

PSYCHOMETRIC PROPERTIES OF THE NORBECK SOCIAL SUPPORT  
QUESTIONNAIRE

By

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Social support is a frequently measured construct though many existing measures of the construct are lacking in psychometric support. The Norbeck Social Support Questionnaire (NSSQ) is a promising, multidimensional measure of social support that has been shown to be highly reliable with moderate validity in nursing students. Perceived support of mothers with children at high risk for or with ADHD diagnoses was assessed using the NSSQ at three time points (Time 1 n = 266, Time 2 n = 207, Time 3 n = 49). The measure demonstrated high internal consistency but low stability across two- and four-year intervals. Convergent and predictive validity of the NSSQ was examined using measures of caregiver strain and general mental well-being. Analyses produced weak relationships, suggesting that while the NSSQ demonstrates internal reliability, it does not adequately relate to the theoretically linked constructs of strain or general psychological well-being. These findings may reflect a need to include information about network characteristics in psychometric analyses. Future revisions may also be needed to include other relevant types of support.

## CHAPTER 1 INTRODUCTION

Although definitions of social support vary, common to most definitions is the exchange of assistance or nurturance and emotional support between two or more individuals (Tietjen, 1985). Social support is related to better health outcomes across a multitude of conditions (e.g., Miller, McMahon, & Garrett, 1989; Rice & Longabaugh, 1996; Dormire, Strauss, & Clarke, 1989), including parent and child mental health (Hanson, 1986). The literature includes findings on social support and parental outcomes such as maternal depression (Cairney, Boyle, Offord, & Racine, 2003), as well as general child emotional and social outcomes (Devall, Stoneman, & Brody, 1986), and reveals a strong link between psychological well-being and satisfaction with perceived support systems. Within families, there are clear connections between parents' social support systems and parenting stress (Fischer, 1990; Bussing, et al., 2003).

Despite the growing body of research on social support, researchers have yet to establish reliable and valid instruments to measure the construct. A barrier to the creation of adequate measures is the variability not only in the definition of support but in the function of support for different populations. One such population is parents of children with attention deficit hyperactivity disorder, a type of externalizing disorder associated with increased activity levels, inattention, and impulsivity (4<sup>th</sup> ed.; *DSM-IV*; American Psychiatric Association, 1994). These parents are known to experience high levels of parenting stress, engage in less positive parenting techniques, and have a lower quality of life than parents of children without clinical problems (Fischer, 1990; Lange, 2005). Because of these findings, further research is needed on factors that contribute to positive parenting experiences in this population.

## **The Impact of ADHD on Parenting**

Attention deficit hyperactivity disorder is a chronic disorder that occurs in three to five percent of school-aged children. The disorder is characterized by developmentally inappropriate levels of inattention, impulsivity, and hyperactivity. The features of ADHD often leave children at risk for academic problems, interpersonal difficulties, and significant behavioral issues that compromise their quality of life (Treacy, Tripp, & Baird, 2005).

The characteristics of ADHD not only affect the child but have been linked to increased familial difficulties. Parents of children with ADHD tend to report less parenting satisfaction, display more ineffective discipline strategies, and have more marital conflict than parents of children without externalizing behavior disorders (Lange, et al, 2005; Suarez & Baker, 1997). Not surprisingly, these parents are more vulnerable to elevated levels of stress compared with parents of normal controls (Eyberg, Boggs, & Rodriguez, 1992; Treacy, Tripp, & Baird, 2005). Research has shown higher levels of parenting stress to be associated with negative parenting practices including physical punishment (Lange, et al, 2005; McCurdy, 2005), which puts into effect a maladaptive cycle between child behavior and parenting approaches.

### **Parental Social Support and Child Behavior Problems**

Not only are parents of children with problem behaviors typically more stressed, they tend to be more socially isolated. Children with ADHD often demand more parental resources than other children, which can lead parents to neglect other areas of their own life. In fact, Lange et al. (2005) found that parents of children with ADHD have less total social support, particularly from family and friends, more stress, and a lower quality of life than other parents. Inadequate social support compromises a parent's ability to monitor, classify, and respond to child behavior (Wahler, 1980; Wahler and Dumas, 1989). Colletta (1979) reports that mothers with low support tend to be more restrictive and punitive in their parenting. According to the stress-buffering

hypothesis, however, positively perceived social networks have been found to buffer stress and promote competent parenting behavior (Rodgers, 1998).

### **Issues in the Measurement of Social Support**

There is considerable variability in thought about how best to measure social support (Langford, Bowsher, Maloney, & Lillis, 1997). Literature on measurement of support in parents in particular is limited but nevertheless suggests that instruments designed to measure support should be developed to reflect the relevant characteristics of a parent's support system.

Identifying those relevant characteristics is an increasingly complex task when families are faced with the challenges of child problem behaviors. Because support measures designed specifically for parents are rare, consideration has to be given to existing studies of parental social support in order to identify specific facets of parental support that should be measured.

