An Abstract of

THE RELATIONSHIP BETWEEN ENGLISH (L1) AND HEBREW (L2) READING AND EXTERNALIZING BEHAVIOR AMONGST ORTHODOX JEWISH BOYS

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Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in The Steinhardt School of Education New York University 2004
The association between reading problems and behavior problems has been established for children learning to read English (see Gellert & Embro, 1999). To date, however, little research has examined this relationship in bilingual situations. The goal of the current study was to investigate the relationship between reading and behavior problems in the Orthodox Jewish community where students are expected to learn to read in both English and Hebrew. Based on the social function that language and literacy play in general and the particular community role that Hebrew plays in this population, social exclusion was investigated as a mediator or moderator of the relationship between reading and behavior. This study involved fifth grade boys \( N = 77 \) who were recruited from Modern Orthodox Jewish day schools in the Metropolitan New York area. Students were tested individually in English decoding and comprehension using the Woodcock Reading Mastery Test – Revised, and Hebrew decoding and comprehension utilizing a parallel measure. Students completed a revised Holmes-Rahe scale of childhood stressors and the Youth Self-Report form of the
Achenbach System of Empirically Based Assessment (ASEBA) concerning their behavior. Each student’s English teacher and Hebrew teacher reported student behavior using the Teacher Report-Form of the ASEBA. The results indicated a significant relationship between reading and externalizing behavior problems in general. Hierarchical multiple regression models substantiated the claim that social exclusion, as perceived by the student, played a mediating role in the relationship between Hebrew decoding and externalizing behavior problems reported by the student. Such a perception of social exclusion also moderated the relationship between Hebrew decoding and aggressive behavior reported by the student. In addition, English comprehension predicted externalizing behavior problems and aggressive behavior reported by the English teacher and externalizing behavior problems reported by the Hebrew teacher when accounting for childhood stress and social exclusion. These findings support the claim that there is a relation between reading and behavior problems, and suggest that for children in bilingual situations, this relation may be a consequence of the social exclusion that results from children’s inability to partake in the literate activities of their culture.
Sponsoring Committee: Professor Bruce D. Homer, Chairperson
Professor Miriam Eisenstein Ebsworth
Professor Perry Halkitis

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Scott Goldberg     Date
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Systems thinking acknowledges the effect of each dimension of a system on the others. In this brief space, I would like to convey my appreciation outward to the many spheres of influence on my life, and particularly those without whom this dissertation would not have become a reality.

I wish to thank my committee members, Dr. Bruce Homer, Chairperson, Dr. Miriam Eisenstein Ebsworth, and Dr. Perry Halkitis. Dr. Homer gave generously of his time, day and night, over the last two years. He knew when I needed guidance and support and when I needed space to learn (and sometimes struggle) independently. We listened to and learned from each other. What more could you ask for in a teacher! Dr. Eisenstein Ebsworth’s knowledge of second language acquisition, the Hebrew language, and the Jewish people played a critical role in helping to clarify many of the fundamental themes throughout this thesis. She has been a calm and encouraging voice throughout this stressful time. Dr. Halkitis’ knowledge of research design and data analysis has greatly enhanced the quality of this dissertation. I must note that all three members followed a personal approach to this dissertation process – that a student should be treated with respect and dignity. This has made the entire process not only bearable but also enjoyable. I thank them for this experience.
I extend my deepest appreciation to the school administrators who consented to have me recruit participants in their schools. They demonstrated a clear understanding of the value of research in Jewish education and the need to support it. In addition, I thank the many student participants and their parents, as well as the teacher participants, who all recognized that in order to benefit from Jewish education research, one must be willing to participate in such research.

Early in January 2002, I had the pleasure of meeting Dr. David Schnall, Dean of the Azrieli Graduate School of Jewish Education and Administration at Yeshiva University. Never had I met a man who was so committed to reforming the world of Jewish education by infusing serious research into the system, among other plans. Several conversations later, I was a full-time professor at his school with an opportunity to teach, learn, and conduct research in a supportive environment. He took a chance on me and raised my work to a new level. For this, and his continued guidance and support, I am grateful.

Without the assistance of Deena Rabinovich, Layala Salomon, Sara Gargir, and Yehuda Brand my research assistants at the Azrieli Graduate School of Jewish Education and Administration at Yeshiva University, I would not have been able to collect the data for this project, enter it into the computer, and analyze the results in the limited time span afforded me by calendrical constraints.

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Long before research questions were conceived and hypotheses considered, two men deliberated each Shabbat afternoon over Seuda Shlishit (3rd meal of the Sabbath) the current system of Jewish education, the opportunities it affords those who are Hebrew-literate, and the position in the community to which those who are illiterate are relegated. Rabbi Shlomo Schwartz has remained my friend, colleague, and confidant. Without his unwavering support and encouragement, I would have given up on “fixing” the system a long time ago.

The gratitude to my parents, Stuart and Marilyn Goldberg, cannot be sufficiently expressed with words. When I was growing up, they told me that they would kill me if I went into the field of education. Thank God, there are many people who have benefited from their inaction. They were my first teachers and continue to play that role in a meaningful and supportive way for my wife, our family, and me. How could I not choose to follow in their footsteps! About twenty years ago, my father brought me to the computer lab at Hofstra University so that he could complete his statistics homework as part of his own doctoral coursework. He probably never imagined that I would come to understand that material and one day use such an understanding to complete a doctorate myself. Knowing that I would be able to share this day with him has been sufficient motivation to see this research to the end.
My children have never known me not to be a student in school. A few months ago, my son asked me when I was going to graduate and be done with school. To my children Yehuda Tzvi and Golda Nora, thanks for waiting. Daddy’s coming home.

As with my children, my wife, Rahel, has never known me not to be a student in school. She has dealt with long hours without me at home, and facilitated and supported my work in Jewish education by taking care of most family responsibilities. A recent study concluded that the average salary for a mother should be approximately $675,000. Averages, by definition, require a range of values above and below a central point. No doubt, my wife’s compensation should fall well above that average. Without her work as a mom and wife, my work could not begin. Those affected by my work truly have her to thank. How fortunate am I to be able to share this important milestone with her, my best friend through this entire process!
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CHAPTER I
RESEARCH OBJECTIVE

Introduction

Mental health professionals and educators in the Orthodox Jewish community gathered at a conference in January 1999 to discuss the children in crisis in their community. The product of that conference and a follow-up conference in February 2000 is a document that includes risk factors for behavior problems identified by these professionals based on anecdotal information. The document notes that, “the risk factors identified by our group of Mechanchim [educators] and mental health professionals were virtually identical to those identified in the clinical and research literature on risk for adolescent conduct problems” (Russell & Blumenthal, 2000, p. 1).

The group identified three main areas of risk: child risk factors, family risk factors, and environmental risk factors. Child risk factors include the dysregulated child (e.g., hyperactive), the depressed or anxious child, and the child who feels like a failure because of learning or social problems. Family risk factors entail poor parenting/marriage issues and membership in a reconstructed family. Environmental risk factors involve abuse and stress. (See Appendix A for a complete listing of these risk factors.) We will consider these factors and their effect on the individual child in light of Bronfenbrenner’s (1979) ecological
theory of development, which proposes that development occurs through the interaction between the individual and multiple contexts. His theory will be reviewed in more detail in the next chapter.

The child, familial, and environmental domains of risk may be understood within the three overarching risk factors for behavior problems in the general population that have been empirically identified by Rutter (2000): weak familial relationships, weak social cohesion, and weak cognitive/language skills. That is, social cohesion is an environmental risk factor (although it is also a child risk factor), weak familial relationships is a family risk factor, and weak cognitive/language skills is a child risk factor.

The first risk factor discussed by Rutter (2000) concerns a weakness in familial relationships. In the general population, both disorganized parenting and family dysfunction represent a “substantial risk associated with a lack of ongoing, harmonious, selective committed relationships” (Rutter, 2000, p. 390). The overall “relationship” risk derives from a combination of unresolved conflict and discord, from inept parenting, from deficiencies in social problem solving, from models of violence and lack of impulse control, from inadequacies in parental supervision, from a lack of committed individualized positive parent-child relationships, or from a number of other associated risk factors (Rutter, 2000, pp. 385-386).

The role of parenting skills in the development of child behavior is seen in the meta-analysis of twenty-six studies concerning behavioral parenting interventions in which the effect size in reducing behavior problems of children was found to be 86%, \( r^2 = .86 \) (Serketich & Dumas, 1996).
A second risk factor discovered by Rutter (2000) is weak social cohesion within the family, peer group, school, or community. Isolation from a community has been shown to be a cause of aggression and other behavior problems in the general population (Twenge, Baumeister, Tice, & Stucke, 2001). However, “…much less is known on the details of the risk and protective features in each case [school, peer group, community] and even less about the causal processes involved” (Rutter, 2000, p. 386). It has been demonstrated, for example, that interventions that amount to social skills training alone are not effective (Taylor, Eddy, & Biglan, 1999).

For Rutter (2000), cognitive/language disabilities constitute a third risk factor for behavior problems in the general population. However, in discussing this risk, Rutter notes the relationship between language and social functioning. “Reciprocal, conversational interchange and play constitute important learning opportunities, both with respect to cognitive skills and also styles of social coping and adaptation” (Rutter, 2000, p. 390). Thus, “weak social cohesion,” may be associated with the risk factor of “weak language skills,” including reading problems. This possibility is bolstered by Taylor, Eddy, and Biglan (1999) who found that social skills training appears to be helpful only in combination with other interventions such as academic remediation. This connection between social cohesion and language functioning (as expressed through reading) will be further explored both theoretically and empirically in the present study.

Clearly, there is a complex association between language, literacy, and behavioral developmental pathways. This relationship is further complicated by
the introduction of a second language, such as with Hebrew in the Orthodox Jewish student population. The extent to which the Hebrew language integrates children into the community may either increase or decrease its ability to ease the effects of reading difficulties in Hebrew. Indeed, in the Orthodox Jewish community, Hebrew literacy drives inclusion and therefore may drive behavior problems of excluded individuals. Specifically, this study will look into the relationship between reading skills (an expression of language ability) and behavior in Orthodox Jewish boys when stress (including family factors) is taken into account. The question of whether this relationship is moderated by social exclusion will also be considered.
CHAPTER II
RELATED LITERATURE

Ecological Approach to Human Development

The ecological approach to human development, promulgated by Bronfenbrenner (1979, 1986), highlights the interaction between individuals and their environment. This systems theory model of human development consists of various contexts with which the child interacts.

Bronfenbrenner considers the experiences of an individual “as a set of nested structures, each inside the next, like a set of Russian dolls” (Garbarino, 1992, p.24). It is helpful to consider these contexts as concentric circles. At the center is the child himself. Nearest the child is the microsystem, consisting of the people (and situations) with whom an individual comes in contact on a daily basis (e.g., family, school, etc.). Further from the child is the mesosystem, which includes the connections between the aforementioned microsystems. For example, the connection between home and school is part of the mesosystem. The strength of this connection will affect a child’s development. Next is the exosystem, those settings which exert control over the child’s life but of which the child lacks any membership or control. Including in the exosystem would be a school board. The furthest level away from the child within this model is the
macrosystem, the shared culture and values of the community in which the child lives. (Bronfenbrenner, 1979, 1986).

Closely related to the ecological approach is Bandura’s social cognitive theory. This theory suggests that children actively interact with their environment. Not only does this process involve the child’s thoughts, emotions, and behaviors, but also the actions and perceptions of others (Bandura, 1989). Thus, a child’s behaviors will be affected by his thoughts and feelings, as well as his community (Rogoff, 1992; Wertsch & Toma, 1995).

Self-efficacy, the extent to which a person views himself as effective, develops through these interactions between the child and his environment. That is, children assess their own behavior, compare their actions with those of others, and are informed by others how their behavior rates according to certain communal values (Bandura, 1997).

Language enables this evaluation. Indeed, language plays a significant role in the process of social cognitive development (Nelson, 1996). Using Vygotsky’s (1978) terminology, language is a “cultural tool” used by the child to gain an understanding of communal standards and to evaluate his own behavior. Just as Dewey (1916) suggests that knowledge is a “mode of participation” (p. 393) for the individual in his world, language is a skill that furthers social cognition (Tomasello, 2002). The relationship of language and social functioning will be discussed further in a later section concerning the relationship between reading and behavior.
The source of the transmission of communal values initially is the family but later includes the child’s peer group and other community agents (e.g., school teacher) (Bandura, 1997). The influence of the various components of Bronfenbrenner’s systems may be seen as emerging over the course of a child’s development.

**Latency and Pathways Models of Development**

Within Bronfenbrenner’s ecological perspective of development, Keating and Hertzman (1999) discuss how social conditions systematically affect human development. In one explanation of this process, the “latency” model, “psychosocial and socioeconomic conditions very early in life will have a strong impact later in life independent of intervening experience” (Keating & Hertzman, 1999, p. 7). According to such an understanding, regardless of any intervention, a child having difficulty with the reading process or with behavior would suffer from the effects of the initial problem later in life. Likewise, childhood stress from child, familial, or environmental problems early in life may result in problem behavior later in life regardless of intercession.

Alternatively, the developmental “pathways” model “emphasizes the cumulative effect of life events and the reinforcing effect of differing psychosocial and socioeconomic circumstances throughout the life cycle” (Keating & Hertzman, 1999, p. 8). This dynamic-systems theory approach to development accounts for movement through bifurcation points in development according to the decisions that we make and events we experience. (See Thelen
and Smith, 1998 for a complete explanation of this theory). In this way, the pathways model provides a framework with which to understand the negative cumulative effects of chronic stress and other risk factors.

Childhood stress comes in four varieties: developmental, economic/physical, psychological, and reality (Long, Morse, & Newman, 1996). Children either cope or act in response to these stressors. Developmental stress is the stress of normal development, such as learning to read. Economic stress, caused by monetary issues in the child’s life, must not only be managed by children, but they must deal with the results of such conditions (e.g., physical stress due to poor diet, illness, etc.) as well. Keating and Hertzman (1999) discuss this connection in terms of socioeconomic gradients. This term refers to the slope of the line generated for a nation by plotting each resident’s outcome of human development (e.g., reading ability) in relation to that individual’s socioeconomic status. “For all areas of developmental health, steep gradients are associated with overall poorer outcomes in comparisons among countries or regions” (Keating & Hertzman, 1999, p. 6). In terms of psychological stress, students must deal with the “unconscious or deliberate attempt by individuals, groups and institutions to destroy the self-concept of a student” (Long, Morse, & Newman, 1996, p. 252). Lastly, when students’ goals are frustrated by unplanned events, they must learn to handle the associated reality stress (Long, Morse, & Newman, 1996). Thus, we can see the interrelatedness of multiple contexts and stress on development and behavior.
While the pathways model explains the negative cumulative effects of chronic stress and other risk factors, it also elucidates positive effects.

Intervention and prevention strategies that are aimed at core developmental processes and that occur at important transition points in development have enhanced prospects for success. The research on early experience as the setting condition for neurophysiology supports the view that this is perhaps the most critical period in human development, but a pathways model affords the opportunity for investigating subsequent developmental transitions that may permit effective redirection of problematic pathways (Keating & Hertzman, 1999, p. 8).

Relating this to the current study, the decisions and experiences of an Orthodox Jewish boy, his family, and his community will impact the developmental outcome of both reading and behavior. Individual, family, community, and cultural (traditional) perspectives on literacy and behavior will impact a child’s development. These perspectives and the consequential decisions and experiences may act as protective or risk factors in relation to both reading and behavior at any point in development.

Concerning risk factors within the developmental pathways model, Rutter (2000) cautions us not to assume that the origins and mode of mediation of a risk factor are synonymous. Rutter cites the example of smoking. Looking at the causes of cardiovascular disease, lung cancer, and osteoporosis we may think that all aspects of smoking directly cause these ills. However, this is not the case. Rather, the nicotine and carcinogenic tar found in cigarettes along with the carbon monoxide product of smoking a cigarette cause those ills. Further, personality, culture, and access to cigarettes are either protective or risk factors related to
smoking. The smoking itself, though, does not directly cause the diseases listed above.

Likewise, when we consider reading within this model we must be careful not to associate reading disability directly with behavior problems. Rather, we must consider that it is the effects of a reading problem that may be associated directly with behavior problems. We must think about the effects of reading disability – such as poor academic achievement, lowered self-esteem, or exclusion from the community – to understand the link between reading disability and behavior problems. Indeed, Pisecco, Wristers, Swank, Silva, and Baker (2001), in a study of 445 adolescents, found that poor academic self-concept directly promotes the development of behavior problems. Academic motivation may also be used to predict behavior problems in that it directly impacts skill-based performance (Oehler-Stinnett & Boykin, 2001).

Considering the present study in light of Rutter’s understanding of risk in the pathways model, a child who has reading difficulties in the Orthodox Jewish community may feel excluded from valuable communal events. Over time, such a sense of exclusion may lead to behavior problems. However, if the reading difficulties are addressed, the child may begin to move towards a sense of inclusion and more prosocial behavior. Accordingly, while the reading problems may lead to a sense of exclusion from the Orthodox Jewish community it is this exclusion that would be the direct link to the behavior problems.
**Literacy Acquisition in a Second Language Context**

The fields of psychology and education continue to struggle with theoretical dichotomies: nature versus nurture, phonics versus whole language, and others. When considering the development of literacy skills, there is a similar debate. According to the “central processing” hypothesis, the child’s underlying cognitive abilities mediate reading development regardless of the target language (see Gleitman, 1985 for a review). In contrast, the “script dependent hypothesis,” claims that reading abilities are mediated by the characteristics of the target language. That is to say, the particular orthography of a language—alphabetic versus logographic and shallow versus deep (Katz & Frost, 1992)—directly relates to an individuals’ ability to acquire literacy in that target language.

Miller (1988) identifies three levels of processing required in reading: (a) visual information processing or decoding, (b) cognitive processing, and (c) metacognitive processing. Decoding, or visual information processing, can be best understood as word recognition that includes “both phonological codes (or pronunciations) and context appropriate lexical meanings from a visual display of words” (Koda, 1996). Cognitive processing within the reading process involves the integration of segmental information in text. Metacognitive processing calls on one’s prior knowledge to make a connection with the textual information. In particular, metalinguistic awareness, the child’s understanding that writing represents speech and that speech involves words, predicates reading acquisition (Homer & Olson, 1999). Simply stated, even a modest definition of reading proficiency should have at least three components: phonological awareness,
orthographic awareness, and comprehension skills. Aspects of pragmatics, syntax, semantics, and culture play a role in the ability to comprehend the texts of a particular language and in turn affect decoding ability and comprehension. The following section will discuss the underlying cognitive functions involved in the reading process, the effects of different orthographies on this process, and the extent to which we may explain reading disability based on both or either of the two.

