

THE ECOMAP AS A MEASURE OF PSYCHOLOGICAL WELL-BEING:
RESULTS FROM PRIMARY SCHOOL CHILDREN IDENTIFIED AS AT-RISK FOR
PSYCHOLOGICAL DISTRESS

AN ABSTRACT SUBMITTED ON THE 15TH DAY OF APRIL 2014 TO THE
DEPARTMENT OF PSYCHOLOGY IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS OF THE SCHOOL OF SCIENCE AND ENGINEERING
OF TULANE UNIVERSITY FOR THE DEGREE OF MASTER OF SCIENCE IN
PSYCHOLOGY


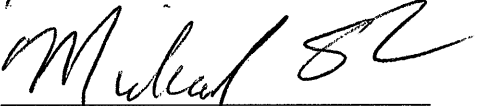
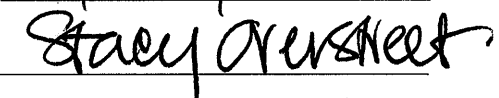
BY


Meredith Summerville

APPROVED: Bonnie K. Nastasi, Ph.D.
(Chair)

Michael Cunningham, Ph.D.

Stacy Overstreet, Ph.D.

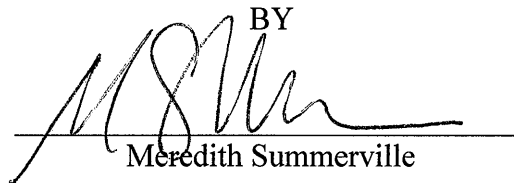





Abstract

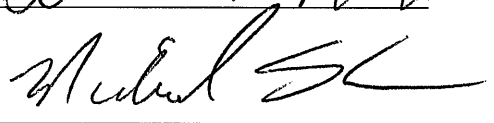
Ecomaps (drawing-based assessments of social networks) were administered to primary school-aged children in order to ascertain whether Ecomaps might be useful in universal screening. Participants included 61 children (40.9% female) aged six to ten ($M = 7.39$, $SD = 1.19$), Kindergarten through third grade students in a predominantly African American (89.5%) public charter school in New Orleans. The study hypothesis was that children who report experiencing higher levels of social support and lower levels of social stress (derived from Ecomap index of Support-Stress balance) would have better social-emotional, behavioral, and academic outcomes than children who report lower levels of support and higher levels of stress. Ecomaps were administered to all participants and correlated with school-based archival data, including results of the Behavior Assessment System for Children, 2nd Edition (BASC-2), school behavior grades, and academic records. Stress-support indices from Ecomaps were significantly correlated with social-emotional and behavioral outcomes, but correlations with academic outcomes were not significant, providing partial support for the study's hypothesis. Based on these findings, Ecomaps might be used as self-report measures to identify children at risk for, or currently experiencing, social-emotional or behavioral problems. This measure could be helpful to school psychologists and other school-based mental health professionals who are attempting to understand and respond to the strengths and needs of the children in their care.

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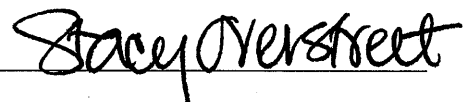
Stacy Overstreet, Ph.D. 

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Introduction

This study seeks to explore whether and how the Ecomap (a drawing-based assessment of the balance of support and stress in a child's social network) might be used as an efficient self-report measure of well-being among young children. The study builds on theory and research that link one's perceptions of social support and social stress to psychological well-being and a variety of other outcomes. Limitations of other currently available measures prevent us from efficiently acquiring self-report information about well-being from large groups of young children (grades Kindergarten to 2). As a self-report measure of psychological well-being, Ecomaps might contribute to the development and implementation of school-based universal and targeted prevention and intervention programming, and be relevant to both school-based professionals and researchers. Moreover, because they are child-directed, they have the potential to yield culturally and contextually specific information and thus be useful with a wide variety of populations; that this study's sample is predominantly comprised of young African American school children from New Orleans means that our results are specifically applicable to this group.

