **get** category. Why a 50% difference in the number of participants in the two groups responding incorrectly to one or more questions exists cannot be determined at this point. Perhaps a larger sample size in each group would establish a trend that could be more accurately noted. Further research is needed to examine this possibility.

Bloom's (1991) research on the development of negation in typically developing human beings indicated that rejection was the form used most often in early negative sentences. Pea (1980) proposed that rejection was the first form to develop due to the fact that it is the most concrete form of negation. Since both of these researchers noted its early existence, one may then expect rejection to obtain one of the higher scores in this study since it has theoretically been used more often at least during the initial stages. That does not appear to be the case in this study for the group with psychiatric disorders. The control group did earn their highest score (159) in this section but the group with psychiatric disorders scored higher in denial (160) rather than rejection (153). This may be due to the fact that comprehension of language does not always precede production (Fenson et al, 1994; Leonard, Newhoff, & Fey, 1980), a true discrepancy between the two groups, or due to some limitation in this research.

The group with psychiatric disorders scored one point higher than the control group in the **want** category of prohibition (151 versus 152 out of 160), while both groups had a perfect score in the **get** category. It is interesting to note that 70% of the

participants with psychiatric disorders answered one or more questions incorrectly compared to only 40% of the control group and that 66% of the control group's incorrect responses came from just two participants. So while the group with psychiatric disorders had fewer incorrect responses, a greater percentage of their participants answered prohibition questions incorrectly. It earned the lowest score for the control group and the third lowest for the group with psychiatric disorders. The participant in the control that was responsible for 33.3% of the incorrect responses in this category was also responsible 37% (6 out of 16) of the control group's total number of incorrect responses. This may be a contributing factor in the difference between the numbers of incorrect answers versus the number of participants scoring incorrectly.

Nonexistence was the area that seemed to cause the most difficulty mainly for the group with psychiatric disorders. It was their lowest scoring category. The overall score for this section was 93.0% with the group with psychiatric disorders scoring 88.8% and the control group 97.5%, a difference of 8.7%. This discrepancy does not seem too noteworthy but when the results are examined in more detail the differences are more considerable especially in the **want** category. In the **want** category the control group scored 95.0% compared to only 80.0% for the group with psychiatric disorders, a 15.0% difference in scores. The discrepancy in these scores seems to lie in the **want** category involving questions having the answer no, especially in the No/Yes combination. In the No/No combination the difference was not extreme with the group with psychiatric disorders scoring 85.0% and the control group 92.5%, a 7.5% difference. In the No/Yes answer combination the group with psychiatric disorders earned a score of just 55.0% correct compared to the 97.5% in the control group, leaving a 42.5% discrepancy. The

discrepancy was most apparent in incidences that required the participant to interpret the lack of desire of an individual when it does not meet the outcome, but this was only obvious in the form of nonexistence. A sample from the research instrument of such an incidence is:

> John was thirsty and thought he would like to drink some juice. He knew his Mother would like him to drink milk. He opened the refrigerator and noticed there was no milk. Just then John's mother came home with a gallon of milk. John drank a glass of milk.
>
> Did John want to drink milk?
>
> Did John drink milk?

The participants with psychiatric disorders tended to have difficulties determining that John did not want to drink milk but did seem to comprehend that he drank milk. The control group did not seem to have the same problem.

The large discrepancy found in this No/Yes answer combination was not found in any other form of negation and seemed to be present mainly in this category with this form. Why this is so is not apparent. Pea (1980) did note that nonexistence, which he referred to as disappearance negation, required more abstract processing than rejection because the item being rejected is not in sight and needs an internal cognitive representation. But if that were simply the case then denial, which requires even greater internal cognitive representation would have the lowest scores but that was not the case.

It has been noted that children with emotional/behavioral problems are more prone to difficulties in understanding abstract language concepts (Donahue, Cole, & Hartas, 1994) and more complex linguistic knowledge like multiple meanings (Mack & Warr-Leeper, 1992). This might explain while there would be some discrepancy between the overall scores in the two groups but does not fully address this specific issue. Is it

more difficult for children with psychiatric disorders to comprehend another's desires if the desired object is not present? It has been noted that children with psychiatric disorders have difficulties inferring the desires of another individual, but if it were simply due to that phenomenon then this discrepancy should be found throughout the negative forms in this study that was not the case. The scenarios read to the participants were identical, the environments where the study was conducted were similar, groups were matched in terms of age and gender, and such a difference was not found in any other section, category or answer combination in this study. Is the disparity then due to a difference in the ability of these participants to comprehend the nuances of a situation involving nonexistence? While that may or may not be the case, that question cannot be answered at this time. Further researched is needed to fully examine these differences.