Central Processing Hypothesis

The central processing hypothesis considers the common underlying cognitive processes that account for the variance in the development of elements of the reading process. Linguistic functions, such as phonemic awareness, and memory functions, such as short-term verbal memory and efficient serial naming, have been linked to emergent literacy in both first language (L1) (Stanovich, Cunningham, & Cramer, 1984) and second language (L2) (Durgunoglu, Nagy, & Hancin, 1993; Geva, Wade-Woolley, & Shany, 1993). This is true regardless of the target language, whether it is an L1 or L2, or the specific script involved (Geva & Ryan, 1993; Durgunoglu et al., 1993). Cummins’ linguistic interdependence principle thus concludes as follows:

although the surface aspects (e.g., pronunciation, fluency, etc.) of different languages are clearly separate, there is an underlying cognitive academic proficiency which is common across languages. This “common” underlying proficiency makes possible the transfer of cognitive/academic or literacy-related skills across languages (Cummins, 1988, p. 44).
Phonemic awareness, the understanding that words are made of component sounds, predicts later reading proficiency. In their study, Durgunoglu et al. (1993) examined the effect of phonological awareness in L1 (Spanish) on word reading in L2 (English). The study found that both L1 phonological awareness and L1 word recognition correlate positively with the ability to read L2 words. However, it must be noted that L1 and L2 oral proficiency did not correlate with English reading.

Phonemic awareness is considered slow in its development. For example, four and five year old children do not demonstrate an understanding of syllables or phonemes when asked to tap the appropriate number of times for short words such as “cat,” or for its component parts (Liberman & Shankweiler, 1977). While Bryant, Maclean, Bradley, and Crossland (1990) showed the relationship among a child’s ability to rhyme, phonemic awareness, and later reading ability, the work of Muter, Hulme, Snowling, and Taylor (1998), suggests that it is children’s ability to break up a word into component sounds and not sensitivity to rhymes that is critical to literacy development. Preschool children (average age – 4 years, 3 months) were tested on rhyming tasks (e.g., picking pictures of items whose names rhyme with each other) and on phonemic segmentation tasks (e.g., saying “cat” without the “/k/”). A child’s ability to segment phonemes predicted reading skill at the end of first grade while rhyming ability did not. These findings are in contrast to Gottardo, Stanovich, and Siegel (1996) who showed that phonemic awareness was directly linked to a child’s ability to rhyme in the preschool and early school years. Such results were also found in languages other than English,
such as Swedish and Danish (Lundberg, Frost, & Petersen, 1988), and Chinese (Ho & Bryant, 1997). Perhaps one could reconcile these findings by considering them in a progression. That is to say, rhyming leads to awareness of phonemes, a prerequisite for correct segmentation.

Armed with phonological segmentation skills, a child has the ability to manipulate the sounds of words. Adams, Foorman, Lundberg, and Beeler (1998) and Vellutino, Scanlon, and Spearing (1995) found that such phonological processing is the main cognitive factor associated with reading disability. A sub-component of phonological processing is phonemic awareness, the ability to hear and manipulate the sounds in spoken words and the understanding that spoken words and syllables are made up of sequences of speech sounds (Yopp, 1992). In alphabetic writing systems, such as English or Hebrew, letters represent sounds or phonemes, the smallest unit of sound in a language. Thus, phonological processing, and phonemic awareness in particular are essential to connecting speech to print. Indeed, "the best predictor of reading difficulty in kindergarten or first grade is the inability to segment words and syllables into constituent sound units (phonemic awareness)" (Lyon, 1995).

Further, Stanovich (1988) theorized that phonological processing functions independently of other more conscious cognitive structures such as general intelligence as measured by the WISC. Siegel (1988) also found that reading-disabled children scored lower on phonological processing tasks (e.g., pseudoword decoding) irrespective of IQ. Given the relation of early phonological awareness to subsequent literacy acquisition, Goswami’s (1999)
claim, based on a review of research on phonological awareness, that “syllable, onset and rhyme awareness is present by at least age four, and phoneme awareness by about age six,” (p. 137) and given the longitudinal studies showing phonological-processing skills to be generally fixed through childhood (Wagner, Torgesen, & Rashotte, 1994), early intervention for weaknesses in phonological skills is crucial.

Of course, we must understand that phonological processing involves many sub-processes: “acoustic-phonetic perception, phonological representation, lexical encoding and retrieval, and phonological recoding in working memory” (Wade-Woolley & Geva, 2000). Unfortunately, although research into the relation of these sub-components with spoken language has been conducted, a connection to reading has not been studied. Indeed, Crain-Thoreson and Dale (1992) found that spoken language proficiency has little relation to reading ability in four and five year old children. Therefore, intervention for spoken language may not be as critical for later reading development as is direct intervention for phonological processing skills.

The development of phonological processing skills prior to school has been tested cross-linguistically. Cossu, Shankweiler, Liberman, Tola, and Katz (1988) replicated the Liberman, Shankweiler, Fischer, and Carter (1974) study of phonological awareness of English speaking children with Italian children. Results substantiated commonalities in development of syllabic awareness prior to school entrance. However, phonemic awareness was found to develop later with reading instruction. Studies by Wimmer, Landerl and Schneider (1994) with

However, the extent to which various phonological based tasks are predictive of later reading abilities in different languages has been questioned. Although the connection between onset-rhyme awareness and learning to read English has been substantiated since Bradley and Bryant’s (1983) initial findings (e.g., Holligan and Johnston, 1988), other languages show a varied relationship. While studies in English see the predictive power of rhyme awareness taper off after age six (Stanovich, Cunningham and Cramer, 1984), Wimmer, Landerl and Schneider (1994) found that rhyme awareness was only predictive of later reading ability for children at nine years-nine months of age learning to read German as a first language. Thus, “the level of phonological awareness that is most predictive of reading development may vary with the phonology of the language that is being learned and the orthographic units that this phonology makes salient to the learner” (Goswami, 1999, p. 142). Indeed, the nature of the orthography (e.g., whether it is alphabetic, transparent, etc.) may mediate the effects of certain underlying phonological skills.

Although, Petrie and Geva (1991) found that reading disabled individuals who displayed decoding difficulties in L1 also had difficulties in decoding L2 regardless of orthography, the type of reading errors that these individuals made revealed distinctions between orthographies. The reason for such distinctions
appears to reflect the methods children employ to read. Siegler (1996) suggests that phonological recoding is not the ideal method of reading. Rather, based on his adaptive strategy-choice model, a child first attempts to automatically retrieve the whole word visually. Only if the child does not have the word in long-term memory, does he or she use phonological recoding. Thus, the effect of specific characteristics of the orthography of the target language on this visual processing of written words must be considered. In light of Siegler’s model and the above studies pointing to the mediating role script has on decoding, orthographic differences must be considered in addition to underlying cognitive processes in determining the course of reading development across languages.

**Script Dependent Hypothesis**

Koda (1996) suggests that we consider the representational units of the orthographic system of a written language to understand literacy development. Representational units refer to the linguistic unit represented by each graphemic symbol. Accordingly, languages can be divided into three types: alphabet, syllabary, and logography. However, Sasanuma (1984) has suggested that dyslexics display similar profiles of reading disability regardless of the type of orthography. Results also pointed to orthographically specific differences that may be accounted for by the transparency of the language.

The development of component reading processes is a function of the transparency of the orthography of the target language according to the “script dependent hypothesis.” This is based on the “Orthographic Depth Hypothesis,”
which places orthographies on a continuum from shallow orthographies (those with a one-to-one sound/symbol correspondence) to deep orthographies (those with complex relationships between sound/symbol) (Frost, Katz, & Bentin, 1987). Feldman and Turvey (1983) argue that prelexical phonology plays a more important role in lexical access in a shallow orthography (e.g., voweled Hebrew) with its consistent phoneme and grapheme relationship than in a deep orthography like English with its less consistent mapping of sounds with letters.

Based on this hypothesis, Geva, Wade-Woolley, and Shany (1993) studied the concurrent English and Hebrew reading and spelling development of English speaking Canadian children in a longitudinal study spanning the senior kindergarten, first-grade, and second-grade years. They hypothesized that the rate of development of reading and spelling will depend on the orthographic depth of the language. That is to say, reading and spelling in Hebrew (L2) would develop more rapidly than in English (L1) regardless of language proficiency. They conclude that L2 spelling develops through stages on a similar trajectory as L1. Where L2 spelling is affected, phonological or orthographic complexities are the cause. However, for reading they “found that children could decode and access the lexicon via assembled phonology with greater ease in their second language” (Geva, et al., 1993, p. 403). The “Orthographic Depth Hypothesis” can explain this phenomenon.

Certainly, Geva et al.’s (1993) results point to the fact that language proficiency in L2 does not contribute greatly to the decoding of a language with a shallow orthography. However, they correctly warn that, “this does not preclude
the essential role that proficiency plays in reading comprehension” (p. 404). Indeed, the competent reader requires language proficiency in addition to phonological knowledge and orthographic awareness. (Although beyond the scope of this paper, see Koda, 1994 for a review of relevant research connecting universal grammar theory and cross-linguistic transfer of comprehension skills.)

One might suspect that reading disabilities will be less prevalent in shallow orthographies than in deep orthographies according to the orthographic depth hypothesis because it would seem to be easier to read in a language with one-to-one sound/symbol correspondence. Lingren, De Renzi, and Richman’s (1985) findings seem to support this idea. They found a higher incidence of reading disability among English speaking fifth grade children in the United States as compared with a similar group of Italian (relatively shallow orthography) children. However, they defined dyslexia as a discrepancy between reading comprehension and verbal ability rather than the more generally accepted definition of reading disabilities as difficulty linking phonemes with corresponding graphemes (Stanovich, 1986). Thus, their conclusions are somewhat suspect.

Orthographic complexity extends beyond the sound-symbol correspondence. Indeed, Geva (1999) writes that, “the contribution of higher order syntactic and morphological processes to orthographic knowledge is relevant to English but it may be even more relevant to growth in orthographic knowledge in highly inflected languages such as French, Dutch, and Hebrew” (pp. 345 – 346). Wade-Woolley and Geva (1998), Shimron and Sivan (1994),
and Geva, Wade-Woolley, and Shany (1997) each showed that Hebrew (L2) learners have more difficulty coordinating the orthographic, lexical and syntactic knowledge in reading because of the Hebrew inflectional system (i.e., prefixes, suffixes, and pointed vowels may indicate person, tense, and possession, and include prepositions.)

Lambert and Tucker (1972) investigated the transfer of orthographic skills from L1 to L2. They studied English-speaking students in a French immersion program and discovered that students who had received all of their reading instructions in French were still able to perform at the same level on English word knowledge and word discrimination tests as average students instructed in English. Lambert and Tucker concluded that the students had applied the skills they had developed in French to the English reading tasks. Almost identical results were found by Kendall, Lajeunesse, Chmilar, Shapson, and Shapson (1987) in their study of a similar group of students.

Although the results of Lambert and Tucker (1972) and Kendall et al. (1987) suggest that there is L1 to L2 transfer, other factors may be involved. Indeed, these researchers pointed out that parents of French immersion students engaged in more reading activities with students at home than parents of non-immersion students. Hence, exposure to print material may explain differences specifically in L2 reading given the lack of exposure to L2 letters/materials in the home environment compared with access to L1 materials (Geva & Siegel, 2000). According to Seidenberg and McClelland (1989), experience with such materials will impact word recognition abilities. Indeed, they define word recognition as
“the formation of an interletter associative network through repeated processing experience.” Thus, lack of repeated processing experience because of an absence of print materials in the home or elsewhere will hinder a child’s development of word recognition abilities. Therefore, representational units and orthographic depth of the orthographic system of a first language determine how a reader of that language processes reading – logographically, alphabetically, or orthographically. On the other hand, L2 word recognition is influenced by three factors of orthography: orthographic processing experience, L1-L2 orthographic distance, and interaction between L1 and L2 orthographic knowledge.

Koda (1996) explains that when L1 and L2 are orthographically similar, the similarity, “first promotes the mastery of L2 lower-level processing [word recognition] skills, which, in turn, facilitates the simultaneous use of multiple processing skills and, thus, enhances overall L2 reading performance” (p.455). That is to say, L1-L2 orthographic distance does influence L2 reading ability. With regard to L1-L2 interaction in terms of orthographic knowledge, learners of L2 do rely on their L1 orthographic knowledge in reading L2 texts (Gass & Selinker, 1983; Kellerman & Sharwood Smith, 1986; Green and Meara, 1987; Ryan and Meara, 1991; Koda 1989, 1990).

Studying two groups of young-adult ESL learners in which L1 was either Japanese or Russian, Wade-Woolley (1999) hypothesized that the Russian group (alphabetic group) would surpass the Japanese group (orthographic group) in word reading tasks when the tasks require processing of grapheme-phoneme correspondence. To verify the hypotheses, she gave seven tasks to both groups of
the participants: TOEFL (Test of English as a Foreign Language) subtests, Woodcock Reading Mastery Test (WRMT)—Word reading subtest, WRMT—word attack subtest, Peabody Individual Achievement Test (PIAT), orthographic knowledge task, pseudoword repetition task, and phoneme deletion task. Both groups performed equally well in the reading comprehension and vocabulary sections while they showed between-group differences in orthographic and phoneme deletion tasks. The test results showed that the Japanese group was better than the Russian counterpart at the orthographic task while the Russian group did better than the Japanese group in the phoneme deletion task. Wade-Woolley explained that the Japanese group’s orthographic processing strength in L1 and the Russian group’s phonological skills in L1 might serve to explain the two groups’ different performances in L2. She concluded that L1 processing in reading does affect L2 reading. However, the Japanese group’s difficulty at phonological processing requires further study.

Comparison of Acquisition Hypotheses

In order to understand more clearly the differences between English and Hebrew reading acquisition the central processing hypothesis and script dependent hypothesis will be analyzed in comparison to each another. Geva and Siegel (2000) concluded that a joint consideration of both hypotheses provides the most comprehensive framework within which to understand literacy development. In a study of 245 children grades 1-5 concurrently learning English (L1) and
Hebrew (L2) reading, Geva and Siegel (2000) set out to examine the extent to which the concurrent development of basic reading skills in two languages can be understood in terms of the central processing hypothesis or, alternatively, in terms of the script dependent hypothesis. They took advantage of the relative differences in orthographic depth between voweled Hebrew and English and the concurrent literacy development of these students to compare L1 and L2 reading processes. Results indicate support for each position.

Support for the central processing hypothesis comes from the positive correlation found among L1 and L2 reading and memory measures, as well as the finding that verbal memory can play a limited role in predicting basic reading skills in both languages. As noted in other studies, L2 oral proficiency explains only a little of the individual differences in L2 reading accuracy. Further, Geva (1995), in a similar study found that, “the linguistic skills in L1 and L2 are related through underlying cognitive constructs such as working memory capacity and non-verbal ability” (p. 288). She notes, though, that her results are based on only moderate correlations between L1 English reading and L2 Hebrew reading. Thus, she suggested in the earlier study (and concluded based on the data in the later study) that, “skilled and less skilled decoding in monolingual and bilingual learners can be better understood in terms of the combined effects of underlying cognitive and linguistic mechanisms and script characteristics” (p. 289).

Indeed, Geva and Siegel (2000) also found support for the script dependent hypothesis. While age was found to be a significant predictor of word recognition and decoding skills in English, it was not as useful for Hebrew. This
finding was due to the difference in orthographic depths in that English reading improvement between grades improves dramatically while in Hebrew, a shallow orthography, children are able to decode accurately already in the first grade. Little change occurs through the years. In fact, at each grade level, children could read Hebrew (L2) more accurately than English (L1).

Thus, both common cognitive demands and orthographic complexity play a role in understanding individual differences in the development of L2 reading skills. In the aforementioned study, the decoding errors may be explained by differences in orthography. Indeed, English errors were related to vowels. However, in Hebrew, errors involved word-stress and visually similar letters. This led Geva and Siegel (2000) to conclude that children increasingly develop proficiency in the specific features of orthography. At that time, script dependent processes are central. However, the ease with which proficiency in these processes are gained depends on the depth of the orthography.

Further questions concerning the differences of underlying cognitive processes across languages remain. In addition, while oral proficiency has been found to be less predictive of reading success than other processes (e.g., rhyming) one must accept the results of the studies involving Hebrew language with caution. Indeed, while studies of other biliterate populations cited above involve the concurrent development of both oral proficiency and reading in L1 and L2, the studies involving Hebrew language entail students gaining oral proficiency in L1 (English) during the preschool years and then concurrently gaining oral proficiency in L2 (Hebrew) and reading proficiency in L1 (English) and L2
Thus, the role of oral proficiency may be more complicated than assumed in these studies.

Based on these differences between English and Hebrew reading processes, this study utilized reading assessments of each language in order to obtain a comprehensive view of the relationship between reading and behavior in the biliterate (English and Hebrew) Jewish population.

The Relationship Between Reading and Behavior

The association between reading and behavior problems has been well documented (e.g., Gellert & Elbro, 1999; Smart, Sanson, & Prior, 1996; Cornwall & Bawden, 1992; Hinshaw, 1992; Kellermann, Fuqua-Whitley, & Rivara, 1996; Lyytinen, Ahonen, Eklund, Guttorm, & Laasko, 2001). Whether this relationship in the general population is a causal one (i.e., reading disabilities cause behavior problems), and if so in what direction, is unclear from these studies.

In considering this relationship between behavior and reading, it is prudent to attempt to rule out underlying variables that impact both. Influences such as background disadvantage, home environment, attentional problems, school failure, and delayed language development potentially contribute to both reading and behavior problems.

For example, concerning the influence of the home environment, both reading and behavior difficulties have been associated with poorer living standards (Williams & McGee, 1994; Silva, Williams, & McGee, 1987).
Williams and McGee (1994) utilized the data from previous studies of 925 children from Dunedin, New Zealand. The Rutter Child Scales A (parents) and B (teachers) were used to measure behavior. Reading skills were tested with The Burt Word Reading Test; IQ was tested using the WISC-R. Language functioning was measured using the Reynell Developmental Language Scales. At age seven, disadvantage in social background negatively correlated with reading skills for boys and positively correlated with behavior problems for boys.

Likewise, using the same cohort of children, Silva, Williams, and McGee (1987) found that scores on the family disadvantage index were significantly higher for those children who had comprehension delay and general language delay than for those children with expressive difficulties.

Fergusson and Lynskey (1997) followed children in Christchurch, New Zealand from birth to age sixteen utilizing the Rutter Questionnaire, the Revised Behavior Checklist, Rutter’s and Conner’s Teacher Questionnaires, and the Diagnostic Interview Schedule for Children as measures of behavior. Background was assessed through interviews with each child’s mother and observations of mother-child interaction. The Burt Word Reading Test and WISC-R were given at age eight to measure reading skills and IQ, respectively. Fergusson and Lynskey (1997) connect a punitive and less nurturing mother-child relationship with reading troubles for the child. Recall that Rutter (2000) discusses this as a risk factor for behavior problems. Fergusson and Lynskey (1997) also link poorer living standards and attentional problems with both reading and behavior.
Lonigan et al. (1999) considered the association between social competences, problem behaviors in preschool, with particular attention to Attention Deficit Hyperactivity Disorder (ADHD), and emergent literacy skills in forty-four children from middle-income families and forty-one children attending Head Start (low-income families). Environmental factors such as exposure to print, parent and child attitudes towards literacy, and the modeling of literacy activities by parents impact the development of these emergent literacy skills (Galda & Cullinan, 2002). Lonigan et al. (1999) found that ADHD and its associated behaviors were consistently associated with emergent literacy skill levels in children. The largest effect was in the middle-income group. They make two major conclusions: 1) one may already see a connection between behavior problems and reading problems in pre-school; 2) the manifestation of reading disorders in older children may be mediated by emergent literacy skills.