Literature Review

The need for this study stems from gaps in assessment methodology, particularly in the context of school-based mental health service provision and research, and particularly regarding children in the primary grades (K-2). Current best practices in

school-based mental health emphasize the importance of taking a public health approach to promoting and improving psychological well-being in the school context (Doll & Cummings, 2008; Nastasi, Moore, & Varjas, 2004; Short & Strein, 2008). Such an approach draws from established public health practices, including epidemiological study and community-wide health planning, emphasizing school mental health professionals' responsibility to monitor the mental health status of the entire population in their care and provide necessary supports and interventions. A public health approach to mental health service provision is further characterized by having a continuum of services, taking an ecological perspective that recognizes various environmental impacts on a child's life, addressing cultural sensitivity, integrating the perspectives of various stakeholders (e.g., school personnel, families, children), cross-disciplinary interagency collaboration, and research-intervention links (Nastasi et al., 2004). It also recognizes the unique role of the school in our society: "the single institution in our society that serves all children, [it] has a unique role to play and a vital interest in bringing this array of supports and opportunities together" (Blank, Quinn, & Kim, 2003, p. 120). Baker (2008) contrasts this approach with the far more prevalent "'wait to fail' model of mental health referral" (p. 46), in which student needs are rarely noticed or addressed until problems become very severe. Moreover, some types of problems, including student anxiety or depression, are highly likely to be overlooked entirely if not systematically evaluated, even though such internalizing issues have grave implications for long-term mental health and academic success (Mazza & Reynolds, 2008).

Self-Reports in Universal Screening for Psychological Well-Being

Such systematic, population-wide evaluation is a key element of Response-to-Intervention (RtI), a widely-accepted school-based model for identifying, evaluating, and

intervening on behalf of children with known or suspected disabilities. RtI is identified as a preferred practice in the Individuals with Disabilities Act (United States Department of Education, 2004) and is mandated in multiple states, including Louisiana, where this study takes place (Bulletin 1508, 2009). Through the RtI process (Martinez & Nellis, 2008), which is equally applicable to academic, psychological, and other concerns that may impede school success, schools carefully monitor all students to identify those who may be struggling, provide them with evidence-based interventions, and collect data on and evaluate student progress, often altering interventions based on how students respond. Adelman and Taylor (2003, 2008) argue that school reform policy, which primarily focuses on improving instruction and restructuring school governance/management, must expand its focus in order to include reducing barriers to learning as a third key objective. While RtI is a set of practices intended for use in more effectively identifying and serving children with disabilities, the careful monitoring of all students can help educators to identify strengths and needs of the entire school population or of different specific groups, reducing barriers to learning for all children. RtI's emphasis on understanding and improving functioning at the population level, including children at risk of poor outcomes, indicates that it is well-aligned with a public health approach. It is to the population-based (school-wide) assessment part of RtI that this study turns its attention.

Typically termed universal screening, school-wide assessment of psychological well-being is a key component of a public health approach to mental health service provision. Via universal screening, it is possible to regularly and efficiently assess the strengths and needs of the student population, in addition to discerning patterns of risk

and protection that may apply to specific groups of students or individuals. Instruments used for screening need not produce comprehensive psychological profiles; it is enough for them to identify broad themes and call attention to students who may be in need of more thorough evaluation to decide if intervention is warranted, and if so, what kind of supports may be necessary (Baker, 2008). With assessment results in hand, schools can arrange for or deliver school-wide and/or targeted promotion and prevention programming in addition to any necessary intervention services.

In universal screening, as in any assessment process, it is preferable to solicit reports from multiple informants in order to glean multiple perspectives, including the child's own point of view, on the child's well-being and development. An individual's own perspective on her well-being is considered a critical indicator of psychological health because the individual possesses valuable and potentially unique information about her own experiences, thoughts, and feelings (Cohen & Wills, 1985; Sarason, Shearin, Pierce & Sarason, 1987); this has also been found among youth and young children (Campione-Barr & Smetana, 2004; Reid, Landesman, Treder & Jaccard, 1989). It is the need for efficient and valid self-report measures, particularly for use with primary school-aged children, that is the focus of this study. Although some screening measures, including the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007), are validated for use with third grade students, we elected to include third graders in this study because of concerns about low literacy levels among some elementary school students; we were interested in examining the usefulness of the Ecomap for this age group as well. At the time of data collection, the participating school

was comprised of only Kindergarten through third grades; in subsequent studies, we plan to evaluate older children's Ecomaps as well.