Denial had a very low number of incorrect responses, only two total. Both of these incorrect responses were made by the control group in the **get** category in answer combinations that otherwise tended to have high scores (Yes/Yes and Yes/No). Both Bloom (1991) and Pea (1980) noted that denial was the last form of negation that developed in the participants in their individual studies. In studies that focus on the development of negative forms, denial is usually believed to be the last form to develop in typical linguistic growth (Hummer, Wimmer, & Antes, 1993). Denial in this study was the highest scoring negative form and it did not appear to cause any difficulties for either the group with psychiatric disorders or the control group. It did not appear to have any of the difficulties in desire and outcome found in nonexistence contrary to Pea's (1980) hypothesis that it requires greater internal cognitive representation.

The results of this study seem to indicate that there may be some differences in the ability of children with psychiatric disorders to comprehend specific situations involving one or more of the four forms of negation studied when compared to children without psychiatric disorders. Participants in both groups were matched and read the same scenarios in similar environments but the results show some discrepancies. Nonexistence seemed to be the area in which children with psychiatric disorders had the greatest difficulty and these difficulties did not seem apparent in the participants without psychiatric disorders. Does this mean that children with psychiatric disorders have greater difficulty processing some instances of negation especially nonexistence? More research is needed to further evaluate this correlation.

There were a much greater percentage of participants in the group with psychiatric disorders responding incorrectly to questions in rejection, prohibition and nonexistence than the participants in the control group. It is more revealing when considering that one of the participants in the control group was responsible for 37.5% (six out of sixteen) of the total number of incorrect responses made by the entire group. While the total number of incorrect replies was not overwhelming, the difference in the percentage of participants with incorrect scores may be cause for concern. While these findings are telling, the differences found may be due to limitations in the study and further research is warranted and needed.

Categories

While the group with psychiatric disorders had the lower scores in both categories the **want** category had lower total scores overall than the **get** category. This section will

discuss the results of the individual category differences and how these differences compare in the four answer combinations.

In the **want** category the group with psychiatric disorders had an overall score of 91.6% compared to 96.3% in the control group, a difference of 4.7%. These findings appear more noteworthy with further analysis. The specific answer combinations seemed to influence the participants' performance especially for the group with psychiatric disorders. The Yes/Yes and Yes/No answer combinations involved instances where the subject of the story wanted something and this did not appear to cause any discrepancies between the two groups. They both appeared to comprehend that the subject was motivated by a want or desire.

Instances where the subject did not want something appeared more problematic especially for the group with psychiatric disorders. Of the 27 incorrect responses made by the group with psychiatric disorders, 17 of them or 63.0% came from the **want** category with the No/Yes answer combination. This means that 63% of the time the participants with psychiatric disorders did not respond correctly when determining if the subject wanted something when in fact they did not. The control group had a total of 16 incorrect responses and six of those or 37.5% came for this same area, a 25.5% difference between the two group scores. In No/No there were six incorrect replies for the group with psychiatric disorders and five for the control group. All the participants in the group with psychiatric disorders incorrectly replied to one or more questions in this category (100%) while six participants in the control group (60%) did so, a 40% difference.

The **get** category did not appear to provide any difficulty for either group in any of the four forms of negation or any of the answer combinations. The scores in all answer

combinations ranged from a low of 78 out of 80 (97.5%) to a high of 80 out of 80 (100%) for both groups. The overall scores for both groups were also impressive, 314 out of 320 (98.1%) for the group with psychiatric disorders and 316 (98.8%) for the control group. It does not appear as if either group had any problem determining if the subject of the story got something, whether they wanted it or not, in any of the four types of negation studied.

The group with psychiatric disorders appears to have had greater difficulty inferring the motivation, or lack there of, in a subject as opposed to inferring the outcome. This discrepancy seems even larger when the subject did not actually want something and especially when they got something (No/Yes). Is this because children with psychiatric disorders confuse outcomes (get) with desires (want)? But if that were simply the case, the results from other answer combinations should also reflect it, especially Yes/No. Instead the results show a discrepancy in the No/Yes combination that cannot simply be explained by a tendency to define intention with outcome or similar results would be apparent throughout the study. These findings could be due to a limitation in the study but why then is it not reflected in both groups? This study looks at specific aspects of language and begins to compare differences and similarities between children with and without psychiatric disorders. While it has been noted that children with psychiatric disorders have language problems in general, research on the relationship with specific types of language is limited. While the results of this study might begin to point to some discrepancies, more research is needed to examine and eliminate some of the limitations to this study.