Efforts to address the importance of parental social support in treatment outcome research have had mixed success. Dadds and McHugh (1992) found that parents with higher levels of social support from friends generally showed greater improvement in parent-training. However, in this same study they found that the addition of a social support enhancement component to treatment was not effective in improving treatment outcomes. Considering the complex nature of social support, these latter findings suggest there may be a breakdown in understanding of social support, as the support measure used was a global index of support rather than a more narrowly-defined, multidimensional tool. Because social support is a complex concept, and sources of support most beneficial to individuals vary, measurement of support should be comprehensive enough to inform treatment plans effectively. Despite this, many instruments designed to measure support do not reflect this multidimensional model of support (Winemiller, Mitchell, Sutliff, and Cline, 1993).

Part of this complexity exists because various types of social support affect families differently depending on demographic characteristics of the family. Wan, Jaccard, and Ramey (1996) found that married mothers report benefiting more from familial sources of support while single mothers and fathers relied more on non-familial support. Suarez and Baker (1997) examined the effects of parental support on married parents' perception of parenting and their perception of their child's impact on the family life. In their study, spousal support predicted how parents perceived their role as parents and how they perceived the impact of their child's behavior on day-to-day activity in that less spousal support resulted in more negative views on both outcome measures. In this study, global social support (i.e., including support outside the marriage) was not related to the outcome measures suggesting that spousal support is of primary importance when available, and that parents without spousal support rely on other sources.

Differences exist not only in different family structures but across ethnicities. Bussing, et al. (2003) compared support network characteristics across African American and Caucasian families with ADHD children and whether these characteristics affect health-seeking behaviors. This study found significant differences between racial groups. African American families tended to have smaller support networks than Caucasian families, and within these networks, they reported less professional support sources (e.g., counselors, physicians). However, they reported more frequent contact with support network members than Caucasian families and higher levels of emotional and instrumental support, meaning they reported feeling more appreciated and supported as well as having more access to tangible support than their Caucasian counterparts (Bussing, et al., 2003). The findings from both Wan et al. and Bussing et al. highlight the need for comprehensive measurement of social support that addresses the multiple domains of support important within diverse families. A single instrument capable of capturing

family social support from these multiple domains would provide more useful and accurate information regarding parental support networks.

### **Necessary Components of Support Measurement**

Researchers in the area of social support tend to agree that support is a multidimensional concept, but there is a wide range of accepted definitions for the construct (Sarason, Shearin, Pierce, & Sarason, 1987; Orth-Gomer & Uden, 1987). These definitional differences lead to a variety of formats for the measurement of support, which may hinder comparability across studies. There are, however, frequently measured types of support, which commonly include (a) tangible or aid-related support, (b) informational support, (c) emotional support, and (d) social companionship (Orth-Gomer & Uden, 1987; Winemiller, Mitchell, Sutliff, & Cline, 1993). Though definitions of support vary, the complex nature of support is well-acknowledged. An instrument capable of distinguishing the composition of support systems by type of support provided and the specific sources of support (e.g., tangible support or health care provider support) may be more useful than a global index of support alone (Winemiller, Mitchell, Sutliff, & Cline, 1993).

In addition to the need for instruments with more sophisticated operationalization of social support, there is also a need for instruments with adequate psychometric support. One concern within the social support literature has been the widespread use of measures with inadequately established psychometric properties (Norbeck, Lindsey, & Carrieri, 1981; Winemiller, Mitchell, Sutliff, & Cline, 1993). Also, social support instruments should be standardized within multiple populations, particularly at-risk populations, to increase the utility of these measures in clinical settings (Norbeck, Lindsey, & Carrieri, 1982). Finally, reliable and valid measures of support are needed to further understanding of social support within clinical research (Norbeck, Lindsey, & Carrieri, 1981).

### **Perceived versus Received Social Support**

Important distinctions in perceived and received support have been identified in response to debate over which type, perceived or received, of support is most relevant. These constructs consistently emerge as unique from one another showing moderate correlations to each other at best (Lakey, et al, 2002). Perceived social support is generally thought to be a more clinically relevant concept than received support. Cohen and Hoberman (1983) find perceived support to be more related to outcome variables such as life stress. In addition, Sandler and Barrera (1984) found perceived support to better predict psychopathology symptomatology than scales assessing actual received support and support network size. Received support has been found less effective as a buffer against the adverse impact of life stress on psychological well-being (Coventry, Gillespie, Heath, & Martin, 2004).

### **The Norbeck Social Support Questionnaire**

The Norbeck Social Support Questionnaire (NSSQ) is a comprehensive, theoretically grounded instrument for measuring social support with promising psychometric findings. The NSSQ is based on Kahn's (1979) definition of support as "interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; the affirmation or endorsement of another person's behavior, perceptions, or expressed views; the giving of symbolic or material aid to another" (85). Kahn described support provision as being delivered through a person's "convoy," a metaphorical description of a support network member. Therefore, Kahn's conceptualization of support includes not only positive regard and expressions of approval but also of the provision of tangible aid. Kahn's conceptualization also included any individuals in a person's life that they rely on for emotional and tangible support, and who rely on them in the same way, so that support is seen as a reciprocal relationship (Norbeck, Lindsey, & Carrieri, 1981).