Above and beyond all of these potential causes, though, appears to be delayed language development. Indeed, Richman, Stevenson, and Graham (1982) and Silva, Williams, and McGee (1987) found that delayed language development influences reading and behavior difficulties. Richman et al. (1982) studied 185 children from a London suburb at ages three, four, and eight. Parents completed The Behavior Screening Questionnaire (BSQ) and The Behavior Checklist (BCL) to assess behavior at ages three and four. Sections of the Reynell Developmental Language Scales and the English Picture Vocabulary Test were used to measure language. Behavior was assessed at age eight using the Rutter Child Scales A (parents) and B (teachers). The Neale Analysis of Reading Ability was used to
measure reading skills and IQ was measured on the WISC-R. Richman et al. (1982) found that, while only 14% of the total population displayed behavior problems, 59% of the children in the study with language delay displayed such behavior problems. However, they found that behavior problems at age three were not associated with reading problems at age eight, nor were the levels of behavior problems at age eight significantly higher for children with reading problems. They concluded that behavior problems were not yet apparent in the group of children with reading problems at age eight because it is sustained school failure that leads to behavior problems.

In a review of the relationship between reading disabilities, behavior problems and delinquency, Gellert and Elbro (1999) concur that underlying language issues appear to cause both reading and behavior problems. However, Lindsay and Dockrell (2000) and Tomblin, Zhang, Buckwalter, and Catts (2000) challenge this conclusion. In a study of seven and eight year old students identified as having a speech and language disorder, Lindsay and Dockrell (2000) asked parents and teachers to rate the behavior of these students on the Strengths and Difficulties Questionnaire (Goodman, 1997) and the Junior Rating Scale, respectively. The Strengths and Difficulties Questionnaire is a brief screening questionnaire that yields a total difficulties score based on five potential areas of difficulty for a child: emotional symptoms, conduct problems, hyperactivity/inattention, peer-relationship problems, and prosocial behavior. Language and reading comprehension predicted parents’ rating of behavior for
this population. That is to say, reading comprehension mediated the behavioral
disposition of students already diagnosed with language impairment.

Tomblin et al. (2000) also concluded that reading disability mediates the
link between language impairment and behavior disorder. They studied a group
of 581 children, one-quarter of whom had language impairment, to determine
whether there is a simultaneous manifestation (comorbidity) of behavior and
reading disorders with language impairment or whether these relate in some other
meaningful way. They measured spoken language using the Peabody Picture
Vocabulary Test-R, subtests of the Clinical Language Fundamentals-III, the
Comprehensive Receptive and Expressive Vocabulary Test, and a story created
by the student based on three picture prompts provided by the researchers. The
Woodcock Reading Mastery Tests – Revised (Word Attack, Word Identification,
Passage Comprehension), Gray Oral Reading Tests (Passage Comprehension),
and Diagnostic Achievement Battery – 2 (Reading Comprehension) were used to
measure reading skill. Behavior was measured principally by the Child Behavior
Checklist (Total Behavior Problems score – subscores for internalizing and
externalizing problems and the syndrome scale for Attention). Teachers also
completed the Social Skills Rating System as a measure of behavior problems.

Tomblin and his colleagues concluded, based on the understanding of
comorbidity by Caron and Rutter (1991), that comorbidity may not accurately
characterize the relationship between these three conditions. In the case of the
three disorders, rather than consider them to be a combined incidence of
independent issues, they suggest considering the relationship to be one of, “an
association between two conditions where one served as a risk factor for the other” (Tomblin, et al., 2000, p. 480). Indeed their findings suggest that the spoken language problems of language impaired children and reading difficulties of these youngsters are a manifestation of the same underlying factor. However, they found that the school-based behavior problems for these children are caused specifically by the aforementioned reading problems.

Tomblin et al. (2000) conclude: “If RD [reading disability] serves as a mediating variable between LI [language impairment] and BD [behavior disorder], effective reading intervention should reduce the rates of BD [behavior disorder] among those children” (p. 480). Specific remediation techniques have indeed been found to reduce behavior problems. For example, Barrera et al. (2002) cite the research of Kellam, Mayer, Rebok, and Hawkins (1998) that found that Mastery Learning, a supplemental reading instruction program, improved achievement for early elementary school boys and girls. Additionally, concerning our question, such academic improvement was accompanied by a reduction in teacher-rated aggression. Barrera et al. (2002) specifically mention reading interventions as important to staving off behavior problems.

It might be particularly important to target reading skills among early elementary school students. Reading is fundamental to academic success, and children who fail to attain an adequate level of basic reading skills by Grade 3 have only a minimal probability of catching up to their average-achieving peers…Although there is insufficient evidence to conclude that reading disability causes aggressive or delinquent behavior, some findings suggest that reading difficulty may be associated with problem behavior as well as academic failure (p. 84).
Barrera et al. (2002) found that comprehensive intervention targeting reading and behavior problems in non-Hispanic elementary school children (including parent training, social behavior interventions, and supplemental reading instruction) reduced both externalizing and internalizing behavior problems, as well as improved reading skills. Intervention effects were not observed for the Hispanic participants. The researchers suggest that this was due to a lack of full participation in parent training and child social behavior interventions on the part of the Hispanic participants.

Interventions must be well designed and appropriately paced. Otherwise we run the risk of what the Educational Psychologist Keith Stanovich calls the Matthew Effect – based on the famous parable of the talents in Matthew 25:29 (New Revised Standard Version), which ends as follows: "For to all those who have, more will be given, and they will have an abundance; but from those who have nothing, even what they have will be taken away.” Basically, “the rich get richer, the poor get poorer.” Applied to reading, Stanovich (1986) showed empirically that those already reading gain even greater proficiency in reading and attain academic success as they continue through school; however, non-readers fall further behind their reading peers as they continue to struggle with gaining reading skills and achieving academic success.

Indeed, Lane, O’Shaughnessy, Lambros, Gresham, and Beebe-Frankenberger (2001) studied seven first grade students who had behavior problems and poor phonological awareness skills. They provided phonological awareness training for these students to assess whether such training would
produce change in both behavior and reading skills of seven teacher-nominated first-grade students. All of these students exhibited low phonological awareness skills based on teacher reports and higher than average problem behaviors based on the Social Skills Rating System – Teacher Version. The Phonological Awareness Training for Reading (PATR) was used for the reading intervention. The PATR includes four types of activities: rhyming, sound blending, sound segmenting, and reading and spelling. While initial results saw student improvement in these reading skills, long lasting changes were not evident. Positive behavior changes were seen for only one participant. The authors considered this a critique of the remediation techniques. Indeed, phonological awareness training concentrates on decoding alone and does not help with other aspects of the reading process, including meaning retrieval. Accordingly, Lane et al. (2001) suggest that early interventions must consider the most effective means by which to provide reading disabled children with broad reading skills (i.e., decoding and comprehension skills) at a rate at which they can succeed along with their peers.

Likewise, research into the efficacy of Reading Recovery, an early intervention reading program, largely hinges on the full implementation of the program, including the staff development component. When the program has been implemented in its entirety, the results have been quite positive in reducing reading difficulties (Wasik & Slavin, 1993; Shanahan & Barr, 1995; Herman & Stringfield, 1997). However, in the Chapman, Tunmer, and Prochnow (2001) study of the effectiveness of Reading Recovery with a cohort of six-year-old
children identified as having reading difficulties, the results were not as positive. It should be noted that the resources of the entire Reading Recovery program were not implemented. Perhaps this is why they found that the program did not provide or improve the phonological processing skills of the children in the program. In addition, students’ positive attitude, including perception of reading ability, declined for students in the program. Those children in the Reading Recovery program exhibited more classroom behavior problems than a control group of normally developing readers. Even when problems with the implementation of such remediation programs are highlighted, they further substantiate the connection between behavior and reading difficulties.

In summary, it is clear that there is an intricate relationship involving language, literacy, and behavioral developmental pathways. However, this connection may be even more complicated in the Orthodox Jewish population in which all members are expected to learn to read Hebrew, in addition to becoming literate in their first language.

The Role of Hebrew Language in the Jewish Community

Humans are social beings. Our daily use of language allows for our individual minds to become part of a culture – a social community. Indeed, Jerome Bruner writes: “Culture is constituted of symbolic procedures, concepts, and distinctions that can only be made in language…Language, in consequence, cannot be understood save in its cultural setting” (Bruner, 1983, p. 134). For the child, the shared meanings attained from the larger community reshape the child’s
own meanings in his or her mind (Nelson, 1996). Thus, language plays a powerful role in community building and maintenance, as it connects or disconnects one to a group of people. This is apparent in the words of Karl Julius Weber, the German writer who saw language as the essential connector of community and nation: "In nothing does the national character, the imprint of the mental and spiritual power of a people, express itself so clearly as in its language" (Rocker, 1998, p. 276).

It is not surprising, then, based on the previous discussion of language and social functioning, that the Hebrew language is a major source of Jewish identity for the Jewish people. Jewish identity may be expressed in multiple dimensions including the religious, the nationalistic, and the cultural. However, according to some views, all facets of Jewish identity exist because of the unifying role of the Hebrew language (Schiff, 1997). Thus, Schiff (1997) portrays the relationship between the Hebrew language and the Jewish community as follows:

Hebrew language has been a significant factor in Jewish continuity and Jewish unity. Ahad Ha'am correctly noted that “more than the Jews have kept the Hebrew language alive, the Hebrew language has kept the Jews alive…” Indeed, Hebrew has been the gateway to Jewish culture. Its use provided Jews everywhere with a sense of belongingness (p. 86).

Hence, “Jewish education has to find means of harnessing literacy and identity education, not separating them or treating them as conflicting goals.” (London & Chazan, 1990, p. 20).

The Hebrew language not only bonds people in the present but also necessarily unites the community to its history. As Christopher Ricks, the English scholar writes, “when a language creates -- as it does -- a community within the
present, it does so only by courtesy of a community between the present and the past” (Michaels & Ricks, 1980, p. xii). Indeed, the Hebrew language has been known for some time to function in this way. In the Hebrew Bible, the Jews travel from Canaan down to Egypt, encamp in the land of Goshen and notably retain their distinct language. Further, the Midrash, written over two thousand years ago, relates the value of the Hebrew language in the following directive:

When the infant begins to speak, his father should speak with him in the Holy Tongue [Hebrew] and teach him Torah [Five Books of Moses]. And, if his father does not speak with him in the Holy Tongue and does not teach Torah, it is appropriate to state that this is as if he buries him. *(Sifre, Deuteronomy Ekev, 46)*

Noting the circumstances involved with Jewish children learning Hebrew as a second language at private Jewish Day Schools in Canada, Geva and Wade--Woolley (1998) write,

…Hebrew does not have the same status as any other foreign language. It is presented as the ancestral language, the language of the Bible, and it symbolizes the revival of the Jewish state. *(p. 89)*

Feuerverger (1989) in summarizing the power of the Hebrew language writes: “Hebrew harbors within its powers religion, history, culture, tradition and folk values. It is the basis for an active Jewish consciousness.” *(p. 329)*. Thus, Hebrew connects present-day Jews to the community’s rich history of 3000 years.

**The Role of Hebrew Literacy in the Jewish Community**

While Hebrew language in general is a crucial aspect of Jewish identity and sense of belongingness, the written word of Hebrew specifically has made a significant contribution to this cause. Schiff (1996) notes this reality in his
chapter titled, “Hebrew literature as a vehicle of the Hebrew language.” To begin this chapter he writes: “A major dimension, and for some the most important aspect, the essential vehicle of Hebrew language usage, is the broad, encompassing, variegated body of the Hebrew writing of the Jewish people.” (p. 28)

When considering the history of literacy in the Jewish community one must note that although many, or even most of the Jews in the various periods of Jewish history may not have been bi-lingual (at home in the language of their adopted lands and in Hebrew), they were, by and large, bi-literal having a reading or cultural knowledge of Hebrew as well as the language of their lands of residence (Schiff, 1996, p. 17).

Hence, Hebrew literacy has played a vital role in the language and thought of the Jewish community throughout its history. As such, it has been and continues to function as a conduit for the maintenance of the Jewish community. In Vygotskian terms, through studying of Jewish texts in Hebrew, praying in Hebrew, having cultural knowledge of Hebrew, as well as the myriad other uses of Hebrew literature, the Jews have used Hebrew literacy as an auxiliary tool for communal continuity (Vygotsky, 1978). Schers (1999) notes that, “every language, including Hebrew – perhaps especially Hebrew… – is both a cultural value and a communication tool” (p. 20).
Hebrew Literacy in the Orthodox Jewish Community

To understand the role of Hebrew literacy in forging identity and building community for Orthodox Jews, one must consider that specific community’s value of learning and living by its religious texts. Thus, Schiff (1996) writes, “only when [Hebrew] fulfills its mission as a national language, drawing upon and making the connection to Judaic sources and Jewish tradition does [Hebrew] qualify as the language of the Jewish people” (p. 134). Noah Golinkin, an expert in Hebrew reading instruction, notes the role that Hebrew literacy plays in Jewish continuity: “Spoken Hebrew…is not the indispensable condition of Jewish survival outside of the Land of Israel. Our survival depends on ritual Hebrew, prayer-book Hebrew and Biblical Hebrew” (Schiff, 1996, p. 134). These survival skills all relate to literacy-based Hebrew language activities. Thus, Hebrew literacy is a conduit for Jewish survival and the survival of the individual in the Orthodox community.

Even more striking, from a traditional Jewish perspective, is the danger posed by being a Jewish community that does not read Hebrew. The disappearance of the 600,000 strong Jewish community of Alexandria fifteen hundred years ago remains a stark example of the result of a disconnect from Hebrew language. This community was completely Hellenized. They studied the Septuagint (the Greek translation of the Bible) and other Judaic sources via translation. They ignored the original Hebrew texts and avoided the use of the Hebrew language. More recently, the proliferation of English language translations of Biblical and Rabbinic texts from the original Hebrew during the
20th century has led to a decline in Hebrew proficiency in the American Jewish population (Schiff, 1996). Today members of the Orthodox Jewish community may study Jewish texts in their native tongue (much like the Alexandrian Jews) thinking that the mere studying of the texts will maintain a connection to the community. However, history may repeat itself in these communities because a heritage language is not merely a vehicle for cultural inclusion; it has cultural value itself (Schers, 1999).

In discussing this important role of literacy in the culture of a community, Alexander (1999) explains the following:

Embedded in the language of a culture is the way in which that culture is communicated across the generations. Embedded in the syntax, style and literacy allusions of the language are a whole host of values and concepts and ideas that are lost in translation…literacy, language, and literature are the ways a learning community or culture is transmitted across the generations (p. 61).

Certainly those Jewish communities that reject the Hebrew language completely, and those individuals who opt for or require translations of Hebrew texts despite living in communities in which Hebrew language study remains a priority and literacy is expected, sever the cultural/communal bond and risk stunting communal continuity. Indeed, “an important part of group identity is that which sets the group off from others” (Waxman, 1999). Those who have Hebrew language skills and opt to utilize them reap the benefits of the social and communal bond formed through a common language. Unfortunately, those who do not gain reading proficiency in Hebrew may feel marginalized as a result of a lack of ability to participate fully in literacy-based community activities.
Helmreich (2000) writes about just such Orthodox Jewish youths who feel marginalized: “…one can see them sometimes on Ocean Parkway in Brooklyn smoking cigarettes on the Sabbath or entering a local McDonald’s restaurant. Drug abuse and premarital sex are by no means unheard of among those belonging to this subculture” (p. xxii). Regardless of whether these are objectively behavior problems, Helmreich (2000) understands that belonging to this subculture appears to be a response to a lack of belonging to the mainstream Orthodox Jewish community. Helmreich (2000) writes, based on interviews with these youths:

They want to be part of the frum [Orthodox] world, but they do not feel wanted…they often feel rejected by the community and are responding to that. Their parents, fearful of confronting and even acknowledging such behavior by their offspring, will tell counselors that their children were not good students and that the yeshiva offers no acceptable self-respecting alternative for those who do not do well in school. Scorned by their more studious peers, they act out. What the parents will not admit to so readily is that some of these children come from homes where there are problems in the family (p. xxiii).

In summary, literacy appears to mediate the relationship between language and behavior problems (Tomblin et al., 2000). In fact, we have seen reading interventions reduce behavior problems (e.g., Barrera et al., 2002). We have seen that isolation from a group in the general community may lead to aggression. (Twenge et al., 2001) Exclusion of this kind may be even more pronounced in the Orthodox Jewish community in which literacy in Hebrew provides a unique connection to communal activities and cultural and religious history. Thus, the emergence of behavior problems in the Orthodox Jewish community may be
associated with Orthodox Jewish students feeling isolated from the community due to poor literacy skills.

Specific Aims of the Research

The purpose of this study was to understand the relationship between reading (first and second language) and behavior for fifth grade male students in Modern Orthodox Jewish schools. Schick (2000), in his *Census of Jewish Day Schools in the United States* defines such a school as follows:

Modern Orthodox schools are coeducational and this is their distinctive feature. Hebrew is generally the language used for religious instruction and there is a modernist approach to contemporary issues, such as feminism. Their student population may include marginally Orthodox and non-Orthodox students, but they remain assuredly Orthodox institutions (p. 8).

There were several theoretical reasons for the choice of this sample for the present study. This study centered on boys since they are significantly more at risk than girls for externalizing (i.e., delinquent and aggressive) behavior problems (Achenbach, 1991; Achenbach & Rescorla, 2001). Such gender differences in behavior have been documented for some time (see Maccoby & Jacklin, 1974). In the Orthodox Jewish community, Russell and Blumenthal (2000) note: “Girls are more likely to hide their risk factors than boys are. Their clothing, manner of speech and school grades may not present as overtly as boys yet they may have serious personality and characterological issues as boys” (p. 44). While there is no doubt that girls experience behavior problems, the pathways of development for girls are different than for boys. Thus, given that
little work has been done to study externalizing behavior problems in the Orthodox Jewish community, it was appropriate in this exploratory study of externalizing behavior to focus on boys.

The concept of reading, as understood in this study, includes both word recognition and comprehension (see below). While schools differ as to the exact method employed in and age at which to begin the teaching of reading, both English and Hebrew decoding and comprehension strategies are, at the least, taught beginning in the second grade. Thus, by fifth grade in all Modern Orthodox Day Schools, students have been exposed for a minimum of three years to reading strategies in English and Hebrew. Such a period of time would allow for the potential effects of reading on behavior to be expressed, if a relationship between reading and behavior exists. As previously cited, Richman et al. (1982) concluded that sustained school failure (a potential effect of reading difficulty) might cause behavior problems.

There were also practical considerations in the selection of this sample. The Teacher Report Form (see below) is appropriate for ages six to eighteen and the Youth Self-Report (see below) is appropriate for ages eleven to eighteen. However, the Hebrew language measures were designed to be used with elementary age children up to and including fifth grade (including age eleven). Therefore, the only age for which all measures are appropriate is 11 years. Accordingly, boys in grade five currently attending a Modern Orthodox Day School made up the sample for this study.
The research discussed above has considered the relationship between monolingual reading difficulties and behavior problems. However, this relationship has not been investigated in biliterate populations. That is to say, it was unknown what the relationship between reading and behavior would be when the sample in question has learned to read in two languages. While it may have been reasonable to suggest that the relationship of reading in one language will generalize to the Jewish community (i.e., English reading will relate to behavior difficulties) this study aimed to demonstrate this empirically. Further, given the unique role that Hebrew literacy plays in the Jewish community, this study aimed to understand the relationship between Hebrew reading and behavior.