Limitations on This Body of Research

Studies on the correlation between psychiatric disorders and language disorders face a variety of limitations. According to Stevenson (1996), there are six main problems in studies that interfere with interpreting and synthesizing findings from these studies. First, there tends to be a lack of heterogeneity in the type and severity of the language disorders studied. This is true for this study also. While all the participants with psychiatric disorders received speech and language services through a speech and language pathologist in their school, no attempt was made to control for different forms of language disorders mainly because it was not deemed to be a contributing factor to this study's hypothesis. A second failure is controlling for the effects of associated disabilities (Stevenson, 1996). Again this is true for both groups in this study. All of the participants in the group with psychiatric disorders were labeled severely emotionally disturbed by their home school district but besides receiving language services other disabilities that the participants might have in either group was not control for due to student confidentiality issues. A third problem results from where samples are recruited (e.g. clinic referrals, schools…) and the possible biases associated with them (Stevenson, 1996). The students in this study were recruited for an alternative school that specializes in children with emotional/behavioral needs and receive speech and language services as part of their daily, which may not be the case for other, such children with psychiatric disorders. Due to this difference it may not be possible to generalize the results of this study to children with psychiatric needs in different environments. Different studies use different measurements to document behavior and/or behavior problems (Stevenson, 1996) that lead to the fourth limitation. The participants with psychiatric disorders were

from an alternative school that serves an entire county and the specific methods used to determine the disability depended on the individual school district from which the child came. This was something this study could not control. A fifth difficulty is that no difference is made between transient and persistent language problems. (Stevenson, 1996) Again this is also a factor for this study since the school that the participants currently attend provides speech and language services that may not be true of the school the participant came from and/or will be returning to. Finally, there is often a lack or absence of data on control subjects. (Stevenson, 1996) In this study information that was relevant to matching the two groups (age and gender) was obtained and factored in.

It has also been noted that the use of children in psychological research studies poses additional problems. Children can make difficult research participants. Making contact with the participants, gaining cooperation, and maintaining interest is more difficult with children than adults (Cantwell & Baker, 1991). While attempts where made to address these issues (contacting resources to help with contact of parents, providing a break and a mint…) some of these limitation may also have existed in this study.

An additional weakness found in this and in many studies involving children with psychiatric and/or language disorders is a small sample size. Small sample sizes give a narrower range of results causing them to be less representative of the whole picture. These small numbers cannot provide information on a wide variety of variables (e.g. age, severity, types of disorders…), and do not have the power to detect small differences in the population (Cantwell & Baker, 1991).

Upon further reflection of the survey, there are possible discrepancies in the difficulty of the individual scenarios. Some of the scenarios appear to present situation

involving inferring and possible multiple negating situations. This may influence the results of this study making it difficult to determine whether the results were due to the intended negative situation or to some unintended situation or wording. Since the instrument was designed, tested and modified by the researcher based on the results of a small selection of adults and through a pilot study, these and other biases may exist and its effectiveness cannot be determined.

Need for Further Research

The participants in this research with psychiatric disorders were from an alternative school for children with emotional disorders. The school place a heavy emphasizes on language and communication remediation and integrates the program throughout the school day. This is not necessarily the experience of many children with psychiatric disorders who are typically underrepresented in the speech and language programs found in many schools. This may influence the results of this study and lead to the question of whether children with psychiatric disorders not receiving speech and language services perform any differently in this research? Further studies are needed to address that question.

When conducting the pilot study for this research, a disproportionate number of incorrect responses were found in one set of question in the survey. This set of questions involved a negating situation between the subject and one of his peers. When the question was reworded substituting the subject's father for the peer the discrepancy ceased to exist. This then leads to the issue of whether a negating situation involving a peer is more difficult to comprehend rather than one involving a parent/child or clearer superior/subordinate relationship. Further research is needed to address this issue.

Further research is also needed to address some of the limitations to this research, especially sample size and the survey instrument itself. With a larger sample the results could be correlated to significance levels to determine statistically if a relationship exists. The instrument could again be modified to allow for more equality on the difficulty of the scenarios making the determination of the results clearer and more easily interpreted.