With Kahn's multidimensional support model as a guideline, Norbeck et al. developed the NSSQ to assess an individual's perceived emotional and tangible support. The NSSQ was also designed to gather information about the size of a person's social network, the frequency of contact with network members, and network member loss. To complete the NSSQ, participants are presented with a series of half-pages that are aligned with a participant's personal network list. This format was intended to simplify the task of recalling each member of one's support network and subsequently answering a series of questions about that person. Respondents are first asked to list up to 20 significant people in their life who they currently consider important to them on the right side of the page using only initials or first names. There is also space for identification of the category in which that person falls (e.g. family, neighbors, spiritual leader, or health care provider) using a provided list of categories.

Participants are next asked to rate each network member using a 5-point Likert scale (with zero indicating "not at all" and four indicating "a great deal"). Two questions were developed for measuring each of the three functional properties of social support: (a) affect, (b) aid, and (c) affirmation. For example, one of the two affect questions asks, "How much does this person make you feel liked or loved?" Ratings on each pair of questions are summed to yield subscale total scores (i.e., Aid total and Emotional Support total, which comprises affect and affirmation). To assess the size, stability, and availability of the support network, it is possible to count the number of network members listed and examine frequency and duration of network member contact through self-reported numerical ratings. To further explore the network dynamics, respondents indicate recent losses of important relationships by reporting number of lost support members as well as the type of support lost (i.e. aid, affective, or affirmative) and

the amount of support that member provides using a 5-point Likert rating scale. The NSSQ can be easily scored using the response sheet provided.

The instrument was initially standardized using 75 first-year graduate nursing students including one male, with a mean age of 30.3 and a range of 23-51 years. Participants were Caucasian (92%), Asian (3%), and Hispanic (1%) in ethnicity. Most were single and never married (43%), with the remaining participants representing married (37%) and divorced or separated (20%) adults. This group was first tested after one week of enrollment in the nursing program, presumably before peer relationships were formed. For comparison, a group of 60 senior-year nursing students including six males, with a mean age of 27.3 and a range of 21-39 years, was also given the NSSQ. This group's ethnicities were Caucasian (80%), Asian (17%), and other (3%). Most participants in this group were also single and never married (63%) and the remaining were married (27%) and divorced or separated (10%).

Items on the NSSQ were collapsed into the three variables: Total Functional (the sum of each Aid, Affect, and Affirmation items), Total Network (number in network, length of relationship, and frequency of contact with network member), and Total Loss (number of categories of persons lost and amount of support lost). To evaluate test-retest reliability, the NSSQ was re-administered one week later, and test-retest reliability was high, ranging from .85-.92. Internal consistency was evaluated through inter-item correlations. Item pair correlations ranged from .72 to .98 with aid being the least correlated to other subscales. Affect and Affirmation were found to be highly correlated (range: .95 to .98), suggesting these might not be distinct variables. Due to consistent findings that these subscales are highly related, an Emotional Support subscale is now calculated by combining these items. Network property items (e.g., duration of relationships) were highly related (.88 to .97) to Affect and Affirmation and

moderately related to aid (.69 to .80). Loss items (e.g., quantity and quality of network member loss) were not significantly related to support types or network property items (.54 to .68) demonstrating that while network composition fluctuates, type of support is relatively stable.

Moderate concurrent validity was found when the NSSQ was administered with the Social Support Questionnaire (SSQ; Shaefer, Coyne, & Lazarus, 1981). Correlations range from weak to significantly moderate relationships when the measure was administered along with the SSQ. Construct validity was not adequately established when the NSSQ was compared to the Profile of Mood States (POMS; McNair, Lorr, & Droppleman, 1971) and the Life Experiences Survey (LES; Sarason, Johnson, & Siegel, 1978). Social desirability bias was examined through analysis of concurrent completion of the Marlowe-Crown Test of Social Desirability Scale (Crowne & Marlowe, 1960) and it was found that none of the NSSQ items correlated significantly with this measure (Norbeck, Lindsey, & Carrieri, 1981).

The NSSQ was further standardized within additional populations including university staff members (Norbeck, Lindsey, & Carrieri, 1982) and mothers enrolled in college (Gigliotti, 2002, 2006). Findings indicated the need for further specification of highly endorsed support types such as friends and spouses. For instance, 61% of respondents listed a support member as belonging in the category of spouse, although only 42% identified themselves as married, suggesting that additional categories representing significant others may be useful. The investigators also found that 90% of participants did not list a health care provider as a network support member, a finding that has implications for future efforts at understanding the support role of health care providers.