This study looked at correlations between reading variables (decoding and comprehension in English and Hebrew) and behavior (internalizing and externalizing behaviors). Specifically, correlations between English reading and student behavior rated by the children’s English teachers, as well as between Hebrew reading and student behavior rated by the children’s Hebrew teachers were considered to understand whether behavior related to reading is domain-specific or domain general.

Multiple regression analysis allowed us to understand the aspects of children’s reading that predict children’s behavior. As discussed above, social exclusion appears to play a role in the relationship between reading and behavior. This study aimed to determine empirically the extent to which social exclusion moderates the relationship between reading and behavior for English and Hebrew reading. Such an understanding would move us close to a causal model for these
relationships. Understanding a causal relationship between reading and behavior in this community could then lead to appropriate early prevention programs, as the initial cause could be diagnosed and treated to prevent the second problem (Curtis and Longo, 1999). The Orthodox Jewish community is poised to understand these needs and to provide appropriate services (Russell & Blumenthal, 2000).

Definitions of Terms

*Childhood stress* – Level of stress of the child caused by personal (non-reading related), family, and environmental risk factors for behavior problems measured using the Holmes/Rahe stress scale for children.

*English reading* – A term that includes the two variables English decoding and English comprehension as measured by the Woodcock Reading Mastery Test – Revised – NU.

*Externalizing behaviors* – Major subscale on the behavior measures (Youth Self-Report and Teacher Report Form) including subscales for rule-breaking behavior and aggressive behavior.

*Hebrew reading* – A term that includes the two variables Hebrew decoding and Hebrew comprehension.

*Reading scores* – A term that includes English and Hebrew reading.

*School setting (Judaic and Secular)* – Jewish Day school students spend the day learning both Judaic and secular subject matter with at least two teachers (one for Judaic subjects and one for secular subjects). “Setting” in this context refers to the classroom with either a Judaic studies teacher or a secular studies (English) teacher. Generally, students are in a Judaic studies setting for either the morning or afternoon and a secular studies setting during the opposite time. English texts are used in the secular studies setting. Hebrew texts are used in the Judaic studies setting.

*English teacher* – The teacher of subjects other than Judaic subjects. This teacher generally provides instruction and facilitates learning in various subjects including: English language and literature, Social Studies (History), Science, and Math.
Judaic/Hebrew teacher – The teacher of Judaic subjects. This teacher generally provides instruction and facilitates learning in various religious subjects including: Chumash (Bible) and Halacha (Jewish law).

Social exclusion – Refers to a student’s connectedness to peers and problems that may be associated with such relations. The social problems subscale on the behavior measures is used in this study to measure a student’s perceived level of social exclusion (Youth Self-Report) and a student’s level of social exclusion rated by each teacher (Teacher Report Form).
CHAPTER III
RESEARCH QUESTIONS AND HYPOTHESES

Differences in Social Exclusion

1) *What differences exist in externalizing behavior between those students/children who are socially excluded and those who are not?* It was expected that those who were socially excluded would display higher levels of externalizing behavior than those who were not socially excluded.

Externalizing Behavior

2) *What are the associations between childhood stress, English decoding, English comprehension, Hebrew decoding, Hebrew comprehension, social exclusion, and externalizing behavior?* This question was considered for each of the three reports of externalizing behavior – Youth Self-Report, Teacher Report Form (English teacher), and Teacher Report Form (Hebrew teacher). Based on previous research, it was expected that students with low reading scores would report high levels of childhood stress, social exclusion, and externalizing behaviors. Specifically, it was expected that Hebrew reading would be associated with externalizing behavior in the Judaic school setting and English reading would be associated with externalizing behavior in the secular school setting.
3) If the possible effects of childhood stress are controlled for, how are English decoding, English comprehension, Hebrew decoding, and Hebrew comprehension relatively and independently associated with externalizing behavior? Based on the results of Question 1, above, the potential role that social exclusion plays in moderating the relationship between reading and behavior was be explored. This question was considered for each of the three reports of behavior – Youth Self-Report, Teacher Report Form (English teacher), and Teacher Report Form (Hebrew teacher). It was hypothesized that low reading scores would be a predictor of externalizing behavior above and beyond the effects of childhood stress, and that this relationship would be moderated by social exclusion. In particular, it was hypothesized that Hebrew reading would be a predictor of externalizing behavior in the Judaic school setting and English reading would be a predictor of externalizing behavior in the secular school setting above and beyond the effects of childhood stress and that each relationship would be moderated by social exclusion in the particular setting.
CHAPTER IV

METHOD

This study followed a nonexperimental design, as the researcher did not manipulate the independent variables (Kerlinger & Lee, 2000). All participants received the same assessment measures. Further, this study utilized a convenience sample.

Setting and Participants

Data was collected with a non-random sample of seventy-seven fifth grade boys (age 11) who were recruited from Modern Orthodox Jewish day schools in the Metropolitan New York area. These students had been exposed to formal English and Hebrew reading instruction, both concerning decoding and comprehension, minimally, for three years. A total of sixteen English teachers and eleven Hebrew teachers from a total of nine schools participated in the study by rating student behavior.

Power Analysis

In order to determine the appropriate sample size for this study, a power analysis was conducted based on the design and methodology of this study. Cohen (1988, p. 56) suggests that “when the investigator has no other basis for
setting the desired power value, the value .80 be used.” Further, Cohen (1988, p. 413) defines a small effect size as 2% and a medium effect size as 15%. In educational research, 10% has been an accepted level of effect size.

Given six predictors (independent variables), \( u \), that I posited would account for .10 \((= R^2)\) of the criterion variance in the population, a significance criterion of \( a = .05 \), and a power of .80, then \( \lambda = 14.3 \) and \( N = 129 \). (See Appendix B.) While 129 participants would have been ideal according to this power analysis, permission to participate was obtained from seventy-seven fifth grade boys. Thus, given the sample size of seventy-seven (77), the statistical power for the statistical analyses was established at .80 with an effect size of .16 at the .05 level. (See Appendix B.)

**Procedures**

The Principal Investigator (P.I.) contacted principals of twenty Modern Orthodox Jewish Day Schools (Kindergarten through Eighth grade) in the New York Metropolitan area with a recruitment letter (See Appendix C) and by phone. There were approximately seven hundred fifth grade boys in total at these twenty institutions. The P.I. then met with the fifth grade class(es) at each of the nine schools that agreed to participate in the study in order to explain the purpose of the study and to inform participants what they would be asked to do if they should volunteer to participate. (See Briefing Script, Appendix D.) There were roughly two hundred fifty potential participants at these nine schools. Consent forms were distributed for parents to sign giving the students permission to complete the
behavior questionnaire, revised Holmes-Rahe scale, and to be tested in English and Hebrew reading. (See Parent/Guardian Consent Form, Appendix E.) Consent of each volunteer student was obtained through the use of an oral assent procedure on the day of data collection. (See the Oral Assent Procedure script, Appendix F.)

Each student was assigned an identification number that was used to identify him on the behavior questionnaires, revised Holmes-Rahe scale, and the recording forms for the reading measures. Although all information remained confidential, complete anonymity could not be accomplished until Teacher Report Forms were received by the P.I. That is to say, the Teacher Report Forms also included the students name so that teachers would know whose behavior they were rating. When these were received by the P.I., the names of the students were removed. Only the P.I. and those assisting him had access to the data. All information gathered during the course of this study was stored in a locked cabinet in the office of the P.I. when not being used for data analysis. The data will remain in a locked cabinet in the office of the P.I. for five years. No known risks beyond daily life were associated with this project. The aggregated results of the study were shared with participants who requested them and with the principals of the participating school.
Measures

**Dependent (Criterion) Variables**

**Behavior Problems**

Behavior problems were operationally defined as the total score for the externalizing problems subscale on the Achenbach System of Empirically Based Assessment. There are various forms of this assessment. The Child Behavior Checklist (CBCL/6-18) is completed by a child’s parents; the Teacher’s Report Form (TRF/6-18) is completed by a child’s teachers; and the Youth Self-Report (YSR/11-18) is completed by the child. The externalizing problem scale measures both delinquent behavior and aggressive behavior. Achenbach and Rescorla (2001) report evidence for cross-informant agreement between the YSR/11-18 and the TRF/6-18 on the externalizing subscale to be a mean $r = .28$, $p< .05$. They further report that this is consistent with the correlations obtained from the Achenbach, McConaughy, and Howell (1987) meta-analysis of various instruments that reported the mean $r$ to be .20 between children and teacher reporting (Achenbach & Rescorla, 2001). These are not impressive correlations and thus further substantiate the use of both teacher and student forms in the present study.

Each student participant completed a YSR/11-18. The TRF/6-18 was utilized to obtain teacher reported school-based behaviors. For each student participant, two teachers (the secular studies teacher and the Judaic studies teacher) each completed a TRF/6-18. However, the parent form (CBCL/4-18) was not used, because of potential parental bias against revealing the true nature
of a child’s behavior for the purposes of research. As noted earlier, Orthodox Jewish parents may be afraid to confront or acknowledge these issues (Helmreich, 2000). Further, parent rating of behavior went beyond the scope of the current study of externalizing behaviors related to school functioning.

The Achenbach System of Empirically Based Assessment is a standard checklist used by most school psychologists. Evidence for internal consistency reliability for the externalizing problem subscale is reported for the TRF/6-18, as $\alpha = .95$, and for the YSR/11-18, as $\alpha = .90$ (Achenbach & Rescorla, 2001). Evidence for test-retest reliability for the externalizing problem subscale is reported for the TRF/6-18, as $\alpha = .89$, and for the YSR/11-18, as $\alpha = .89$ (Achenbach & Rescorla, 2001).

Achenbach and Rescorla (2001) provide evidence for construct validity with a Pearson Correlation between the externalizing problems subscale scores on the TRF/6-18 and Conduct Disorder on the DSM-IV Checklist of $r = .62$, and the Externalizing Scale on the teacher form of the Behavior Assessment System for Children (BASC) Scales (Reynolds & Kamphaus, 1992) of $r = .74$. Nineteen percent (19%) on the TRF/6-18 and seventeen percent (17%) on the YSR/11-18 of the variance accounted for in the externalizing problems subscale scores by significant effects ($p < .01$) of referral status is reported as evidence for criterion-related validity (Achenbach & Rescorla, 2001).
Independent – Predictors

Childhood Stress

Risk factors for behavior problems in the Orthodox Jewish community have been organized into the categories of child risk factors, family risk factors, and environmental risk factors (Russell and Blumenthal, 2000). (See Appendix A for a complete listing of these risk factors for behavior problems noted by educators and mental health professionals anecdotally at conferences in 1999 and 2000 for which Russell & Blumenthal, 2000, is a summary). As discussed above, childhood stress is itself a risk factor for externalizing behavior problems and falls under the general category of an environmental risk factor.

Horowitz, Schaefer, Hiroto, Wilner, and Levin (1977) provide evidence for test-retest reliability for the adult version of the Holmes-Rahe Social Readjustment Scale of $\alpha=.8$. However, although the Holmes-Rahe Social Readjustment Scale for Children has been used in various studies concerning childhood stress (for example, see Jacobs & Charles, 1980), studies to establish empirical evidence for reliability and validity have not been conducted.

In addition to measuring stress, the Holmes-Rahe Social Readjustment Scale (Holmes-Rahe, 1967) includes items associated with the non-reading risk factors delineated by Russell and Blumenthal (2000). Indeed, items on the version for children under eighteen years of age include child risk factors, such as “failure of a grade in school,” familial risk factors, such as “divorce of parents,” and environmental risk factors, such as, “loss of job by parent” (Holmes & Rahe, 1967). The original adult version of this scale was developed during the 1960s to
measure individual levels of stress. A group of 394 participants were given a list of “stressors,” including marriage. Told that marriage earned 50 “stress” points, participants were asked to assign relevant values (between 0 and 100) to the other stressors. The original scale (and the under 18 years version) asks a person to consider his or her life over the past two years and check those “stressors” on the scale that he or she has experienced. A total score puts the individual into one of several categories ranging from extreme risk to only slight risk. While the original scale projected the likelihood of health problems due to stress, clearly other problems may result.

The Holmes/Rahe scale for children less than eighteen years of age was edited for the purposes of the current study. This edited scale includes most of the original language (e.g., “Death of a parent”). However, some items that are not culturally relevant were changed. For example, “Becoming a full fledged member of a church” was changed to “Becoming a Bar Mitzvah.” (See Appendix G).

In this study, the scale was used to measure childhood stress associated with non-reading risk factors for behavior problems noted above. A total score on this revised scale was used. This enabled examination of the specific question of the extent to which problems with reading relate to behavior problems above and beyond childhood stress. Thus, the directions were revised to include experiencing any of these “stressors” during any part of the child’s lifetime.
Literacy Measures

Both the English and Hebrew reading tests followed the same format. The measures for each language are detailed below.

English Reading (L1)

Various subtests on the Woodcock Reading Mastery Tests-Revised (WRMT-R; Woodcock, 1987) were used to measure English reading. English decoding was measured using the Word Identification subtest. English comprehension was measured using the Passage Comprehension subtest. Together, these subtests are considered a short scale of reading ability referred to as Total Reading – Short Scale (Woodcock, 1987).

Evidence for internal consistency reliability for 1st grade boys and girls and 3rd grade boys and girls for the Word Identification subtest is reported as ranging from $\alpha=.98$ to $.99$ and $\alpha=.97$ to $.99$, respectively (Woodcock, 1987). Evidence for concurrent validity is reported as a Pearson Correlation between various subtests of the WRMT-R and other achievement tests. For example, for 3rd grade boys and girls, the correlation between the Word Identification section on the WRMT-R and the Total Reading section of the Woodcock Johnson Psycho-Educational Battery is $r=.86$.

Evidence for internal consistency reliability for 1st grade boys and girls and 3rd grade boys and girls for the Passage Comprehension subtest is reported as ranging from $\alpha=.94$ to $.97$ and $\alpha=.92$ to $.96$, respectively (Woodcock, 1987). Evidence for concurrent validity is reported as a Pearson Correlation between
various subtests of the WRMT-R and other achievement tests. For example, for 3rd grade boys and girls, the correlation between the Passage Comprehension section on the WRMT-R and the Passage Comprehension section of the Woodcock Johnson Psycho-Educational Battery is \( r = 0.70 \) (Woodcock, 1987).

Hebrew Reading (L2)

To measure Hebrew reading, a test designed according to a similar format to the Woodcock Reading Master Tests-Revised (i.e., word identification – reading words in isolation, passage comprehension – cloze procedure) was used. (See Appendix H.) Esther Geva of the Ontario Institute for Studies in Education of the University of Toronto created these measures and has used them in various Hebrew language studies (e.g., Geva & Wade-Woolley, 1998; Geva & Siegal, 2000). Despite the consensus among experts to accept these measures in the field of cross-linguistic transfer studies, no empirical evidence for reliability and validity has been established. The word identification task was originally developed based on the vocabulary taught in grades one to five in a bilingual English-Hebrew Day School in Toronto. The Hebrew cloze form was developed for the same population (See Geva and Wade-Woolley, 1998).

Social Exclusion

Social exclusion was operationally defined as the score for the social problems subscale on the Youth Self-Report (YSR/11-18) form and the Teacher Report Form (TRF/6-18) of the Achenbach System of Empirically Based
Assessment. The former measure was used when analyzing the externalizing behavior reported by the student; the latter, completed by the English and Hebrew teachers independently, was used when analyzing the externalizing behavior reported by each of these teachers, respectively. The social problems subscale of the YSR/11-18 includes items such as, “I am not liked by other kids,” “I get teased a lot,” and “I feel lonely,” along with other items that tap into social problems. The TRF/6-18 has parallel items.

Evidence for internal consistency reliability for the social problem subscale is reported for the YSR/11-18, as $\alpha=.74$ (Achenbach & Rescorla, 2001). Evidence for test-retest reliability for the social problems subscale is reported for the YSR/11-18, as $r=.74$ (Achenbach & Rescorla, 2001). Ten percent (10%) of the variance accounted for in the social problems subscale scores by significant effects ($p<.01$) of referral status is reported as evidence for criterion-related validity for the YSR/11-18 (Achenbach & Rescorla, 2001).

**Data Analysis**

The method for addressing the study’s research questions involved the use of independent-samples t-tests, Pearson product-moment correlations, and multiple hierarchical regression equations. These analyses were completed in the *Statistical Package for Social Scientists* (SPSS) version 10.0. An alpha level of .05 was used for all statistical tests.

Summary statistics such as mean, median, and standard deviation were generated to provide the characteristics of the sample, to identify outliers, and to
confirm that ceiling and floor effects were not affecting the data. In order to alleviate issues of normality for each variable, raw scores (transformed into z-scores) for each variable were used in each analysis.

Each distribution (Youth Self-Report, Teacher Report Form – English teacher, Teacher Report Form – Hebrew teachers) of social exclusion was transformed into a dichotomous variable, split by the median, because these distributions were skewed and thus would have affected the regression models. This allowed for differences in externalizing behavior between high social problem students and low social problem students to be seen. An independent samples t-tests was conducted for each of the externalizing behavior variables (i.e., student reported, English teacher reported, and Hebrew teacher reported). This analysis was conducted as a first step in the process of determining whether social exclusion acts as a moderator in the multiple regression models discussed below.

Subsequently, correlational matrices were created to obtain descriptive information concerning the other research questions and hypotheses. The correlation matrices also provided information about multicollinearity (including whether there was a relationship between reading problems in English and/or Hebrew and behavior problems in general or specific to secular or Judaic school settings, respectively). Neither multicollinearity nor singularity is desirable for a multiple regression model. To provide further information concerning the relationship between variables in the study, values (r) from the correlation matrix were squared in order to determine the effect size (r^2) for each pair of variables.
A residual scatterplot was generated for information about normality, linearity (relationship between independent and dependent variables), and homoscedasticity (similarity of variability of dependent variable at all values of independent variables) of the data.

Then, a series of hierarchical multiple regression analyses, one each for the youth self-report, English teacher report, and Hebrew teacher report of externalizing behavior, were conducted to determine the common contribution of the independent variables to the variance in school-based externalizing behavior problems. Further, the unique contribution of each independent variable to the variance in school-based externalizing behavior problems, when the contribution of other independent variables is accounted for, was determined. These multivariate analyses were designed based on this study’s proposed model of factors associated with externalizing behavior problems. Thus, the hierarchical multiple regression analyses were conducted to determine the predictive value of English and Hebrew reading on each of the criterion variables (externalizing behavior problems reported by the student and his teachers), after accounting for childhood stress (non-reading risk factors).

The role that social exclusion plays in the relationship between reading problems (in first and second language) and behavior was also explored to determine if social exclusion acts as a moderating variable. To test moderational hypotheses, “statistical analysis must measure and test the differential effect of the independent variable on the dependent variable as a function of the moderator” (Baron & Kenny, 1986, p. 1174). In the current study, the differential effect of
English reading and Hebrew reading on behavior problems as a function of social exclusion was explored.