While there are a variety of inconsistencies, difficulties and limitations with this field of research, the need for it is great. Language and learning problems have been referred to as "marginal" or "invisible" handicaps (Lipsky, 1985; Willmer & Crane, 1979), causing adults to interpret problems in understanding and producing language as noncompliance, inattentiveness, or social withdrawal (Howlin & Rutter, 1987). Failure to understand these handicaps may cause parents, teachers, and other individuals to have inappropriate expectations for these children and attribute their misbehavior to a behavior disorder rather than a problem with understanding and producing appropriate communication. Individuals need to be made aware that what may be seen as non-responsiveness, defiance, or lying may be due to a child's problems in understanding abstract language or formulating coherent verbal explanations (Donahue, Cole, & Hartas, 1994). This undiagnosed or misunderstood language and communication disorder can have large repercussions. A child's ability to communicate and understand language influences their experiences with their family and society in general (Cohen, 1996), and understanding this relationship can help eliminate many problems and provide child with the skills they need to better function as a pro-social individual.

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Appendix A

Instrument

Nonexistence Yes/Yes

John was thinking about some apples. He went to the refrigerator to get some. There were no apples. He told his mother about this. She went to the store and bought some apples. John ate his apple.

Did John want an apple?

Did John get an apple?

Nonexistence Yes/No
John was thinking about some apples. He went to the refrigerator to get some. There were no apples. He told his mother he could not find the apples. She said there were no more apples. John went outside to play.

Did John want an apple?

Did John get an apple?

Nonexistence No/Yes
John was thirsty and thought he would like to drink some juice. He knew his mother would like him to drink milk. He opened the refrigerator and noticed there was no milk. Just then John's mother came home with a gallon of milk. John drank a glass of milk.

Did John want to drink milk?

Did John drink milk?

Nonexistence No/No
John was thirsty and thought he would like to drink some juice. He knew his mother would like him to drink milk. He opened the refrigerator and noticed there was no milk. Just then John's mother came home with a gallon of milk. John drank a glass of juice.

Did John want to drink milk?

Did John drink milk?

Prohibition Yes/Yes
John saw some toys. He thought he would like to play with them. His mother told him not to play with the toys. She left the room. John began playing with the toys.

Did John want to play with some toys?

Did John play with the toys?

Prohibition Yes/No
John saw some toys. He thought he would like to play with them. His mother told him not to play with the toys. She left the room. John followed her into the other room.

Did John want to play with some toys?

Did John play with the toys?

Prohibition No/Yes
It was raining. John does not like to play in the rain. John's mother told him not to go out in the rain. She left to go to the store. His sister went out to play, so John went out in the rain.

Did John want to go out in the rain?

Did John go out into the rain?

Prohibition No/No
It was raining. John does not like to play in the rain. John's mother told him not to go out in the rain. She left to go to the store. John stayed in the house..

Did John want to go out in the rain?

Did John go out into the rain?

Rejection Yes/Yes
John and his father went to the park. John thought he would like to play soccer. His father saw a basketball game starting. He asked John to play basketball. John said no. John and his father played soccer.

Did John want to play soccer?

Did John play soccer?

Rejection Yes/No
John and his father went to the park. John thought he would like to play soccer. His father asked John to play basketball. John said no. His father insisted. John and his father played basketball.

Did John want to play soccer?

Did John play soccer?

Rejection No/Yes
John and his father went to the park. John's father asked him to play basketball. John said no. His father insisted. John and his father played basketball.

Did John want to play basketball?

Did John play basketball?

Rejection No/No
John and his father went to the park. John's father asked John to play basketball. John said no. His father insisted. John again said no. John and his father walked home.

Did John want to play basketball?

Did John play basketball?

Denial Yes/Yes
John asked his dad to drive him to the park to play soccer. When they got to the park John's dad handed him a basketball. John said, "This is not a soccer ball." John's dad went back to the car and got the soccer ball. John and his dad played soccer.

Did John want to play soccer?

Did John play soccer?

Denial Yes/No
John asked his dad to drive him to the park to play soccer. When they got to the park John's dad handed him a basketball. John said, "This is not a soccer ball." John's dad went back to the car but could not find the soccer ball. John and his dad played basketball.

Did John want to play soccer?

Did John play soccer?

Denial No/Yes
It was dinner time and John was not hungry. His mother told him he needed to eat all his vegetable. John said, "No, I am not hungry." His mother told him to eat it anyway. John ate it.

Did John want to eat his vegetables?

Did John eat his vegetables?

Denial No/No
John was not hungry. His mother told him he needed to eat all his vegetable. John said, "No, I am not hungry." His mother told him to eat it anyway. She left the room. John feed the vegetables to his dog.

Did John want to eat his vegetables?

Did John eat his vegetables?