These studies confirmed earlier findings of good test-retest reliability and went on to establish concurrent and predictive validity. Moderate to high seven-month test-retest reliability

was established indicating stability over extended periods of time. Concurrent validity was moderately demonstrated using the Personal Resource Questionnaire (PRQ; Brandt and Weinert, 1981). Correlations between the NSSQ variables and the total score on the PRQ were calculated and represented medium levels of association and ranged from .35 to .41 (Norbeck, Lindsey, & Carrieri, 1982). Some evidence of predictive validity was demonstrated by aid-related support accounting for 13.2% of the variance when predicting life stress (LES; Sarason, Johnson, & Siegel, 1978). Initial exploratory factor analyses revealed that the proposed functional support types (i.e., aid, affect, and affirmative) represent unique dimensions important to the understanding of social support networks (Gigliotti, 2002). Subsequent factor analyses suggested, however, that only Aid measures unique dimensions of support (Gigliotti, 2006), and the support subtype, Emotional Support, was created to represent reports of affirmational and affective support.

### **Specific Aims**

The purpose of this study was to examine the reliability as well as convergent and predictive validity of the Norbeck Social Support Questionnaire utilizing responses from mothers of children with or at high risk for ADHD. Because parents of children with ADHD represent a population with unique characteristics, it is important to study the psychometric properties of the NSSQ as a measure of support in this group across time. Internal consistency and stability of the measure at intervals up to two- and four-years were calculated as measures of test reliability. Because social support is thought to be related to stress, convergent as well as predictive validity were tested using a measure of caregiver strain. Additionally, convergent and predictive validity were examined using the related construct of overall parental mental health.

## CHAPTER 2 METHODS

### **Participants**

Participants for this study were drawn from a large longitudinal study examining factors related to help-seeking behaviors and treatment continuity in children and adolescents with ADHD (Bussing et al., 2003). To be eligible for participation in the longitudinal study, families had to have a telephone in their home, be Caucasian or African American, and only one child in the home could participate in the study. Families were excluded from participation if the target child was receiving special education services for mental retardation or autism. Participants were parents of children at high risk for ADHD. Initially, a stratified random sample of 1615 elementary school children was recruited, with girls over sampled by a ratio of two to one to account for lower ADHD prevalence rates among girls. From this sample, 266, 207, and 49 mothers of high risk children have completed the NSSQ at Time 1, two years later at Time 2, and four years later at Time 3, respectively.

High risk for ADHD was defined by the presence of one or more of the following: (a) parent report of an existing ADHD diagnosis or on-going professional treatment for ADHD; (b) a suspicion of ADHD by family or school officials or (c) parent or teacher ratings on behavior problem subscales of the SNAP, a measure of ADHD symptomatology, at least 2 *SD* above the norm for the child's age and gender. Diagnoses upon enrollment were determined at Time 1 through parent interview using the Diagnostic Interview Schedule for Children, Version 4.0 (DISC-4). At Time 1, 62% of children met *DSM-IV* criteria for ADHD. Comorbid diagnoses within this sample included conduct disorder (15%) and oppositional defiant disorder (60%).

At Time 1 of the longitudinal study, all children were enrolled in grades K-5 at schools within 30 miles of Gainesville, Florida. Among the high risk children identified at Time 1, 55%

were female and 63% were Caucasian, with the remaining 36% African American. Socio-economic status scores were calculated using the Hollingshead 4-factor index on which scores can range from 8 for the lowest social strata to 66 for the highest social strata (Hollingshead, 1975). In this sample, 42% of families were classified as low SES as defined by a score of 33 or below. Demographic characteristics of the Time 1 sample are representative of the 2000-2001 U.S. Census Data for families in Alachua County, Florida, which is similar to data for Florida as a whole and generally representative of the United States in general.

### **Measures**

The *Norbeck Social Support Questionnaire* (NSSQ, Norbeck, Lindsey, & Carrieri, 1981) was developed as a self-administered measure of perceived emotional and tangible support. The measure was adapted for the longitudinal study by adding parent-specific words or phrases to four of the items, to determine parents' perceived level of network support in reference to their caregiver role. In this adaptation, support network was defined as people available for the caregiver to talk with and rely on particularly when concerned about their child's health, behavior, or emotions. The four items were altered to target parents rather than a generic population through these modifications. See Table A1 in Appendix A for the complete listing of functional support and network items. Adaptations are indicated in bold text.

The original NSSQ was developed in self-administration form. However, in this study, research assistants administered the NSSQ in interview format. Parents were first asked to list up to 12 significant people in their life whom they currently considered important to them in their caregiver role. They were then asked to rate each of these people on 6 items, which make up the NSSQ functional subscales, using an answer card displaying the five response categories (0 = *not at all*, 1 = *a little*, 2 = *moderately*, 3 = *quite a bit*, 4 = *a great deal*). The items pertain to amount of perceived support provided by that person. Three additional items are used to assess length of

relationship, contact frequency, and geographical distance from that person (see items 7 through 10 in Table A1). NSSQ completion time varied according to the number of support network members listed, with a maximum administration time of approximately 20 minutes.