Each multiple regression model began with childhood stress in Step 1. Also included in Step 1 was the dichotomized social exclusion variable (having determined that the group differences in externalizing behavior between those with above average versus below average social exclusion was significant) to test for moderating effects of social exclusion. If social exclusion made a statistically significant contribution to the variance in externalizing behavior problems, but the English and Hebrew reading variables entered into Step 3 were not predictive of the criterion (i.e., they no longer had a relationship with externalizing behavior problems) it would suggest that social exclusion moderated the relationship between the reading factors and behavior. Social exclusion and externalizing behavior as reported by the student, the English teacher, and the Hebrew teacher were used in three regression models, respectively.
CHAPTER V
RESULTS

This study examined the relationship between reading (English and Hebrew) and behavior. To answer the study’s research questions, bivariate analyses (i.e., independent sample t-tests and Pearson product-moment correlations) and multivariate analyses (i.e., hierarchical multiple regression models) were completed using data collected for the purposes of this study by the Principal Investigator. Data from the 77 fifth-grade boys for whom permission to participate was obtained were analyzed. Of the 77 participants, English teachers’ reports of behavior were received for 67 students and Hebrew teachers’ reports of behavior were received for 55 students.

The results of the study delineated in this chapter are presented in four main sections: 1) descriptive statistics; 2) association between the study’s main variables; 3) multivariate (regression) analyses; and 4) secondary analyses.

Descriptive Statistics

Initial descriptive statistics were generated to better understand the distribution of variables in this study. Table 1, below, gives the means, standard deviations, and ranges for the unstandardized main study variables. A review of the distribution of each variable found some to be negatively skewed, others to be
positively skewed, and many to contain outliers. Based on the results of these
descriptive analyses and the fact that the measures utilized different units of
measurement, z-score transformations were performed to standardize the data.
These z-scores were used in all analyses for which results are described, below,
subsequent to the initial descriptive analyses, for which raw scores from the tests
were used.

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<td>10.57</td>
<td>7.56</td>
<td>0 - 37</td>
</tr>
<tr>
<td>ETR - Social Problems **</td>
<td>67</td>
<td>.93</td>
<td>1.74</td>
<td>0 - 8</td>
</tr>
<tr>
<td>ETR - Externalizing Behavior Problems **</td>
<td>67</td>
<td>4.39</td>
<td>6.24</td>
<td>0 - 27</td>
</tr>
<tr>
<td>HTR - Social Problems **</td>
<td>55</td>
<td>1.69</td>
<td>2.54</td>
<td>0 - 11</td>
</tr>
<tr>
<td>HTR - Externalizing Behavior Problems **</td>
<td>55</td>
<td>5.24</td>
<td>6.19</td>
<td>0 - 26</td>
</tr>
</tbody>
</table>

* Higher scores are related to greater reading ability
** Higher scores are related to more of a problem.
Social Exclusion and Externalizing Behavior

The continuous variables for social exclusion (social problems) were collapsed into groups divided by the median to be used in t-tests to determine group differences in externalizing behavior. First the median of each of these continuous variables was generated. The results were as follows: social exclusion reported by students ($Mdn = -.043$), social exclusion reported by English teachers ($Mdn = -.530$), and social exclusion reported by the Hebrew teachers ($Mdn = -.272$). Based on these results, characteristics of the high social exclusion students and the low social exclusion students were produced. Table 2, below, records the characteristics of each group based on the median.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Reported Social Exclusion (N=77)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Median ($Mdn = -.043$)</td>
<td>48</td>
<td>62.3</td>
</tr>
<tr>
<td>Above Median</td>
<td>29</td>
<td>37.7</td>
</tr>
<tr>
<td><strong>English Teacher Reported Social Exclusion (N=67)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Median ($Mdn = -.530$)</td>
<td>45</td>
<td>58.4</td>
</tr>
<tr>
<td>Above Median</td>
<td>22</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>Hebrew Teacher Reported Social Exclusion (N=55)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below Median ($Mdn = -.272$)</td>
<td>35</td>
<td>45.5</td>
</tr>
<tr>
<td>Above Median</td>
<td>20</td>
<td>26</td>
</tr>
</tbody>
</table>
Then, each new categorical variable was used in an independent samples t-test to examine the relationship between social problems and externalizing behavior. Independent samples t-tests were used to determine if there were significant differences in externalizing behavior problems between the group below and the group above the median of reported social problems. These t-tests were conducted utilizing the same source of information for social exclusion and externalizing behavior in each of the three analyses (i.e., social exclusion and externalizing behavior as reported by the student, social exclusion and externalizing behavior as reported by the English teacher, and social exclusion and externalizing behavior as reported by the Hebrew teacher). For each of the three t-tests, based on Levene’s test of equality of variance, the data violated the assumption of equal variance. Thus, the information from the t-test table output labeled “equal variances not assumed” is reported, below (see Table 3).

Results for student reported externalizing behavior problems showed a statistically significant difference in scores for externalizing behavior problems between students with below median social problems ($M=-.41$, $SD=.69$), and students with above median social problems ($M=.68$, $SD=1.07$), $t(42.39) = -4.88$, $p<.001$. Cohen (1988) delineates the following guidelines when it comes to effects size: .01=small effect, .06=moderate effect, and .14=large effect. The magnitude of the differences (effect size) in the means was large based on Cohen (1988) ($eta$ squared $=.241$). That is, those students who reported externalizing behavior problems perceived and reported social problems (exclusion).
There was a statistically significant difference in scores for English teacher reported externalizing behavior problems between students with English teacher reported below median social problems ($M = -.39$, $SD = .40$), and students with English teacher reported above median social problems ($M = .80$, $SD = 1.34$), $t(22.90) = -4.10$, $p < .001$. The magnitude of the differences (effect size) in the means was large based on Cohen (1988) (eta squared = .205). That is, those students for whom English teachers reported externalizing behavior problems also experienced social problems (exclusion).

Results for Hebrew teacher reported externalizing behavior problems showed a statistically significant difference in scores for externalizing behavior problems between students with below median social problems reported by the Hebrew teacher ($M = -.38$, $SD = .58$), and students with above median social problems reported by the Hebrew teacher ($M = .67$, $SD = 1.22$), $t(23.99) = -3.64$, $p = .001$. The magnitude of the differences (effect size) in the means was large based on Cohen (1988) (eta squared = .20). That is, those students for whom Hebrew teachers reported externalizing behavior problems also experienced social problems (exclusion).

Pearson product-moment bivariate correlations, discussed below, were calculated to determine the strength and direction of these relationships between externalizing behavior and social exclusion.
Table 3
Group Differences for Externalizing Behavior Between Students with Below Median Social Problems and Above Median Social Problems

<table>
<thead>
<tr>
<th>Externalizing Behavior Problems</th>
<th>Below Median Social Problems</th>
<th>Above Median Social Problems</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Student Reported*</td>
<td>.41</td>
<td>.69</td>
</tr>
<tr>
<td>English Teacher Reported*</td>
<td>.39</td>
<td>.40</td>
</tr>
<tr>
<td>Hebrew Teacher Reported*</td>
<td>.38</td>
<td>.58</td>
</tr>
</tbody>
</table>

*p ≤ .001

Association of Variables
Pearson product-moment correlations were calculated to determine the strength and direction of the relationship between the study’s independent (childhood stress, social exclusion - dichotomized, English decoding, English comprehension, Hebrew decoding, and Hebrew comprehension) and dependent variables (externalizing behavior problems reported by students and two teachers). Preliminary analyses were performed to ascertain whether any violation of the assumptions of normality, linearity, and homoscedasticity was present. Given the aforementioned rationale of a directional relationship between reading and behavior, one-tail tests of significance were utilized.
As anticipated, childhood stress ($r=.322, p<.01$) and social problems reported by the student ($r=.530, p<.001$) were statistically significant and positively correlated with externalizing behavior problems reported by the student. English decoding ($r=-.241, p<.05$), English comprehension ($r=-.304, p<.01$), Hebrew decoding ($r=-.265, p<.01$), and Hebrew comprehension ($r=-.208, p<.05$) were statistically significant and negatively associated with externalizing behavior problems reported by the student. Thus, student reported externalizing behavior was associated with reading in both English and Hebrew.

When considering the same factors in relation to externalizing behavior problems reported by the English teachers, childhood stress did not have a statistically significant association, but social problems reported by the English teachers ($r=.566, p<.001$) was statistically significant and positively correlated with externalizing behavior problems reported by the English teachers. English comprehension ($r=-.328, p<.01$) was statistically significant and negatively associated with externalizing behavior problems reported by the English teacher. English decoding, Hebrew decoding, and Hebrew comprehension were not correlated with externalizing behavior problems reported by the English teacher. Hence, children who exhibited externalizing behavior problems in English class tended to have English reading comprehension difficulties.

As expected, childhood stress ($r=.270, p<.05$) and social problems reported by the Hebrew teacher ($r=.513, p<.001$) were statistically significant and positively correlated with externalizing behavior problems reported by the Hebrew teacher. Interestingly, only English comprehension ($r=-.335, p<.01$)
was statistically significant and negatively associated with externalizing behavior problems reported by the Hebrew teacher. However, English decoding, Hebrew decoding, and Hebrew comprehension were not correlated with externalizing behavior problems reported by the Hebrew teacher. Accordingly, it appears that students who displayed externalizing behavior problems in Hebrew class did not tend to have Hebrew reading difficulties. Rather, these students tended to have English reading comprehension difficulties. However, as we will see below when we discuss the intercorrelations between the study’s three main dependent variables, these were not the same students suffering from externalizing behavior problems as in the English class, generally.

Regarding the intercorrelation between the independent variables in this study, all of the reading variables were statistically significant and positively correlated. English comprehension \( (r = -0.266, p < 0.01) \) was statistically significant and negatively correlated with childhood stress. There was a negative trend toward statistical significance between English decoding \( (r = -0.188, p = 0.051) \) and childhood stress. Hebrew decoding and Hebrew comprehension were not correlated with childhood stress.

The following intercorrelations relate to social problems reported by students. Childhood stress \( (r = 0.243, p < 0.05) \) was statistically significant and positively associated with social problems reported by students. There was a negative trend toward statistical significance between social problems reported by students and Hebrew decoding \( (r = -0.148, p = 0.099) \). English decoding and comprehension and Hebrew comprehension were not associated with social
problems reported by students. Of note, is the statistically significant negative correlation between Hebrew decoding ($r = -0.280$, $p < 0.05$) and the original social problems variable (not dichotomized based on median). The other reading variables were not associated with the original social problems variable.

The next intercorrelations relate to social problems reported by the English teachers. Hebrew decoding ($r = -0.212$, $p < 0.05$) and Hebrew comprehension ($r = -0.232$, $p < 0.05$) were statistically significant and negatively associated with social problems reported by the English teacher. Childhood stress and English decoding and comprehension were not correlated with social problems reported by the English teachers.

The subsequent intercorrelations relate to social problems reported by the Hebrew teachers. Childhood stress ($r = 0.249$, $p < 0.05$) was statistically significant and positively associated with social problems reported by the Hebrew teachers. Hebrew decoding ($r = -0.237$, $p < 0.05$) and Hebrew comprehension ($r = -0.285$, $p < 0.05$) were statistically significant and negatively associated with social problems reported by the Hebrew teacher. English decoding and comprehension were not associated with social problems reported by the Hebrew teachers. Table 4, below, shows the intercorrelations between the main study variables.

Also of note, are the intercorrelations between the study’s three dependent variables (i.e., externalizing behavior reported by the student, each student’s English teacher, and each student’s Hebrew teacher). Student self-reporting of externalizing behavior was statistically significant and positively correlated with both the English teacher rating of externalizing behavior ($r = 0.213$, $p < 0.05$) and the
Hebrew teacher rating of externalizing behavior ($r = 0.389, p < 0.01$). The English teacher reporting of externalizing behavior was also statistically significant and positively correlated with the Hebrew teacher rating of externalizing behavior ($r = 0.392, p < 0.01$). While these are statistically significant results, these are not strong correlations. Thus, the use of multiple forms of behavioral assessment was justified. Further, this indicates that different students exhibited externalizing behavior in the English setting and the Hebrew setting and still other students perceived that they exhibited these behaviors.

**Multivariate Analyses**

Multivariate analyses using hierarchical multiple linear regression were conducted to determine the extent to which the combination of reading factors accounted for an understanding of externalizing behavior problems when accounting for childhood stress and the potential mediating variable, social exclusion. Accordingly, childhood stress and social exclusion were entered into the first step of the model for each criterion with which they had a statistically significant correlation. Only those independent variables that had a statistically significant association with the specific criterion variable in each model were used as predictors in the final step of the respective model. Given the small sample size, Adjusted $R^2$ is reported. Further, only the b-weight is reported as the beta was the same because only z-scores of the variables were used.
Table 4
Correlation Coefficients of Main Study Variables
(N=77 for all variables except those marked ETR, N=67 and HTR, N=55)

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Childhood Stress</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. English - Decoding</td>
<td>-.188+</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. English - Comprehension</td>
<td>-.266**</td>
<td>.546***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Hebrew - Decoding</td>
<td>-.116</td>
<td>.489***</td>
<td>.361***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Hebrew - Comprehension</td>
<td>-.050</td>
<td>.392***</td>
<td>.411***</td>
<td>.557***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. YSR - Social Problems</td>
<td>.243*</td>
<td>-.088</td>
<td>-.136</td>
<td>-.148+</td>
<td>.022</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. YSR - Externalizing Behavior</td>
<td>.322**</td>
<td>-.241*</td>
<td>-.304**</td>
<td>-.265**</td>
<td>-.208*</td>
<td>.530***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. ETR - Social Problems</td>
<td>.044</td>
<td>.049</td>
<td>-.068</td>
<td>-.212*</td>
<td>-.232*</td>
<td>.030</td>
<td>.113</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. ETR - Externalizing Behavior</td>
<td>.152</td>
<td>-.051</td>
<td>-.328**</td>
<td>-.101</td>
<td>-.094</td>
<td>-.076</td>
<td>.213*</td>
<td>.566***</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>10. HTR - Social Problems</td>
<td>.249*</td>
<td>-.172</td>
<td>-.130</td>
<td>-.237*</td>
<td>-.285*</td>
<td>.154</td>
<td>.333**</td>
<td>.490***</td>
<td>.178</td>
<td>--</td>
</tr>
<tr>
<td>11. HTR - Externalizing Behavior</td>
<td>.270*</td>
<td>-.146</td>
<td>-.335**</td>
<td>-.105</td>
<td>-.139</td>
<td>.168</td>
<td>.389**</td>
<td>.322**</td>
<td>.392**</td>
<td>.513***</td>
</tr>
</tbody>
</table>

*** p < .001 (1-tailed). ** p ≤ 0.01 (1-tailed). * p ≤ 0.05 (1-tailed). + = trend toward statistical significance.
The results of the hierarchical regression equation for student reported externalizing behavior problems are presented in Table 5, below. Childhood stress and social exclusion (Step 1) contributed 30.2% of the explained variance in student reported externalizing behavior problems ($p<.001$). The social exclusion variable reached statistical significance ($B=.468$, $SE=.99$, $t=4.73$, $p<.001$), indicating that student reported social exclusion contributed to the variance in student reported externalizing behavior above and beyond the other variables in the model. The coefficient for childhood stress did not reach statistical significance. The second step in the model, English decoding, English comprehension, Hebrew decoding, and Hebrew comprehension, was not a statistically significant step in the model. None of these variables were individually statistically significant either. Therefore, the most parsimonious model included only the first step.

Even though each of the reading measures was correlated with externalizing behavior problems reported by the student, Hebrew decoding was the only reading variable that had even a trend toward a statistically significant correlation with social exclusion. Thus, we cannot say that social exclusion perceived by the student mediated the relationship between reading and behavior. The next regression equation discussed will address whether the relationship between Hebrew decoding, in particular, and externalizing behavior reported by the student was mediated by social exclusion perceived by the student.
Table 5  
Multiple Hierarchical Linear Regression Model for Factors Associated with Student Reported Externalizing Behavior Problems

\[(N=77)\]

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>(B)</th>
<th>(SE)</th>
<th>Adjusted (R) Square</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.160</td>
<td>.100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.468</td>
<td>.099</td>
<td>.302***</td>
<td>(F(2,74)=17.433***)</td>
</tr>
</tbody>
</table>

\(F(2,74)=17.433, p<.001\)

Total \(R\) Square (Adjusted) = .302

\***p<.001\]

The results of the hierarchical regression equation for Hebrew decoding predicting student reported externalizing behavior problems are presented in Table 6, below. Childhood stress and social exclusion (Step 1) contributed 30.2% of the explained variance in student reported externalizing behavior problems \((p<.001)\). The social exclusion variable reached statistical significance \((B = .457, SE = .201, t = 4.666, p<.001)\), indicating that student reported social exclusion contributed to the variance in student reported externalizing behavior above and beyond the other variables in the model. The coefficient for childhood stress did not reach statistical significance. The second step in the model, Hebrew decoding, was not a statistically significant step in the model. The most parsimonious model therefore included only step one.
Since Hebrew decoding was correlated with externalizing behavior problems reported by the student and achieved a trend toward a statistically significant correlation social exclusion reported by the student, it appears that social exclusion perceived by the student may have mediated the relationship between Hebrew decoding and externalizing behavior problems.

Table 6
Multiple Hierarchical Linear Regression Model for Hebrew Decoding Predicting Student Reported Externalizing Behavior Problems

\[(N=77)\]

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.190</td>
<td>.98</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.457</td>
<td>.201</td>
<td>.302***</td>
<td>(F(2,74)=17.433***)</td>
</tr>
</tbody>
</table>

\(F(2,74)=17.433, p<.001\)
Total \(R Square\) (Adjusted) = .302

***\(p<.001\)

The results of the hierarchical regression equation for English teacher reported externalizing behavior problems are presented in Table 7, below. In this equation, childhood stress was not included in Step 1 with social exclusion reported by the English teachers because it was not associated with externalizing
behavior problems reported by the English teachers. Social exclusion (Step 1) contributed 31% of the explained variance in English teacher reported externalizing behavior problems \( (p<.001) \). The social exclusion variable reached statistical significance \( (B=.566, SE=.102, t=5.541, p<.001) \), indicating that English teacher reported social exclusion contributed to the variance in student reported externalizing behavior above and beyond English comprehension, the other variable in the model.

The second step in the model, English comprehension contributed 7.6% of the explained variance in English teacher reported externalizing behavior problems and also achieved statistical significance, \( F \) change \( (1, 64) = 9.056, p<.01 \). English reading comprehension also emerged as statistically significant in its association with the dependent variable \( (B=-.289, SE=.096, t=-3.01, p=.004) \). The overall model reached statistical significance \( F(2,64)=21.783, p<.001 \) with an Adjusted \( R \) Square of 38.6%.

Even though English comprehension was correlated with externalizing behavior problems reported by the English teacher, it was not correlated with social exclusion reported by the English teacher. Thus, we cannot say that social exclusion reported by the English teacher moderated the relationship between reading and behavior. However, English comprehension did predict externalizing behavior problems reported by the English teacher when accounting for social exclusion observed by the English teacher.
Table 7
Multiple Hierarchical Linear Regression Model for Factors Associated with English Teacher Reported Externalizing Behavior Problems

\( (N=66) \)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>( B )</th>
<th>( SE )</th>
<th>Adjusted ( R^2 ) Change</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.547</td>
<td>.097</td>
<td>.31***</td>
<td>( F(1,65)=30.705***</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>-.289</td>
<td>.096</td>
<td>.076**</td>
<td>( F(2,64)=21.783***</td>
</tr>
<tr>
<td>Comprehension**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( F(2,64)=21.783, p<.001 \)
Total \( R^2 \) (Adjusted) = .386

***\( p<.001 \)   **\( p<.01 \)

The results of the hierarchical regression equation for Hebrew teacher reported externalizing behavior problems are presented in Table 8, below.