Prohibition Yes/Yes
Bobby and his mother were in the kitchen. Bobby saw some candy he thought he would like to have. Bobby asked his mother if he could have it. His mother said no. She walked away. Bobby took the candy and ate it.

Did Bobby want to eat some candy?

Did Bobby eat some candy?

Prohibition Yes/No
Bobby and his mother were in the kitchen. Bobby saw some candy he thought he would like to have. Bobby asked his mother if he could have it. His mother said no. She walked away. Bobby followed her out of the room.

Did Bobby want to eat some candy?

Did Bobby eat some candy?

Prohibition No/Yes
Bobby and his mother were at the beach. Bobby was happily playing in the sand and does not like to go in the water. Bobby's mother came over to him. She said, "Do not go in the water." Bobby's mother walked up the beach. Bobby got up and went in the water.

Did Bobby want to go in the water?

Did Bobby go in the water?

Prohibition No/No
Bobby and his mother were at the beach. Bobby does not like to go in the water and was happily playing in the sand. Bobby's mother came over to him. She said, "Do not go in the water." Bobby's mother walked up the beach. Bobby continued playing in the sand.

Did Bobby want to go in the water?

Did Bobby go in the water?

Rejection Yes/Yes
Bobby went into the kitchen. He saw some cookies that he thought he might like. Bobby asked his mom for a snack. She offered him carrots. Bobby said, "No, I would rather have a cookie." Bobby's mom gave him some cookies.

Did Bobby want a cookie?

Did Bobby get a cookie?

Rejection Yes/No
Bobby went into the kitchen. He saw some cookies that he thought he might like. Bobby asked his mom for a snack. She offered him carrots. Bobby said, "No, I would rather have a cookie." Bobby's mom gave him the carrots.

Did Bobby want a cookie?

Did Bobby get a cookie?

Rejection No/Yes
Bobby saw some lima beans on his dinner plate. His mother told him to eat them. Bobby said, "No, I do not like them." His mother said to eat them or he could not have dessert. Bobby ate his lima beans.

Did Bobby want to eat his lima beans?

Did Bobby eat his lima beans?

Rejection No/No
Bobby saw some lima beans on his dinner plate. His mother told him to eat them. Bobby said, "No, I do not like them." His mother said to eat them or he could not have dessert. His mother walked out of the room. Bobby threw his lima beans away.

Did Bobby want to eat his lima beans?

Did Bobby eat his lima beans?

Denial Yes/Yes
Bobby was at the video store and saw a movie he thought he would like to watch. When he got home he told his mom. She went out and got a video for him. When Bobby saw it, he said "No, that is not the one." His mom returned it and got the correct one. Bobby watched the movie.

Did Bobby want to watch a video?

Did Bobby watch a video?

Denial Yes/No
Bobby was at the video store and saw a video he thought he would like to watch. When he got home he told his mom. She went out and got a video. When Bobby saw it, he said "No that is not the one." His mom said there weren't anymore of the one Bobby wanted. Bobby read a book instead.

Did Bobby want to watch a video?

Did Bobby watch a video?

Denial No/Yes
Bobby was playing with his toys. His sister asked him to play dolls. Bobby said "No." His sister cried. Bobby played dolls with his sister.

Did Bobby want to play with the dolls?

Did Bobby play with the dolls?

Denial No/No
Bobby was playing with his toys. His sister asked him to play dolls. Bobby said "No." His sister cried. Bobby continued playing with his toys.

Did Bobby want to play with the dolls?

Did Bobby play with the dolls?

Nonexistence Yes/Yes
Bobby thought he would like to play basketball. He looked for the basketball in the toy box but could not find it. Bobby asked his mom where it was. She said it was in the garage. Bobby found the basketball in the garage. Bobby played basketball.

Did Bobby want to play with the basketball?

Did Bobby play with the basketball?

Nonexistence Yes/No
Bobby thought he would like to play basketball. He looked for the basketball in the toy box but could not find it. Bobby asked his mom where it was. She said she did not know where it was. Bobby continued to look but could not find it.

Did Bobby want to play with the basketball?

Did Bobby play with the basketball?

Nonexistence No/Yes
Bobby was looking at the children playing in the street. He thought playing baseball would be fun but he did not see them playing baseball. His mother told him to go play with them anyway. He went out and played with them.

Did Bobby see the children playing baseball?

Did Bobby go out and play?

Nonexistence No/No
Bobby was looking at the children playing in the street. He thought playing baseball would be fun but he did not see them playing baseball. His mother told him to go play with them anyway. He decided he would stay inside.

Did Bobby see the children playing baseball?

Did Bobby go out and play?