Three types of support are measured by NSSQ functional subscales: Affective (feeling liked or loved), Affirmational (ability to confide and agreement with parenting decisions), and Instrumental (help with babysitting or other parenting responsibilities if needed). These three variables are calculated by summing the 5-point Likert-type responses on the two items constituting each functional subscale. Scores for each subscale can range from 0, if the respondent answers 0 to both subscale questions, to 8, if the respondent answers 4 to both questions. Two composite variables, Emotional Support and Total Functional Support, are calculated by combining these subscales. Emotional Support is the sum of Affective and Affirmational functional subscale scores. Total Functional Support is the sum of all three subscale scores and is also considered the global index of NSSQ caregiver support. Scores are calculated by summing all ratings for all network members rather than averaging scores to capture quantity and quality of support. Norbeck suggests that participants are unlikely to list network members who provide low levels of support, and summing scores more accurately reflects total support (1995).

The *Caregiver Strain Questionnaire* (CGSQ; Brannan and Heflinger, 2001) is an adult self-report instrument containing 21 items that address the perceived impact on caregivers of children with emotional and/or behavioral problems. This measure has shown strong reliability and validity in multiple populations. On the CGSQ, caregivers rate how problematic they find various negative experiences or feelings that result from their child's problem behaviors. Items such as family disruption, time demands, financial strain, and embarrassment are rated on a

Likert-type scale from 0 (*not at all*) to 5 (*very much*). Three dimensions of negative caregiver experiences or feelings are measured by the CSQ: Objective (11 items), Internalized Subjective (6 items), and Externalized Subjective (4 items).

The *Mental Health Inventory-5* (MHI-5; Veit & Ware, 1983) is a brief 5-item measure of adult psychological distress and well-being in general populations. Respondents rate their degree of psychological distress on a 6-point Likert-type scale, and the sum of these ratings on all 5 items generates a total score.

### **Procedure**

For this study, parent-report data obtained for youths at high risk for or with pre-existing ADHD diagnoses at Times 1, 2, and 3 were used. Demographic data were obtained from school records and were updated at each assessment point. Parents were contacted by phone to arrange a convenient time and place for the assessment, which included both in-home and community-based locations such as a public library meeting room. Assessments were conducted by trained graduate research assistants in clinical or school psychology, and childcare was provided if needed by trained undergraduate students. The assessments lasted approximately 90 minutes at Time 1, 60 minutes at Time 2, and 90 minutes at Time 3. Data collection for Time 2 began approximately two years after Time 1 collection but continued up to four years later. Data collection for Time 3 began approximately one year after Time 2 collection and is currently ongoing.

Assessments were conducted by one of three graduate research assistants. Their training included general interviewing skills as well as practice in administration of the NSSQ. A script outlining the procedures for test administration was followed to ensure consistency in administration across interviewers. Assessors received approximately 4 hours of instructional training for the NSSQ including role-playing, video-taped practice, and practice administration

with the primary investigator to establish inter-rater reliability at or above .90 prior to initial data collection. Inter-rater reliability was reassessed at three-month intervals, and interviews were supervised randomly to guard against drift from the administration protocol.

## **Data Analysis**

### **Data Integrity**

Data were analyzed using the *Statistical Package of the Social Sciences* (SPSS). Rating distributions of the NSSQ and CSQ were analyzed to ensure normality of scores. Entry error was checked through visual inspection of item ranges for potential outliers using box plots. Item sums were used in analyses as indicated by NSSQ scoring procedures and empirical support of the use of sums over item averages (Norbeck, 1995; Gigliotti, 2002).

### **Reliability Analysis**

A bivariate correlations matrix and Cronbach's alpha were used to examine internal consistency via inter-item and item-total correlations. Paired samples *t* tests were first conducted on each item mean score pairing (e.g., Time 1 scores and Time 2 scores) to screen for significant mean differences across time in order to ensure that any significant test-retest correlations reflect true stability and a non-changing mean over time. Pearson correlation coefficients were calculated for participants who completed the NSSQ at both Time 1 and Time 2 to assess 4-year test-retest reliability ( $n = 156$ ). Additionally, 2-year test-retest correlations between Time 2 and Time 3 were calculated ( $n = 49$ ). Correlational magnitude was evaluated using Cohen's suggested guidelines of 0.2 as small, 0.5 as medium, and 0.8 as large (1988).

### **Validity Analysis**

#### **Convergent validity**

To examine convergent validity, correlational analyses were also conducted to assess the degree to which the NSSQ corresponds with a validated measure of caregiver strain, the

Caregiver Strain Questionnaire (CSQ). Convergence between: (a) NSSQ Aid scale and CSQ Objective Strain subscale; (b) NSSQ Emotional Support scale and CSQ Subjective Internalized Strain subscale; and (c) NSSQ Total Functional scale and CSQ Global Strain scale was examined. The NSSQ was administered concurrently with the CSQ at Time 1, thus Time 1 data were used for these convergent validity analyses ( $n = 262$ ).