Childhood stress and social exclusion (Step 1) contributed 25.7% of the explained variance in Hebrew teacher reported externalizing behavior problems \( (p<.001) \).
The social exclusion variable reached statistical significance \( (B=.475, SE=.121, t=3.925, p<.001) \), indicating that Hebrew teacher reported social exclusion contributed to the variance in student reported externalizing behavior problems above and beyond the other variables in the model.
The second step in the model, English comprehension, contributed 4.2% of the explained variance in Hebrew teacher reported externalizing behavior problems and also achieved statistical significance, $F$ change (1,51) = 4.106, $p<.05$. English reading comprehension also emerged as statistically significant in its association with the dependent variable ($B=-.237$, $SE=.117$, $t=-2.026$, $p=.048$). The overall model reached statistical significance $F(3,51)=8.679$, $p<.001$ with an Adjusted $R^2$ of 29.9%. Although English comprehension was correlated with externalizing behavior problems observed by the Hebrew teacher, it was not correlated with social exclusion reported by the Hebrew teacher. Thus, we cannot say that social exclusion reported by the Hebrew teacher moderated the relationship between reading and behavior. However, English comprehension did predict externalizing behavior problems reported by the Hebrew teacher when accounting for childhood stress and social exclusion reported by the Hebrew teacher.

**Secondary Analyses**

Given the above results, similar analyses were conducted to investigate the relationship between reading problems and the components of the externalizing behavior problems scale, rule-breaking behavior and aggressive behavior. As with the main effects, a negative relationship between reading problems and these behaviors was expected.
Table 8
Multiple Hierarchical Linear Regression Model for Factors Associated with Hebrew Teacher Reported Externalizing Behavior Problems

(N=54)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square Change</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.047</td>
<td>.129</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.468</td>
<td>.118</td>
<td>.257***</td>
<td>F(2,52)=10.347***</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Comprehension*</td>
<td>-.237</td>
<td>.117</td>
<td>.042*</td>
<td>F(3,51)=8.679***</td>
</tr>
</tbody>
</table>

F(3,51)=8.679, p<.001
Total R Square (Adjusted) = .299

***p<.001  *p<.05

The same process was followed for these analyses: 1) intercorrelational matrices were generated for the independent variables (i.e., childhood stress, social exclusion, English decoding and comprehension, and Hebrew decoding and comprehension) and the dependent variables (i.e., rule-breaking behavior and aggressive behavior); 2) hierarchical multiple regression equations were generated for the predictors that had a statistically significant association with each criterion. These analyses were performed for the student reported behavior problems, English teacher reported behavior problems, and the Hebrew teacher...
reported behavior problems. The results of each of these series of analyses are discussed below. Table 9, below, shows the intercorrelations for the independent variables and the behavior problem variables reported by students, English teachers, and Hebrew teachers, including externalizing behavior problems discussed above.

**Student Reported Subscales of Externalizing Behavior Problems**

As could be expected, when it comes to student reported rule-breaking behavior, a component of the externalizing behavior problem scale discussed above, childhood stress ($r=.234, p<.05$) and social exclusion ($r=.436, p<.001$) were statistically significant and positively correlated with it. English comprehension ($r=-.265, p=0.01$) was statistically significant and negatively correlated with student reported rule-breaking behavior and there was a trend towards such a relationship for Hebrew decoding ($r=-.172, p=0.068$). English decoding and Hebrew comprehension were not associated with student reported rule-breaking behavior.

The results of the hierarchical regression equation for student reported rule-breaking behavior are presented in Table 10, below. Childhood stress and social exclusion (Step 1) contributed 18.6% of the explained variance in student reported rule-breaking behavior ($p<.001$). The social exclusion variable reached statistical significance ($B=.388, SE=.105, t=3.68, p<.001$), indicating that student
Table 9
Correlation Coefficients for Reading and Student Reported Behavior Variables

(N=77 for all variables except those marked ETR, N=67 and HTR, N=55)

| Variables                        | 1     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    | 11    | 12    | 13    | 14    | 15    | 16    | 17    |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Childhood Stress                 | --    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| English - Decoding              - .188+ | --    |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Hebrew - Decoding               - .116  | .489*** | .361*** | --   |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| YSR - Rule-Breaking Behavior    .234*  | -.118  | -.265** | -.172+ | -.135 | --   |       |       |       |       |       |       |       |       |       |       |       |       |
| YSR - Aggressive Behavior       .333** | -.276** | -.294** | -.284** | -.223* | .717*** | --   |       |       |       |       |       |       |       |       |       |       |       |
| YSR - Externalizing Behavior    .322** | -.241* | -.304** | -.265** | -.208* | .863*** | .971*** | --   |       |       |       |       |       |       |       |       |       |       |
| YSR - Social Problems           .243*  | -.088  | -.136  | -.148+ | .022  | .436*** | .524*** | .530*** | --   |       |       |       |       |       |       |       |       |
| ETR - Rule-Breaking Behavior    .150   | .007   | -.223* | .041  | -.158  | .171+  | .056  | .099  | -.170+ | --   |       |       |       |       |       |       |       |       |
| ETR - Aggressive Behavior       .136   | -.070  | -.336** | -.149  | -.058  | .339** | .166+  | .237* | -.029  | .643*** | --   |       |       |       |       |       |       |       |
| ETR - Externalizing Behavior    .152   | -.051  | -.328** | -.101  | -.094  | .314** | .145  | .213* | -.076  | .810*** | .970*** | --   |       |       |       |       |       |       |
| ETR - Social Problems           .044   | .049   | -.068  | -.212* | -.232* | .242*  | .042  | .113  | .030   | .450*** | .553*** | .566*** | --   |       |       |       |       |       |
| HTR - Rule-Breaking Behavior    .245*  | -.295* | -.420*** | -.158  | -.236* | .258*  | .201+  | .236* | .129   | .475*** | .178  | .285*  | .294*  | --   |       |       |       |       |
| HTR - Aggressive Behavior       .247*  | -.075  | -.265* | -.073  | -.088  | .381** | .369** | .399*** | .163  | .375**  | .348** | .385** | .296*  | .578*** | --   |       |       |       |
| HTR - Externalizing Behavior    .270*  | -.146  | -.335** | -.105  | -.139  | .381** | .355** | .389** | .168  | .437*** | .332** | .392** | .322** | .755*** | .972*** | --   |       |       |
| HTR - Social Problems           .249*  | -.172  | -.130  | -.237* | -.285* | .306*  | .314** | .333** | .154  | .184+  | .157  | .178  | .490*** | .387** | .499*** | .513 | --   |

*** p ≤ .001 (1-tailed). ** p ≤ .01 (1-tailed). * p ≤ .05 (1-tailed). + = trend toward statistical significance.
reported social exclusion contributed to the variance in student reported rule-breaking behavior above and beyond the other variables in the model. The coefficient for childhood stress did not reach statistical significance.

The second step in the model, English comprehension, resulted in a trend towards a statistically significant change in the overall model representing a 2.3% change in explained variance in student reported rule-breaking behavior, $F$ change $(1,73) = 3.168, p= .079$. There was a trend toward a statistically significant unique contribution of 18.9% to the explained variance in student reported rule-breaking behavior ($p=.079$) for English comprehension.

<table>
<thead>
<tr>
<th>Table 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple Hierarchical Linear Regression Model for Factors Associated with Student Reported Rule-Breaking Behavior</td>
</tr>
</tbody>
</table>

(N=77)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted $R^2$</th>
<th>Change $F$ of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.090</td>
<td>.108</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.388</td>
<td>.216</td>
<td>.186***</td>
<td>$F(2,74)=9.678$***</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Comprehension+</td>
<td>-.189</td>
<td>.106</td>
<td>.023+</td>
<td>$F(3,73)=7.697$***</td>
</tr>
</tbody>
</table>

$F(3,73)=7.697, p<.001$
Total $R^2$ (Adjusted) = .209

***$p<.001$  + = trend toward statistical significance
Even though English comprehension was correlated with rule-breaking behavior reported by the student, it was not correlated with social exclusion reported by the student. Thus, we cannot say that social exclusion reported by the student mediated the relationship between reading and behavior. The overall model reached statistical significance $F(3,73)=7.697, p<.001$ with an Adjusted $R^2$ of 20.9% when including English comprehension (Step 2) in the model.

The other component of the externalizing behavior problem scale discussed above was aggressive behavior. Childhood stress ($r=.333, p<.01$) and social exclusion ($r=.524, p<.001$) were statistically significant and positively correlated with student reported aggressive behavior. English decoding ($r=-.276, p<.01$), English comprehension ($r=-.294, p<.01$), Hebrew decoding ($r=-.284, p<.01$), and Hebrew comprehension ($r=-.223, p<.05$) were statistically significant and negatively correlated with student reported aggressive behavior.

The results of the hierarchical regression equation for student reported aggressive behavior are presented in Table 11, below. Childhood stress and social exclusion (Step 1) contributed 30.2% of the explained variance in student reported aggressive behavior ($p<.001$). The social exclusion variable reached statistical significance ($B=.46, SE=.201, t=4.687, p<.001$), indicating that student reported social exclusion contributed to the variance in student reported aggressive behavior above and beyond the other variables in the model. However, the coefficient for childhood stress reached a trend towards statistical significance.

The second step in the model, English decoding, English comprehension, Hebrew decoding, and Hebrew comprehension, was not a statistically significant
step in the model. None of these variables were individually statistically significant either. Thus, the most parsimonious model included only step one of the equation.

Although each of the reading measures was correlated with aggressive behavior reported by the student, Hebrew decoding was the only reading variable that had even a trend toward a statistically significant correlation with social exclusion perceived by the student. Hence, we cannot say that social exclusion perceived by the student mediated the relationship between reading and behavior. In the next regression equation, the relationship between Hebrew decoding, in particular, and aggressive behavior reported by the student was explored.

Table 11
Multiple Hierarchical Linear Regression Model for Factors Associated with Student Reported Aggressive Behavior

(N=77)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square Change</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Childhood Stress+</td>
<td>.175</td>
<td>.100</td>
<td>.302***</td>
<td>F(2,74)=17.421***</td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.46</td>
<td>.201</td>
<td>.302***</td>
<td></td>
</tr>
</tbody>
</table>

F(2,74)=17.421, p<.001
Total R Square (Adjusted) = .302

***p<.001  + = trend toward statistical significance
The results of the hierarchical regression equation for Hebrew decoding predicting student reported aggressive behavior are presented in Table 12, below. Childhood stress and social exclusion (Step 1) contributed 30.2% of the explained variance in student reported aggressive behavior ($p<.001$). The social exclusion variable reached statistical significance ($B=.446$, $SE=.20$, $t=4.578$, $p<.001$), indicating that student reported social exclusion contributed to the variance in student reported aggressive behavior above and beyond the other variables in the model. The coefficient for childhood stress also reached statistical significance ($B=.202$, $SE=.097$, $t=2.082$, $p<.05$), indicating that childhood stress contributed to the variance in student reported aggressive behavior above and beyond the other variables in the model.

The second step in the model, Hebrew decoding, contributed 1.8% of the explained variance in student reported aggressive behavior, $F$ change ($1, 73) = 4.174, p<.05$. The Hebrew decoding variable ($B=-.195$, $SE=.095$, $t=2.043$, $p<.05$) reached statistical significance, indicating that Hebrew decoding contributed to the variance in student reported aggressive behavior above and beyond the other variables in the model. The overall model reached statistical significance $F(3,73)= 13.503, p<.001$ with an Adjusted $R$ Square of 33%.

Since Hebrew decoding was correlated with externalizing behavior problems reported by the student and achieved a trend toward a statistically significant correlation social exclusion reported by the student, it appears that
social exclusion perceived by the student may have moderated the relationship
between Hebrew decoding and aggressive behavior problems.

### Table 12

Multiple Hierarchical Linear Regression Model for Hebrew Decoding Predicting
Student Reported Aggressive Behavior Problems

\(N=77\)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>(B)</th>
<th>(SE)</th>
<th>Adjusted (R^2)</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress*</td>
<td>.202</td>
<td>.97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.446</td>
<td>.200</td>
<td>.302***</td>
<td>(F(2,74)=17.421***)</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hebrew Decoding*</td>
<td>-.195</td>
<td>.095</td>
<td>.330***</td>
<td>(F(3,73)= 13.503***)</td>
</tr>
</tbody>
</table>

\(F(3,73)= 13.503, \ p<.001\)
Total \(R^2\) (Adjusted) = .330

***\(p<.001\)  *\(p<.05\)

### English Teacher Reported Subscales of
Externalizing Behavior Problems

Concerning English teacher reported rule-breaking behavior, a component
of the externalizing behavior problem scale discussed above social exclusion
\((r=.450, \ p<.001)\) was statistically significant and positively correlated with it.

English comprehension \((r=-.223, \ p<.05)\) was statistically significant and
negatively correlated with English teacher reported rule-breaking behavior.
Childhood stress, English decoding, Hebrew decoding, and Hebrew comprehension were not associated with English teacher reported rule-breaking behavior.

The results of the hierarchical regression equation for English teacher reported rule-breaking behavior are presented in Table 13, below. Social exclusion (Step 1) contributed 21.6% of the explained variance in English teacher reported rule-breaking behavior \( (p<.001) \). The social exclusion variable reached statistical significance \( (B=.437, SE=.109, t=4.003, p<.001) \), indicating that English teacher reported social exclusion contributed to the variance in English teacher reported rule-breaking behavior above and beyond the other variables in the model.

The second step in the model, English comprehension, resulted in a trend towards a statistically significant change in the overall model representing a 2.5% change in explained variance in English teacher reported rule-breaking behavior, \( F \text{ change (1, 64)} = 3.145, p = .081 \). There was a trend toward a statistically significant unique contribution of 19.3% to the explained variance in English teacher reported rule-breaking behavior \( (p=.081) \) for English comprehension. Given that English comprehension was statistically significantly correlated with rule-breaking behavior reported by the English teacher but not with social exclusion, we cannot conclude that social exclusion of the child perceived by the English teacher mediates the relationship between reading and behavior. The overall model reached statistical significance \( F(2,64)=10.116, p<.001 \) with an Adjusted \( R \text{ Square} \) of 21.6%.
Table 13
Multiple Hierarchical Linear Regression Model for Factors Associated with English Teacher Reported Rule-Breaking Behavior

(N=66)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion*</td>
<td>.437</td>
<td>.109</td>
<td>.191***</td>
<td>F(1,65)=16.541***</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Comprehension+</td>
<td>-.193</td>
<td>.109</td>
<td>.025+</td>
<td>F(2,64)=10.116***</td>
</tr>
</tbody>
</table>

F(2,64)=10.116, p<.001
Total R Square (Adjusted) = .216

***p<.001  *p<.05  + = trend toward statistical significance

The following are the results of correlational and multivariate analyses concerning the other component of the externalizing behavior problem scale discussed above, aggressive behavior. Social exclusion (r=.553, p<.001) was statistically significant and positively correlated with English teacher reported aggressive behavior. English comprehension (r=-.336, p<.01) was statistically significant and negatively correlated with English teacher reported aggressive behavior. Childhood stress, English decoding, Hebrew decoding, and Hebrew
comprehension were not associated with English teacher reported aggressive behavior.

The results of the hierarchical regression equation for English teacher reported aggressive behavior are presented in Table 14, below. Social exclusion (Step 1) contributed 29.5% of the explained variance in English teacher reported aggressive behavior ($p<.001$). The social exclusion variable reached statistical significance ($B=.533$, $SE=.097$, $t=5.464$, $p<.001$), indicating that English teacher reported social exclusion contributed to the variance in English teacher reported aggressive behavior above and beyond the other variables in the model.

The second step in the model, English comprehension, contributed 8.1% to the explained variance in English teacher reported aggressive behavior, $F$ change $(1,64) = 9.438$, $p<.01$. The English comprehension variable reached statistical significance ($B=-.298$, $SE=.097$, $t=-3.072$, $p<.01$), indicating that English comprehension contributed to the variance in English teacher reported aggressive behavior above and beyond the other variables in the model. Thus, English comprehension predicts aggressive behavior reported by the English teacher. However, since English comprehension was correlated with aggressive behavior reported by the English teacher yet not associated with social exclusion reported by the English teacher, we may not conclude that social exclusion perceived by the student moderated this relationship between reading and behavior. The overall model reached statistical significance $F(2,64)=20.887$, $p<.001$ with an Adjusted $R$ Square of 37.6%.
Table 14
Multiple Hierarchical Linear Regression Model for Factors Associated with English Teacher Reported Aggressive Behavior

(N=66)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.533</td>
<td>.097</td>
<td>.295***</td>
<td>( F(1,65)=28.622*** )</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Comprehension**</td>
<td>-.298</td>
<td>.097</td>
<td>.081**</td>
<td>( F(2,64)=20.887*** )</td>
</tr>
</tbody>
</table>

\( F(2,64)=20.887, p<.001 \)
Total \( R^2 \) (Adjusted) = .376

***p<.001   **p<.01

Hebrew Teacher Reported Subscales of Externalizing Behavior Problems

Childhood stress \( (r=.245, p<.05) \) and social exclusion \( (r=.387, p<.01) \) were statistically significant and positively correlated with Hebrew teacher reported rule-breaking behavior, a component of the externalizing behavior problem scale discussed above. English decoding \( (r=-.295, p<.05) \), English comprehension \( (r=-.420, p<.001) \), and Hebrew comprehension \( (r=-.236, p<.05) \) were statistically significant and negatively correlated with Hebrew teacher reported rule-breaking behavior. Hebrew decoding was not associated with Hebrew teacher reported rule-breaking behavior.
The results of the hierarchical regression equation for Hebrew teacher reported rule-breaking behavior are presented in Table 15, below. Childhood stress and social exclusion (Step 1) contributed 14.1% of the explained variance in Hebrew teacher reported rule-breaking behavior ($p<.001$). The social exclusion variable achieved statistical significance ($B=.348$, $SE=.129$, $t=2.69$, $p=.01$), indicating that Hebrew teacher reported social exclusion contributed to the variance in student reported rule-breaking behavior above and beyond the other variables in the model. The coefficient for childhood stress did not reach statistical significance.