Convergent validity of the Time 2 administration of the NSSQ with the Mental Health Inventory-5 (MHI-5) was also analyzed ( $n = 200$ ). Pearson correlations were calculated between the MHI-5 Total score and the NSSQ Aid, Affective Support, and Affirmative Support subscales as well as the NSSQ composite scales, Emotional Support and Total Functional Support.

### **Predictive validity**

To examine the predictive validity of the NSSQ, Pearson correlations were calculated for scores of participants completing both the NSSQ at Time 1 and the CSQ, at Time 2 ( $n = 138$ ). The same NSSQ and CSQ subscales were examined as in the convergent validity analyses. Additionally, correlations were calculated between scores of mothers completing both the NSSQ at Time 2 and the MHI-5 at Time 3 ( $n = 114$ ). Specifically, correlations between the MHI-5 Total score and the NSSQ Aid, Affective Support, and Affirmative Support scales as well as the NSSQ composite scales, Emotional Support and Total Functional Support were calculated.

## CHAPTER 3 RESULTS

NSSQ data from mothers of children at high risk for or with current ADHD diagnoses were analyzed for this study using the Statistical Package of the Social Sciences (SPSS). Data were screened for normality and judged to have normal distributions. Table B1 present the means, standard deviations, and range of scores for participants who completed the NSSQ at Time 1 and Time 2 ( $n_{time 1} = 266$ ,  $n_{time 2} = 207$ ,  $n_{time 3} = 49$ ).

### **Reliability**

Internal consistency was examined using inter-item and item-total correlations as well as Cronbach's alpha. Inter-item and item-total correlations for Time 1 ( $n = 266$ ) were high with Aid items being the least correlated with other subscales, though remaining highly related. These findings are consistent with previous internal consistency patterns and suggest that Affect and Affirmation items may not represent distinct subscales. Table B2 displays these results.

Cronbach's alpha for Time 1 functional items Affect, Affirmation, and Aid was .60, and as expected, removal of Aid items from calculations increased alpha to .84 providing further support that Affect and Affirmation items are highly correlated and may not be distinctive. Consistent with Time 1 data, Cronbach's alpha for Time 2 ( $n = 207$ ) functional items Affect, Affirmation, and Aid was .68. Removing Aid items from calculations again resulted in an increased alpha of .85 for Affect and Affirmation items alone.

Paired samples  $t$  tests were conducted to assess mean differences between item means at Time 1 and Time 2 as well as Time 2 and Time 3. No significant differences in means were found for any scale or subscale, indicating that the two and four-year test-retest correlations accurately represent item score stability. Table B3 displays the two- and four-year test-retest stability coefficients for NSSQ subscales (i.e., Affect, Affirmation, and Aid) as well as

composite scales (i.e., Emotional Support and Total Functional Support) for participants who completed the NSSQ at both Time 1 and Time 2 ( $n = 156$ ) and at Time 2 and Time 3 ( $n = 49$ ). Test-retest reliability between Time 1 and Time 2 NSSQ functional and composite item scores was moderate and ranged between .37 and .45. Functional and composite item correlations at Time 2 and Time 3 were also moderate and ranged between .30 and .38.

### **Convergent Validity**

Analyses were conducted to determine the degree to which the NSSQ is related to a measure of caregiver strain, the Caregiver Strain Questionnaire (CSQ), in the Time 1 sample of 262 mothers of children at high risk for or with ADHD diagnoses. Correlations between the NSSQ Aid scale and CSQ Objective Strain subscale; NSSQ Emotional Support scale and CSQ Subjective Internalized Strain subscale; and NSSQ Total Functional scale and CSQ Global Strain scale are presented in Table B4. The obtained correlations were small and not statistically significant, ranging from -.01 to .07.

Convergent validity of the Time 2 administration of the NSSQ with the Mental Health Inventory-5 (MHI-5; Veit & Ware, 1983) was also analyzed. Pearson correlations were calculated between the MHI-5 Total score and the NSSQ Aid, Affective Support, and Affirmative Support scales as well as the NSSQ composite scales, Emotional Support and Total Functional Support. Correlations were small and not statistically significant. Table B5 displays these results.

### **Predictive Validity**

Predictive validity of specific Time 1 NSSQ scales was assessed using specific Time 2 CSQ subscales as the criterion variables ( $n = 138$ ). The same NSSQ and CSQ subscales examined in convergent validity analyses were used to examine predictive validity of the NSSQ. Correlations were small and non-significant, suggesting that social support as measured by

NSSQ scales does not predict caregiver strain assessed up to four years later among mothers of children at risk for or with ADHD. Table B6 displays these results.

Predictive validity of the Time 2 administration of the NSSQ was also assessed using Time 3 MHI-5 total scores for mothers of children at high risk for or with ADHD. Correlations between the MHI-5 Total score and the NSSQ Aid, Affective Support, and Affirmative Support scales as well as the NSSQ composite scales, Emotional Support and Total Functional Support, were small and not statistically significant. Table B7 displays these results.

## CHAPTER 4 DISCUSSION

Psychometric analyses of the NSSQ in this sample of mothers of children with ADHD symptomatology were not wholly consistent with previous psychometric findings, providing only limited support for the use of the NSSQ in this population. Internal consistency of the NSSQ in our sample of mothers was moderate to high with Affective and Affirmation items being more highly related to each other than with Aid items. This finding is consistent with previous studies of the NSSQ in other population samples, lending support for the use of two composite variables, Emotional Support and Aid, rather than an index of total support.

Test-retest reliability of the NSSQ up to a four year interval was low in this sample. However, previous test-retest analyses of the NSSQ with students and university employees demonstrated high stability of the NSSQ scales when assessed over one week and seven month intervals. Shorter retest intervals are more typical in psychometric analysis, and it is possible that the NSSQ would demonstrate adequate stability for use in ADHD families if examined over shorter spans of time. However, Sarason, Sarason, and Shearin (1986) found moderate three year test-retest correlations for another measure of social support using a sample of university students. Their findings suggest that perceived support network composition is more stable than satisfaction with the level of support provided. Therefore, inclusion of all NSSQ items, such as proximity to support network members, in test-retest analyses may increase the stability of the instrument across time. For example, the inclusion of information about how physically close a network member is over time is important to understanding changes in support such as decreased aid-related support, which would likely be negatively related to geographic proximity. It is also possible that in our sample there were actual decreases in the mothers' functional support as their

children got older and that the NSSQ was demonstrating sensitivity to real change over the extended test-retest time intervals.

Our analysis of the NSSQ with mothers of children with ADHD symptoms also failed to reveal evidence of convergent validity. Contrary to our hypotheses, there was little convergence of specific NSSQ scales and subscales with CSQ subscales and scales. Previous studies with the NSSQ have shown strong relations between NSSQ Aid items and a measure of life stress. The absence of convergence between the NSSQ measures of perceived support and caregiver strain as measured by the CSQ was unexpected. The weak relationship between the NSSQ and an index of overall mental health was also unexpected, particularly for mothers of children with ADHD, a group more at risk for depression and significant anxiety than mothers of children without ADHD.

Our hypotheses concerning the predictive validity of the NSSQ, in which we expected social support to be negatively related to caregiver strain and psychological distress over time, were also not confirmed. In light of the absence of concurrent relations between the NSSQ and our measure of caregiver strain, it is less surprising to find that the measures do not relate over time. Initial evidence for the predictive validity of the NSSQ has not been replicated and remains important for further examination of this instrument.

Previous psychometric study of the NSSQ has been based on non-clinical samples of convenience. The social support literature has identified links between social support and parental stress in numerous studies, though the mechanisms of association vary. For example, childhood co-morbidities such as ODD are more strongly associated with parental stress than singular diagnoses. Financial burden also uniquely accounts for higher parental stress in mothers of children with ADHD (Johnston & Mash, 2001). Future studies within this population should

account for pre-existing stressors given to the unique effects of child ADHD symptom severity, co-morbid behavior problems, and familial factors unrelated to child behavior on parenting stress (Podolski & Nigg, 2001). Also, research on changes in parental support systems throughout child development, particularly for children with ADHD symptomatology, is notably lacking but may be influential in longitudinal research involving samples of parents and their children.

Future research on the NSSQ may also include a revision of the instrument to include a wider variety of support types. While the measure currently aims to capture the multidimensional nature of support, psychometric analyses of the NSSQ have found only two distinct aspects of support are being measured. Other types of support have been noted as important to health outcomes including information support and social companionship. Informational support measures one's perception of the receipt of useful information such as education, advice, and referral to other sources of support. Social companionship refers to participation in leisurely activities with a support network member. The inclusion of other types of support may generate a more comprehensive picture of perceived support and reveal a stronger link between social support and current as well as future health outcomes (Langford, Bowsher, Maloney, & Lillis, 1997).

Limitations of this study include the restriction of available measures for validity analyses due to the secondary analysis of available data. Because analyses were conducted on existing data, test-retest intervals were longer than conventional intervals for reliability analysis, which prevented replication of previous findings. Results may have been impacted by method variance and future studies may benefit from employing multiple raters of familial social support. Finally, findings are based on a regional sample and use of geographically broader

samples is needed. Despite the limitations of this study, findings are supported by a large, well-defined sample that represents the local ethnic and gender distribution among this age group.

Features of the NSSQ such as the ability to measure multiple types and sources of support are integral to measures of perceived social support. The NSSQ employs a multidimensional approach to the measurement of social support, which is necessary for complex constructs. Previous testing of the NSSQ yields support for its use in non-clinical populations. Based on the results of this study, however, further research and refinement of the NSSQ is needed before use in clinical child populations.