The second step in the model, English decoding, English comprehension, and Hebrew comprehension resulted in a trend towards a statistically significant change in the overall model representing a 7.6% change in explained variance in Hebrew teacher reported rule-breaking behavior, $F$ change $(3, 49) = 2.691$, $p = .056$. English comprehension reached statistical significance ($B=-.364$, $SE=.158$, $t=-2.304$, $p<.05$), indicating that English comprehension contributed to the variance in Hebrew teacher reported rule-breaking behavior above and beyond the other variables in the model. Since we learned from our correlations discussed above that English comprehension was statistically significantly correlated with rule-breaking behavior reported by the Hebrew teacher, but not associated with social exclusion, social exclusion of the student perceived by the Hebrew teacher did not appear to mediate the relationship between reading and behavior. The overall model reached statistical significance $F(5,49)=4.001$, $p<.01$ with an Adjusted $R$ Square of 21.7%.
Table 15
Multiple Hierarchical Linear Regression Model for Factors Associated with Hebrew Teacher Reported Rule-Breaking Behavior

(N=55)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square Change</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.002</td>
<td>.138</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion**</td>
<td>.348</td>
<td>.129</td>
<td>.141**</td>
<td>F(2,52)=5.437**</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Decoding</td>
<td>-.011</td>
<td>.147</td>
<td></td>
<td></td>
</tr>
<tr>
<td>English Comprehension*</td>
<td>-.364</td>
<td>.158</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hebrew Comprehension</td>
<td>.048</td>
<td>.131</td>
<td>.076</td>
<td>F(5,49)=4.001**</td>
</tr>
</tbody>
</table>

F(5,49)=4.001, p<.001
Total R Square (Adjusted) = .217

**p<.01    *p<.05

Aggressive behavior is the other element of the externalizing behavior problem scale discussed above. Childhood stress (r=.247, p<.05) and social exclusion (r=.499, p<.001) were statistically significant and positively correlated with Hebrew teacher reported aggressive behavior. English comprehension (r=-.265, p<.05) was statistically significant and negatively correlated with Hebrew teacher reported aggressive behavior. English decoding, Hebrew decoding, and
Hebrew comprehension were not associated with Hebrew teacher reported aggressive behavior.

The results of the hierarchical regression equation for Hebrew teacher reported aggressive behavior are presented in Table 16, below. Childhood stress and social exclusion (Step 1) contributed 23.7% of the explained variance in Hebrew teacher reported aggressive behavior ($p<.001$). The social exclusion variable reached statistical significance ($B=.461$, $SE=.122$, $t=3.788$, $p<.001$), indicating that Hebrew teacher reported social exclusion contributed to the variance in Hebrew teacher reported aggressive behavior above and beyond the other variables in the model. But, the coefficient for childhood stress did not reach statistical significance.

The second step in the model, English comprehension, was not a statistically significant step in the model. Thus, the most parsimonious model included only step one. Because English comprehension was associated with aggressive behavior reported by the Hebrew teacher but not with social exclusion, social exclusion of the student reported by the Hebrew teacher did not seem to mediate the relationship between reading and behavior.
Table 16
Multiple Hierarchical Linear Regression Model for Factors Associated with Hebrew Teacher Reported Aggressive Behavior

(N=54)

<table>
<thead>
<tr>
<th>Step/Variable</th>
<th>B</th>
<th>SE</th>
<th>Adjusted R Square</th>
<th>Fit of Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Childhood Stress</td>
<td>.057</td>
<td>.133</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Exclusion***</td>
<td>.461</td>
<td>.122</td>
<td>.237***</td>
<td>F(2,52)=9.367***</td>
</tr>
</tbody>
</table>

F(2,52)=9.367, p<.001
Total R Square (Adjusted) = .237

***p<.001
CHAPTER VI
DISCUSSION AND CONCLUSIONS

This chapter will first present an overview of the study and a discussion of the study’s findings regarding stress, reading, and social factors associated with behavior problems in fifth grade Orthodox Jewish boys. Next, methodological strengths and limitations of the study will be presented. Lastly, implications of the findings will be discussed in relation to theory, research, and practice.

Overview of the Study

This study sought to understand the relationship between reading and behavior problems for fifth grade Orthodox Jewish boys when accounting for the effects of childhood stress. This association was already established for children learning to read English (e.g., Gellert & Embro, 1999). Given that children in the Orthodox community have a dual-language (English and Hebrew) school curriculum, the goal of this research was to see whether this previously established relationship between reading problems and behavior problems in a monolingual situation would be different in a bilingual situation. Specifically, this study looked into whether the relationship between reading and behavior for Orthodox Jewish boys was domain specific. That is, did English reading difficulties manifest themselves in English teacher reports of behavior problems
in the English classroom and did Hebrew reading difficulties manifest themselves in Hebrew teacher reports of behavior problems in the Judaic studies classroom? Further, based on the social function that language and literacy play, the role of social exclusion of these children as a mediator or moderator of the relationship between reading and behavior was explored.

Based on the research objectives, the sample included 77 fifth grade boys, each attending a Modern Orthodox Jewish day school in the Metropolitan New York area. After obtaining written consent from parents and teachers and oral assent from students, students were tested individually in English decoding, English comprehension, Hebrew decoding, and Hebrew comprehension. In addition, students were asked to complete a self-report of childhood stressors and a self-report concerning their behavior. Each student’s English teacher and Hebrew teacher were asked to complete separate reports of student behavior.

Data analyses confirmed a relationship between reading and externalizing behavior problems in general. However, the hypothesis that such a relationship would be specific to the domain in which a reading problem resided was not supported. Nonetheless, hierarchical multiple regression models substantiated the claim that social exclusion, as perceived by the student, played a mediating role in the relationship between Hebrew decoding and externalizing behavior problems reported by the student. Further, such a perception of social exclusion also moderated the relationship between Hebrew decoding and aggressive behavior reported by the student. In addition, English comprehension predicted externalizing behavior problems and aggressive behavior reported by the English
teacher when accounting for social exclusion reported by the English teacher. Additionally, English comprehension predicted externalizing behavior problems reported by the Hebrew teacher when accounting for childhood stress and social exclusion reported by the Hebrew teacher. The following section presents interpretations of the data in light of the study’s research questions and hypotheses.

**Differences in Social Exclusion**

The study’s first research question considered whether those children who were socially excluded also displayed higher levels of externalizing behavior than those who were not socially excluded. Independent sample t-tests (social exclusion by externalizing behavior) were used to explore this question. They revealed statistically significant differences in externalizing behavior problems for student, English teacher, and Hebrew teacher reported high and low social exclusion. Empirical data from other researchers have also found significant behavior differences related to social standing. Hartup (1993) and Cichetti and Bukowski (1995) found peer exclusion to be associated with externalizing behavior, including aggressive and disruptive behavior. In contrast, peer acceptance was associated with positive outcomes, such as better mental health and achievement (Masten & Coatsworth, 1995).

Similarly, Russell and Blumenthal (2000), based on the experiences of teachers in Jewish schools and mental health professionals who work with Orthodox Jewish children exhibiting problem behaviors, reported the following:
The *socially rejected child* is at particular risk for later problems. Social skills are among the most important predictors of later success in life. Children rejected by peers are, as adolescents, at particular risk for seeking acceptance among more marginal groups including those who rebel against their families, communities and/or religious practices (Russell & Blumenthal, 2000, p. 2).

Indeed, Orthodox Jewish community continuity appears to depend, at least in part, on making those children who are marginalized, more a part of the community. Although other factors may lead to social exclusion, this study considered the role of reading in that process.

While Coleman (1988) found that children with positive peer relationships (i.e., more social capital) generally succeeded in school, Tomblin et al. (2000) found that the causal relationship went in the opposite direction (i.e., reading problems cause behavior problems). Accordingly, in the current study, the marginalization experienced by children seems to be a result of Hebrew decoding difficulties; such social exclusion may then lead to externalizing behavior problems. The following sections will deal with the factors associated with externalizing behavior problems and the potential predictors of such behaviors.

**Relationship Between Reading and Other Factors**

The second research question dealt with the relationship between reading and childhood stress, social exclusion, and externalizing behavior. It was expected, in general, that students with low reading scores would report high levels of childhood stress, externalizing behavior problems, and social exclusion.
Childhood Stress

Based on the ecological approach to development espoused by Bronfenbrenner (1979, 1986) and the related theory of Keating and Hertzman (1999), that the social conditions in which individuals live affect development, it was expected that high levels of childhood stress would relate to reading difficulties. Indeed, those children who suffered from particular non-reading related stressors (e.g., parental conflict, change in family structure, etc.) were found to have higher levels of English comprehension difficulties. Although just a trend toward significance, these children also tended to have English decoding issues. This corroborates the findings of previous researchers, such as Smart, Prior, Sanson, and Oberklaid (2001) who found family factors to relate to persistent reading difficulties.

Childhood stress was not associated with Hebrew reading, though. Such a finding seems to be inconsistent with Belsky’s (1984) addition of the individual’s ontogeny (i.e., religious/cultural background) to the ecological approach to development. That is, the religious and cultural background of Jews includes the use of the Hebrew language (see for example Schiff, 1996). An expectation to read Hebrew could have logically been thought to influence both childhood stress and reading ability. Such a hypothesis was not substantiated by these findings. Because Hebrew is the second language for these children, only formally taught beginning in school, it could be that family and community factors play less of a role in the development of Hebrew decoding and comprehension skills. Of course, this is an empirical question for future consideration.
Externalizing Behavior

As anticipated, students with lower reading scores generally reported higher levels of externalizing behavior problems than those students with higher reading scores. This was the case for English decoding and comprehension, as well as for Hebrew decoding and comprehension. English teacher reporting of externalizing behavior problems was associated with English decoding. These findings are consistent with other research on this association. For example, Kellermann et al. (1996) found a link between delinquency and criminal behavior with poor school achievement. In addition, Nigg, Hinshaw, Care, and Treuting (1998) found that students with Attention Deficit Hyperactivity Disorder (ADHD) had higher rates of reading problems and Pisecco, Baker, Silva, and Brooke (1996) found that students with reading problems had higher rates of ADHD. (See Gellert and Elbro, 1999, Cornwall and Bawden, 1992, Hinshaw, 1992 for reviews of the research on the correlations between behavior problems and reading problems).

However, Hebrew teacher reporting of externalizing behavior problems was not associated with Hebrew reading – neither decoding nor comprehension. Rather, English comprehension was correlated with Hebrew teacher reporting of externalizing behavior problems. This finding appears to be consistent with the understanding of second language literacy acquisition purported by Cummins (2000).

Cummins’ interdependence hypothesis (also referred to as the common underlying processes hypothesis) suggests that “academic language proficiency
transfers across languages such that students who have developed literacy in their L1 will tend to make stronger progress in acquiring literacy in L2” (Cummins, 2000, p. 173). Accordingly, we would expect there to be a strong relationship between English reading comprehension and Hebrew reading comprehension. However, although a relationship was found in the present study, it was not strong. This finding may be explained by the short-circuit hypothesis (Bernhardt & Kamil, 1995; Cziko, 1978). In discussing this phenomenon, Hulstijn (1991) states: “L1 reading performance can only begin to correlate substantially with L2 reading after knowledge of L2 has attained a threshold” (p. 9). Clarke (1979) refers to this second language threshold as a language ceiling. In the case of the students in this study, a weakness in second language ability may have “short-circuited” the first language reading knowledge from being applied to Hebrew reading skills directly. Thus, it appears that because students and teachers attempt to circumvent this problem in the Judaic studies classroom by utilizing English language for instruction and translation of the Hebrew text, the requisite comprehension skills in the Judaic studies classes for the students in the present study may have been based in English. Furthermore, even in those classes in which Hebrew is the language of oral instruction, students may still be “comprehending” Hebrew texts through translation into English; they “think” about the texts and understand the texts in English. Accordingly, English comprehension, and not Hebrew reading, was related to behavior in the Judaic studies setting represented in this study.
Social Exclusion

While Hebrew reading did not relate to externalizing behavior reported by the teachers, Hebrew decoding and comprehension were statistically significantly associated with social exclusion reported by the English and Hebrew teachers, independently. Hence, within the Jewish school, as is the case in the community at large, Hebrew plays a significant role in forging group identity. As suggested by Schiff (1996, 1997) and others, Hebrew is the cornerstone of the Jewish identity and thus forms the basis for Jewish communal continuity. Hebrew language is the key to the millenia long tradition of the Jewish people. It permeates communal prayer, learning, and living. Those without proficiency in Hebrew literacy are by definition excluded from many communal events in the Orthodox Jewish community.

Student perceptions of social exclusion related slightly differently to Hebrew reading. It may be that the measure of student perceptions of social exclusion is a better gauge of social problems than the teacher reports of social exclusion because teacher observation is not an adequate tool to know the full extent of social exclusion.

While it is true that understanding Hebrew allows one to connect to the history of the Jewish people in meaningful prayer, learning, and living, Hebrew decoding is a skill without which such prayer, learning, and living cannot be realized. Thus, Hebrew reading weaknesses in the form of decoding difficulties appears to target the individual’s view of his or her connection to the community. Without an ability to participate fully in communal prayer services an individual
unable to decode Hebrew may feel left out. Further, in Judaic classrooms in which students are regularly asked to individually and in groups read sacred texts aloud, students who cannot perform such skills may perceive that they are not part of the community of learners. Likewise, in the home, in which countless blessings are said and other religious acts performed, the individual who is unable to read the words of Hebrew may lack the connection to the community and the larger history of the Jewish people. Therefore, it was not surprising to have found that Hebrew decoding tends to be associated with student perceptions of social exclusion.

**Student Reported Behavior Problems**

Results of the hierarchical multiple regression equation for student reported externalizing behavior problems substantiated the hypothesis that social exclusion mediates the relationship between Hebrew decoding and student reported externalizing behavior problems when accounting for childhood stress. That is to say, student reports of externalizing behavior problems were predicted by social exclusion above and beyond the effects of childhood stress. This social exclusion may be a result of various factors, including Hebrew decoding problems. Similarly, the hierarchical multiple regression equation for student reported aggression, a component of the externalizing behavior problems scale, indicated that social exclusion moderated the relationship between Hebrew decoding and student reported aggressive behavior when the effects of childhood stress were controlled. Thus, Hebrew decoding problems predicted aggressive
behavior, but did so more strongly when perception of social exclusion was involved. Indeed, Twenge et al. (2001) found that social isolation is a cause of aggression. While Russell and Blumenthal (2000) listed learning problems and social rejection as parallel risk factors for behavior problems, the present study clarifies this relationship.

The practical ramifications of these findings relate directly to potential interventions. Currently, most Orthodox Jewish day schools have pull-out resource room interventions for students who have difficulty with early Hebrew literacy. Considering that externalizing behavior problems and aggressive behavior reported by the student were predicted by social exclusion perceived by the student, removing the student from a classroom for remedial reading instruction may well be another source of social exclusion in addition to the Hebrew decoding difficulty, itself. Further, in Orthodox Jewish day schools, students who exhibit aggressive behavior or other externalizing behavior problems are often separated from their peers without practical recognition of the role that social exclusion plays in the problem behavior. Thus, school discipline and academic interventions may well exacerbate the behavior problems associated with Hebrew reading difficulties.

In contrast, Barrera et al. (2002) found a tertiary intervention, including parenting classes, social skills training for children, and supplementary reading instruction, to be successful in reducing students’ (K – 3) aggressive behavior. Likewise, in the school setting, Sugai, Kame’enui, Horner, and Simmons (1998) suggest a school-wide systems approach to both behavior management and early
literacy. Interventions for social skills and reading skills need not further isolate students from their peers. Rather, understanding the path involved in the manifestation of behavior difficulties by way of social exclusion, mandates more than merely supplemental Hebrew reading review for those finding the reading process challenging or removal from class for those whose behaviors are difficult.

In addition, these findings are relevant beyond initial Hebrew reading instruction. Schools begin to expose students to text without vowels throughout middle to late elementary school. Many students continue to struggle in middle school, high school, and beyond with this skill. As discussed earlier, the orthography of Hebrew with vowels is shallow. That is, for Hebrew with vowels there is generally a regular sound-symbol correspondence. However, when the vowels are not present, the orthography is deep; there is not a regular sound-symbol correspondence. Educators must be cognizant of the potential difficulties students will have due to this transition to decoding text without vowels. This transition presents further opportunities for students to feel socially excluded if they have difficulty with such decoding.

It must be emphasized that these findings are based on student perceptions of both social exclusion and behavior problems. Of particular importance is the realization that the source of reporting of social and behavior problems is significant. Indeed, the current study found only small intercorrelations between the student, English teacher, and Hebrew teacher report of behavior and only moderate intercorrelations between the three reports of social exclusion. Accordingly, those in positions to deal with behavior and social problems in
schools must take into account the source of information when considering possible causes of these behaviors.

**Teacher Reported Behavior Problems**

In contrast to the role of social exclusion in mediating or moderating the relationship between reading and behavior for student perceived social exclusion and behavior problems, English comprehension predicted behavior problems reported by both the English and Hebrew language teachers when accounting for social exclusion and childhood stress. Specifically, the hierarchical multiple regression equations concerning English teacher reports of externalizing behavior problems and aggressive behavior, each indicated that English comprehension predicted these criteria when holding social exclusion and childhood stress constant. That is to say, above and beyond the effects of social exclusion and childhood stress, English comprehension explained a statistically significant portion of the variance in externalizing behavior problems and aggressive behavior reported by the English teacher. Although these behavior problems were associated with social exclusion, English comprehension was not. Thus, English comprehension problems and social problems reported by the English teacher both played a role in explaining the behavior problems in the English language classroom.

Like students in the general population, boys attending Modern Orthodox day schools appear to act out when suffering from academic difficulties. In the English language classroom, English reading comprehension is essential to
academic success. Not having those abilities predicted behavior problems that occurred in the English language classroom. These findings are in line with Lindsay and Dockrell (2000) and Tomblin et al. (2000), who discuss this unique role that English reading comprehension plays in behavioral outcomes. Indeed, Kellam et al. (1998) found that effective reading instruction reduced teacher-rated aggression.

In addition, it was hypothesized that Hebrew reading would relate to Judaic classroom behavior. However, this prediction was not substantiated. On the contrary, poor English reading comprehension predicted externalizing behavior problems in the Judaic studies classroom when the effects of childhood stress and social exclusion reported by the Judaic studies teacher were controlled.

As suggested earlier, students in the Judaic studies classroom may comprehend Hebrew texts only after translating them to English. This may imply that reading comprehension in the Judaic studies classroom in a school in which the first language of the population is English, may rely heavily on English reading comprehension skills even when reading Hebrew texts. Further, students may not necessarily relate the texts that are studied in these classrooms to their lives. However, through English discussions and deliberations, both personal and public, students may relate to these Hebrew texts better. Again, the comprehension of these texts would then seem to be based on English comprehension and not heavily rely on Hebrew comprehension skills.

Replicating the current study on a population for whom Hebrew is the first
language and English the second (i.e., Israelis) could empirically test such a hypothesis.

Methodological Strengths and Limitations of the Study

A strength of the study was that it utilized several different measures of behavior problems, not only student self-reports. While student self-reports of behavior allowed the question concerning student perception to be answered, teacher reports of behavior allowed for questions specific to a particular classroom to be answered.

Although this study has produced results that have implications for theory and future research on reading and behavior, a few methodological concerns limit the generalizability of the work. Methodological problems include the use of a measurement based on a revised Holmes-Rahe scale and Hebrew reading tests that were not scrutinized for reliability or validity. In addition, this study used a convenience sample that was less than the a priori sample size calculated according to Cohen (1988). However, significant effects were still found with this sample size. Finally, the current study controlled for only a limited number of factors that may impact reading and behavior in the regression models. Each of these issues will be addressed in turn.

Although the revisions of the Holmes-Rahe scale only involved the removal of culturally irrelevant items and/or clarification of language, such changes may have negatively impacted the reliability and validity of the instrument. With regard to the Hebrew reading tests, only face-validity
information was available. In addition, for the Hebrew passage comprehension subtest, students chose from three options for each blank in the cloze formatted paragraphs. However, in the English version, students needed to generate responses independently based on context. Further, the Hebrew tests had fewer items than the parallel English reading measure. The Hebrew word identification subtest had 60 items compared with 106 on the English version; the Hebrew passage comprehension had 20 items compared with 68 on the English version. While z-score transformations allowed for comparison, more closely parallel measures would have been preferable. In defense of the use of these measures, these Hebrew reading tests are the only Hebrew reading measures in this format. Furthermore, they are among the very few Hebrew reading measures developed and used in studies of Jewish day school students studying Hebrew as a second language. As the field of Hebrew reading research develops, more measures of the skills investigated in this study will be produced.

Concerning the sample, the study did not focus only on students who had diagnosed reading or behavior problems. Rather, a broad sample including those with and those without reading or behavior problems was obtained. Previous studies for reading and behavior interventions (e.g., Barrera et al., 2002) have successfully targeted only a population of students with reading and/or behavior difficulties. While this does not necessarily follow the systems approach to behavior promoted in this study, it allows for a more robust analysis of the population in question.
Because the goals of this study included studying the relationship between reading and behavior for a specific population, the Modern Orthodox Jewish community, the results cannot be generalized beyond that community. Perhaps children in communities in which a heritage language functions (e.g., Greek in certain Greek Orthodox communities, Spanish in certain communities in New York City, etc.), have similar experiences and outcomes. Future research may wish to pursue this question.

Further, within the Jewish community, schools were not randomly selected and students were not randomly chosen. This raises questions as to whether the students who did participate were significantly different in their reading abilities and perceptions of behavior than those who chose not to participate or those whose parents did not consent to student participation.

The small sample size of seventy-seven may have been a limitation of the study, as well. A larger sample would have improved the chances of detecting the roles of each variable in the hierarchical multiple regression analyses. While the findings in this study have been generally consistent with anecdotal findings within the Orthodox Jewish community (see Russell & Blumenthal, 2000) and empirical data from similar studies in the general population (e.g., see Tomblin et al., 2000), a larger sample size would be appropriate for future studies.

Although family, social, and learning problems are risk factors for antisocial behavior (Rutter 2000), these factors each include more specific risks. As Rutter (2000) cautions, though, “the main problem in testing causal hypotheses is not the possibility that all causal factors have not been considered
but, rather, that exposure to environmental risks is not randomly distributed” (p. 380). Hence, factors such as socioeconomic status, education level reached by parents, and intelligence may play a specific role in relation to both reading and behavior.

**Future Directions**

Researchers have found English reading to be related to behavior problems in the general population (Gellert & Elbro, 1999; Smart, Sanson, & Prior, 1996; Cornwall & Bawden, 1992; Hinshaw, 1992; Kellermann et al., 1996; Lyytinen et al., 2001). However, this study considered this relationship for children learning to read two languages simultaneously: English (L1) and Hebrew (L2). By considering the relationship between reading in each language and behavior problems in the English and Hebrew language classrooms, this study concluded that English comprehension predicted externalizing behavior problems and aggressive behavior in the English language classroom and externalizing behavior problems in the Hebrew language class. Future studies could empirically test the hypothesis that it is the first language that predicts behavior problems in different classroom settings, not the language of that setting, by considering the relationship between reading and behavior on a population in which Hebrew is the first language and English the second (i.e., Israelis).

Although this study focused only on the Modern Orthodox Jewish community, the findings may have implications beyond that community. Indeed, Schers (1999), Geva and Wade-Woolley (1998), Alexander (1999), and others
writing about the general Jewish population have stressed the importance of Hebrew language literacy and the strong impact it has on identity formation. Future consideration of the effects of Hebrew reading difficulties in communities other than the Modern Orthodox one is essential to better understand this phenomenon. Studies need to look at the relationship between reading and behavior for students in each type of school, such as those delineated by Schick (2000), including Centrist Orthodox, Chabad, Chassidic, Community, Immigration and Outreach, Reform, Solomon Schechter (Conservative), Special Education, Yeshivas, and the Modern Orthodox. Results could be considered within each micro community and within the larger community through comparison. In addition, the effects of reading problems should be considered at various key grades, such as at the end of first, fourth, eighth, and twelfth grade.

One potential difference between Orthodox and non-Orthodox communities, for example, may involve the public role of women. This study demonstrated that social exclusion mediated the relationship between Hebrew decoding and externalizing behavior problems for boys. It was explained that Hebrew decoding is often a skill needed at communal gatherings, such as during prayer services and learning groups. However, in the Orthodox community, when a boy becomes a full-fledged member of his community (Bar Mitzvah), he is expected to be competent to lead prayer services, read Torah publicly, and to make blessings in group settings. This is not the case for most girls in this community. As suggested by Russell and Blumenthal (2000), girls may respond to reading challenges by internalizing behavior problems, as opposed to boys
who, as we have seen, tend to externalize behaviors. But, future studies of a relationship between English and Hebrew reading and behavior, may not find Hebrew decoding to be related to internalizing behavior problems for girls, since such reading problems may not relate to perceptions of social exclusion by these girls.

In addition, childhood stress was found to be unrelated to Hebrew reading but related to English reading. The timing of literacy acquisition was hypothesized to be the reason for these findings. Future studies may consider the different roles that the home and the school play in the early acquisition of Hebrew as a second language, different than that of English reading acquisition. It was suggested, above, that Hebrew emergent literacy begins at school-age for most students attending Jewish days schools, while English literacy skills begin when English language is first spoken to the child. Further, children are often read to in English, almost from birth. However, these same children, who will grow up to attend Jewish day schools, are usually not exposed to Hebrew books in the pre-school years. Limited exposure to Hebrew language through home-based rituals (e.g., blessings over food) does not provide the same foundation for literacy, as does exposure to developmentally appropriate literature. Thus, the role of the home in relation to Hebrew reading may be less than that for English reading.

Lastly, we have seen the role that social interaction and reading play in behavioral outcomes for Modern Orthodox Jewish children. Without early intervention assessment tools, schools will be unable to properly diagnose reading
difficulties and stave off the potential effects of these problems. When Sugai et al. (1998) discuss this problem for English reading in the general population, they suggest a school-wide behavioral program, as well as a school-wide literacy program. Included in such a literacy program would be dynamic (i.e., skill-based) assessments of indicators of early literacy, research based reading instruction for everyone, and research based customized interventions for children with reading issues in integrated learning environments. Unfortunately, dynamic assessments of Hebrew reading still need to be developed and scrutinized for reliability and validity. Further, Hebrew curriculum and instruction practices grounded in empirical studies of Hebrew reading and second language pedagogy need to be validated for effectiveness. Finally, interventions for struggling Hebrew readers that do not further exclude these children socially must be developed, tested for effectiveness, and implemented.

Russell and Blumenthal (2000) write: “every interaction a parent or educator has with a child is an opportunity to promote his or her sense of being a valuable member of our community” (p. 1). The community has largely misunderstood what the content and context of this interaction should be. The Jewish community must respond to the findings in this study by supporting the research and development of Hebrew reading assessments and pedagogical techniques for the beginning reader and the challenged reader so that schools may intervene, if not prevent, Hebrew reading difficulties, social rejection, and behavior problems.
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APPENDIX A

RISK FACTORS OF YOUTH IN THE ORTHODOX JEWISH COMMUNITY
(RUSSELL & BLUMENTHAL, 2000)

Child risk factors
- *The dysregulated child:*
  - Attention deficit disorder
  - Oppositional defiant disorder
- *The depressed/anxious child:*
  - Depression
  - Perfectionism or anxiety
  - “out of synch” with average peer behavior
- *The child feels like a failure because of:*
  - Learning disability
  - Dyslexia
  - Language disorder
  - Well below average academic ability
  - Socially rejected

Family risk factors
- *Lack of family cohesiveness*
  - Child receives minimal attention
  - Parents have poor parenting skills
- *High expressed emotion in home*
- *Serious inconsistency in parenting.*
  - Mood dominated disciplinary style
  - Inconsistency between parents
  - Parental mental illness or substance abuse.
- *Marital or family crisis*
  - Severe marital conflict
  - Divorcing or divorced.
  - Death or serious illness.
- *Reconstructed family.*
  - Child member of blended family
  - Child in foster care
  - Child is adopted

Environmental risk factors
- *History of abuse*
  - Sexual abuse
  - Physical abuse
- *Demands for academic success*
- *Chronic stress.*
  - Major medical problem in family
  - Serious economic problem in family
  - Family relocation
APPENDIX B

EQUATION FOR DETERMINATION OF SAMPLE SIZE ($N$)

\[
N = \frac{\lambda (1 - R^2)}{R^2}
\]

Equation to Determine Ideal Sample Size

\[
N = \frac{14.3 (1 - .10)}{.10} = 129
\]

Equation to Determine Effect Size Based on Actual Sample

\[
N = \frac{14.3 (1 - R^2)}{R^2} = 77
\]

$R^2 = 15.66$
APPENDIX C

LETTER TO SCHOOLS REQUESTING PARTICIPATION

Date

Name of School
Address of School

Dear Principal:

I would like to invite (name of school) to take part in a study to learn more about the potential connection between reading and behavior problems amongst Orthodox Jewish boys. Currently, there is an ever-growing population of our children who are exhibiting problem behaviors, including dropping out of school. The purpose of this study is to understand the role that reading difficulty may play as a risk factor connected to these problem behaviors.

This study will be conducted by Rabbi Scott Goldberg, M.S. Ed., Doctoral Candidate in the Department of Applied Psychology at New York University as part of his doctoral dissertation work under the supervision of Bruce Homer, Ph.D., Department of Applied Psychology.

If your school agrees to be a site for this study, we will ask fifth grade boys (and the parents of these students) for consent to participate in approximately 15 minutes of English and Hebrew reading testing, as well as to fill out a self-report concerning the individual student’s experiences and behavior. Teachers of these fifth grade boys will be asked to consent to complete a teacher questionnaire concerning individual student behavior. Participation in this study is voluntary. Faculty or students may refuse to participate or withdraw at any time without penalty. Confidentiality of our research records will be maintained to the extent provided by law. There are no known risks associated with participation in this research beyond those of everyday life. Although participants will receive no direct benefits, this research may help us understand the reading and behavior problems of some of our students.

In order to begin the study, we require a letter on school stationery stating that we have approval to conduct the study at your institution. You may send this directly to my attention at 57 Idaho Street, Passaic, NJ 07055. If you have additional questions you may contact me at 973-779-0327, sjg230@nyu.edu, or Dr. Bruce Homer, 212-998-5564 or at 239 Greene Street, 5th floor, New York, NY 10003. Thank you for your time.

Sincerely,

Scott Goldberg
APPENDIX D

BRIEFING SCRIPT

It is great to be here at (name of school). I am Scott Goldberg. I am learning in school also. One of the things that I want to learn about is how students read and behave. I am doing a study to understand this better.

Since you are in a school learning both English and Hebrew, I would like to see how you read in English and Hebrew. I would also like to ask you about how you act – for example, “Do you get along with other kids?”

If you say that you want to do this, I will ask you to read some words and some stories in English and Hebrew for about 15 minutes. I will then ask you to answer some questions about how you act and about some things that might have happened to you in your life – it should take about 15 minutes to do that too. You may skip any questions that you do not wish to answer.

It is your choice to do this or not to do this. Even if you say that you want to do this now, you may change your mind at any time. You are not being graded on this for school, so if you say yes or no your grades will not change. Everything I write down about your reading and all of your answers to the questions will be kept in a locked cabinet – only I will have the key.

If you want, when we are done with this study, you can ask to get a copy of what I learned.

Do you have any questions?

[Each student will be given the Parent/Guardian Consent Form.]

Please take this home and discuss this with your parents. If you choose to help, bring the permission slip back to school signed.

I will come back to the school a different day to do the reading testing for those who choose to help.

Thanks.
PARENT/GUARDIAN CONSENT FORM

Your son has been invited to take part in a study to learn more about the potential connection between reading and behavior problems amongst Orthodox Jewish boys. Please note that this invitation in no way should be construed as an indication that your son has such issues. Rather, we need to have a broad group of students, including those without known reading and behavior problems in order to learn the most about these phenomena. As you may know, there is an ever-growing population of our children who are exhibiting problem behaviors, including dropping out of school. The purpose of this study is to understand the role that reading difficulty may play as a risk factor connected to these problem behaviors.

This study will be conducted by Rabbi Scott Goldberg, M.S.Ed., Department of Applied Psychology, New York University as part of his doctoral dissertation work under the supervision of Bruce Homer, Ph.D., Department of Applied Psychology. As part of the study, your son would volunteer approximately 30 minutes – about 15 minutes for English and Hebrew reading testing, as well as roughly 15 minutes to complete a self-report concerning his experiences and a questionnaire about his behavior. Your son’s religious and secular studies teachers will be asked to complete a teacher questionnaire concerning your son’s behavior.

Participation in this study is voluntary. Your son may refuse to participate or withdraw at any time without penalty. Nonparticipation or withdrawal will not affect your child’s grades or academic standing. You may request, if you wish, to receive a copy of the findings of the study. Understand that the researchers will not report any information using any identifying information. Only group data will be made available from this study; individual results will not be reported. All responses will be kept confidential with the following exception: the researcher is required by law to report to the appropriate authorities, suspicion of harm to children or to others. In the event that your son requests psychological assistance, he will be referred to the school psychologist or social worker. There are no known risks associated with your son’s participation in this research beyond those of everyday life. Although your son will receive no direct benefits, this research may help the investigator understand the reading and behavior problems of some of the students in the Jewish community.

If you have questions or wish to report a research-related problem, you may contact Scott Goldberg at 973-779-0327, by email at sjgoldbe@ymail.yu.edu, or Dr. Bruce Homer, 212-998-5564 or at 239 Greene Street, 5th floor, New York, NY 10003. For questions about your child’s rights as a research participant, you may contact the University Committee on Activities Involving Human Subjects, Office of Sponsored Programs, New York University, 212-998-2121.

Please sign one copy of this form, indicating that you consent for your son to participate in this study. Keep the other copy for your records. Thank you.

_______________________ ___________________________          ___________
Parent/Guardian Name       Parent/Guardian Signature                     Date
APPENDIX F

ORAL ASSENT PROCEDURE

[Each boy, whose parents gave permission for him to participate in this study, will have the following assent procedure read to him individually.]

STUDENT ASSENT PROCEDURE

[Each boy, whose parents gave permission for him to participate in this study, will have the following assent procedure read to him individually.]

I am Scott Goldberg. You may remember that I came to talk to your class about helping me to learn about how students read and how they act.

Since you are in a school learning both English and Hebrew, I would like to see how you read in English and Hebrew. I would also like to ask you about how you act – for example, “Do you get along with other kids?”

If you say that you want to do this, I will ask you to read some words and some stories in English and Hebrew for about 15 minutes. I will then ask you to answer some questions about how you act and about some things that might have happened to you in your life – it should take about 15 minutes to do that too. You may skip any questions that you do not wish to answer.

It is your choice to do this or not to do this. Even if you say that you want to do this now, you may change your mind at any time. You are not being graded on this for school, so if you say yes or no your grades will not change. Everything I write down about your reading and all of your answers to the questions will be kept in a locked cabinet – only I will have the key.

Do you have any questions?

Do you want to participate in this study?
    [If yes, then I will begin the testing procedures.]
APPENDIX G

REVISED HOLMES/RAHE SCALE FOR CHILDREN

(Explanations of revisions, including the original language of the scale, are written in italics and put in parentheses.)

Directions: This is a list of experiences that some children have had in their lifetime. You might have experienced some or none of them. Check a box that is an event you have experienced.

(“Getting married” and “unwed pregnancy” were removed from the scale)

- Death of a parent
- Acquiring a visible deformity  (Example: Did you get a scar on face?) – (example added)
- Divorce of parents

(“Fathering an unwed pregnancy” was removed from the scale)

- Becoming involved with drugs or alcohol
- Jail sentence of parent for over one year
- Marital separation of parents
- Death of a brother or sister
- Change in acceptance by peers (kids your age) – (definition of peers added)

(“Pregnancy of unwed sister” was removed from the scale)

- Discovery of being an adopted child
- Marriage of parent to step-parent
- Death of a close friend
- Having a visible congenital deformity  (Example: Were you born with a scar on your face?) – (example added)
- Serious illness requiring hospitalization
- Failure of a grade in school
- Not making an extracurricular activity
- Hospitalization of a parent
- Jail sentence of a parent for over 30 days

(“Breaking up with boyfriend or girlfriend” was removed from scale)

- Suspension from school
- Birth of a brother or sister
- Increase in arguments between parents
- Loss of job by parent
- Outstanding personal achievement
- Change in parent’s financial status

(“Accepted at a college of your choice” and “being a senior in high school” were removed from scale)

- Hospitalization of sibling
- Increased absence of parent from home
- Brother or sister leaving home
- Addition of third adult to family
- Becoming a Bar Mitzvah – (changed from “Becoming a full fledged member of a church”)
- Decrease in arguments between parents
- Decrease in arguments with parents
- Mother or father beginning to work
## APPENDIX H

HEBREW READING MEASURES

*(Size reduced for inclusion here.)*

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<td>2.</td>
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<td>12.</td>
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</table>
I.D. ___________________ Score ________

1
לא yönelik ביצת תכשיט.

ologi שלושה נציגים בכתש. (ologi. שולה. עלון)

שהמה בכתש נтельные לכתש انמקה:

שלשה (ologi. עלון. אוניות)

אני רקתי. אני ת🐴הת שלושה ק imprimir.

מלוחה כתשה.

2
למענה תכתת חותם נשפץ יםonalת.

 than כבש בטאת. (than. שמע, שמע)

מלוחה ט Pearce לא להפוך אל השפה. תתך.

למענה ____________ כתש משחתים. (כתשה. כתש. כתשה)

אמוא הכתשה משחתים. כתשה. השפה: ____________ (ologi. שורה. אוניות)

סוף סכליות. כתשה אוניה כתשה.

אייר בטוליה ____________况且나. (ologi. לישון, גרובינ)

3
ת:boolean שיש. קוגים פור אוניה קולם.

מי בלא? ____________ (ותר. קטחה. אוניות)

ום שקפת,verige שביתת עם משבה שקפת.

מי ____________ בא? מי נשא הרוח בפריט? (מי. בה. לא)

וכו שישה ____________ (ותר. ספירה. המשים)

וכו לא ____________ ____________ ויהי והורה. (ללא, אוניה. ב)
4.

יתר ונודע עЂברם מוכיס תמאו. על הדםומו זה כלוה.

יתר ונודע עЂתרים תמאו.__________ (אבקתא עЂברם ומקלט)\\n
יתר ונודע עЂתרים תמאו.__________ (מקלט עЂתרים מקלט)

וז יש בכיסים wipe מערבות בין.

יתר ונודע את הספכיה אופרות לכלמו (לך פלח

({*מקלט עЂתרים מקלט)}

אתם כמי __________ (אפיקר א设计器 מקלט)

5.

אפקה שמה את המפור מקלט על משכלות

נכבד והתרד ה__________ נציב על המפור יציל אפקא (יוד קוזג שוק)

אפקא מקיימה את ה__________ שלחה ( >:: תריה עЂוק)

אפקא אינטרנט "אפקה המפור __________ " (לך שמח ליה כמות)

הפור לא על המפרק. הפרבר לא __________ חיסולות (לך. בכ)

אפקא בורה לא אפקא:

"אפקה המפור על משכלות __________ (ים. אפק כמות)

נfrared חיסול עילוי.