APPENDIX A  
NSSQ ITEMS

Table A-1. NSSQ items used to rate the quality of social support provided by members of the respondent's social support network

Items	Functional type
*1. How much does this person make you feel liked or loved?	Affect
*2. How much does this person make you feel respected or admired as a parent?	Affect
*3. How much can you confide in this person?	Affirmation
*4. How much does this person agree with or support your parenting?	Affirmation
*5. If you needed babysitting, a ride to the doctor, or some other immediate help, how much could this person usually help?	Aid
*6. If you were confined to bed for several weeks, how much could this person help with your parenting responsibilities?	Aid
7. How long have you known this person?*	Duration of relationship
8. How frequently do you have contact with this person?	Frequency of contact
9. How close do you feel to this person?	Closeness of relationship
10. How close does this person live to you?	Geographical distance

Note. Item responses are rated on a 5-point Likert-type scale for items marked with an asterisk. Item 9 is rated on a 3-point Likert-type scale. Item 10 is rated on a 7-point Likert-type scale

APPENDIX B  
ADDITIONAL DATA

Table B-1. Time 1 and time 2 means, standard deviations, range of scores

NSSQ Scales	Time 1 ( <i>n</i> = 266)			Time 2 ( <i>n</i> = 207)		
	Mean	<i>SD</i>	Range	Mean	<i>SD</i>	Range
Affect	27.92	16.13	0-87	27.23	16.56	0-88
Affirmation	27.10	15.69	0-88	26.30	15.58	0-80
Aid	19.31	12.93	0-88	19.27	13.46	0-79
Emotional Support	55.02	31.64	0-173	53.54	31.97	0-160
Total Functional	74.33	42.91	0-255	72.72	43.84	0-238

Table B-2. Pearson correlation coefficients for all pairs of items on time1 NSSQ

	1	2	3	4	5	6	7	8
1 Affect1	--							
2 Affect2	0.98	--						
3 Affirmational1	0.96	0.96	--					
4 Affirmational2	0.96	0.96	0.95	--				
5 Aid1	0.83	0.81	0.80	0.79	--			
6 Aid2	0.82	0.80	0.78	0.77	0.94	--		
7 Emotional Support	0.99	0.99	0.98	0.98	0.82	0.80	--	
8 Total Functional	0.98	0.97	0.97	0.96	0.90	0.89	0.99	--

Note. *n* = 266. All correlations are significant at  $p < .01$

Table B-3. Test-retest stability Pearson correlations for NSSQ scales

NSSQ Scales	Four-Year Retest	Two-Year Retest
	Time 1 to Time 2 ( <i>n</i> = 156)	Time 2 to Time 3 ( <i>n</i> = 49)
Affect	0.37**	0.36**
Affirmation	0.39**	0.35**
Aid	0.45**	0.31**
Emotional Support	0.38**	0.38**
Total Functional	0.38**	0.30**

\*\*  $p < .001$

Table B-4. Time 1 Pearson correlations between the NSSQ scales and specific Caregiver Strain Questionnaire subscales (*n* = 262)

NSSQ Scales	CSQ Subscales		
	Objective Strain	Subjective-Internalized Strain	Global Strain
Aid	-0.01	--	--
Emotional Support	--	0.07	--
Total Functional	--	--	0.05

Table B-5. Time 2 Pearson correlations between the NSSQ scales and the Mental Health Inventory-5 total score (*n* = 200)

NSSQ Scales	MHI-5 total
Affect	-0.05
Affirmation	-0.05
Aid	-0.08
Emotional Support	-0.05
Total Functional	-0.06

Table B-6. NSSQ Scales Predictive Validity of Specific CSQ Subscales ( $n = 138$ )

NSSQ Scales	CSQ Subscales		
	Objective Strain	Subjective-Internalized Strain	Global Strain
Aid	0.00	--	--
Emotional Support	--	0.06	--
Total Functional	--	--	0.04

Table B-7. NSSQ Scales Predictive Validity of Mental Health Inventory-5 Total Scores ( $n = 114$ )

NSSQ Scales Time 2	MHI-5 Total Time 3
Affect	0.04
Affirmation	0.01
Aid	-0.05
Emotional Support	0.03
Total Functional	0.01

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## BIOGRAPHICAL SKETCH

Monica Leah Stevens was born in Laurel, Mississippi in 1984. She was raised in Mississippi along with her older and younger brother and graduated from the Mississippi School for Mathematics and Science in May of 2002. She then enrolled in the University of Southern Mississippi Honors College and graduated *summa cum laude* with a Bachelor of Science degree in psychology in 2006. In 2006, Monica enrolled in a dual Master of Science and Doctor of Philosophy program in the University of Florida's Department of Clinical and Health Psychology. She currently has maintains an assistantship in the Child Study Lab under the mentorship of Sheila Eyberg and Stephen Boggs. Upon completion of her Master of Science, Monica continued her Doctor of Philosophy work in the Department of Clinical and Health Psychology.