Unfortunately, although very valuable, self-reports can be difficult to obtain from young children, especially in a school setting, leaving both researchers and practitioners with limited access to these valuable indicators of emotional risk and well-being. Efficient and valid self-report measures for older children do exist; for example, the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007) is a brief, 30-item questionnaire which has been found to measure comparable constructs (Dowdy, Chin, Twyford, & Dever, 2011) to the much longer Behavior Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004). Typical screening instruments are written questionnaires that teachers, parents, and older children and youth can complete relatively quickly and independently, and yet this approach is inappropriate for young children because of various developmental considerations and cognitive limitations. Obviously, most young children have limited literacy and writing skills, but there is also significant evidence that they are quite difficult to interview verbally; they have difficulty paying attention to open-ended questions and often give incomplete or unrelated answers, and when multiple choice or true-false questions are asked, they often misinterpret items, oversimplify their own feelings, or respond randomly (Reid et al., 1989). Even though some well-validated self-report measures, such as the Behavior Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004), can be administered to young children as young as six years of age via individual interviews, administering such an instrument across a school population would generally be prohibitively costly in terms of time and personnel. School-based

assessments must be completed and analyzed efficiently, taking as little instructional time and teacher effort as possible while yielding useful information.

Likely as a result of all of these challenges, self-report forms of widely-used screening measures, such as the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007), are valid for use with third through twelfth grade students only, while other popular screening measures, such as the Systematic Screening for Behavior Disorders (SSBD; Walker et al., 1994) do not involve student self-reports at all. In sum, because we lack an efficient and valid way to gather young children's perspectives on their own thoughts and feelings (and perhaps because evidence of the importance of these perspectives are not widely understood), schools that conduct universal screenings generally simply forego self-reports for young children, relying solely on reports from teachers and parents. As a result, they may miss critical information about children's well-being; after all, some information may be unknown or at least go unreported by adults. For example, in their study of 9- through 11-year-olds, Waasdorp & Bradshaw (2009) found that relational aggression was far more disruptive and stressful to children than parents were aware of.

Several recent studies have found that parents and teachers have limited ability to identify children suffering from psychological distress, particularly when such distress is in the form of internalizing problems, such as anxiety or depression; the BESS Teacher Report in particular has been found to accurately identify children with academic but not psychological problems (Kamphaus et al., 2007; Renshaw et al., 2009). In fact, as a part of the participating school's universal screening, the BESS Teacher Report was completed on all children and the BESS Self-Report by all third graders. Although results

from these assessments are outside the scope of this paper, an earlier comparison of the BESS (administered at the beginning of the school year) with academic performance and BASC-2 assessment results indicated that our results may mirror those of the researchers mentioned above. Students with higher (more at-risk) BESS Teacher Report scores had statistically significantly lower achievement scores, but Teacher Report scores were not significantly correlated with students' self-reports of psychological well-being (as measured by the BASC-2). By contrast, students with high (more at-risk) scores on the BESS Self-Report were highly likely to report depressive symptoms on the BASC-2 ($r = 0.64, p < .01$) (Summerville, Olton-Weber, & Siddiqui, 2011). In sum, as found by other researchers, if we rely on teacher reports only, we will have an incomplete picture of children's psychological well-being, and we will be specifically likely to miss students in need of support, thus inhibiting the design, implementation, and evaluation of appropriately-targeted, effective programming.

Assessing Social Support to Understand Psychological Well-Being

This research study investigates a potential solution to the lack of self-report measures for young children, building on considerable theory and research that support the link between an individual's perceptions of his or her social network, particularly the social support that he or she receives, and his or her general well-being, including psychological health and other outcome variables. If young children's perceptions of the social stress and support in their lives can be effectively assessed, then the results of such an assessment might provide researchers and practitioners with self-report data that is currently difficult to acquire.

Several theoretical models inform both the link between social support/stress and outcomes and the need to assess an individual's own perceptions of social support and stress, rather than relying solely on outside informants. First, Bronfenbrenner's ecological systems theory (EST; 1977, 1986) and Spencer's phenomenological variant of ecological systems theory (PVEST; 2008) emphasize that the individual is embedded in a complex web of interacting proximal and distal influences that shape development, and that these influences are indeed a web of nested social systems. The child is a member of the family, school community, and peer group, all of which interact reciprocally within larger systems of city, parental workplaces, and institutions, and are simultaneously shaped by prevailing cultural influences and social mores as well as by time-bound events and one's place in history. Similarly, Vygotsky's social constructivist perspective (1978), in which we build our world via communication with one another, would seem to lend credence to the hypothesis that one's social network is central to identity and survival. Social support may have direct effects, helping to build strength and overall well-being, and/or indirect effects, acting as a stress-buffering environmental protective factor that can help enhance coping skills and promote constructive emotional responses to stressors (Olsson, 2009).

Spencer (2008) in particular emphasizes the importance of phenomenology. While each individual is shaped by systemic factors, she also specifically participates in her own development via her interpretations of and responses to the multiple interacting forces that influence her life course. Spencer's PVEST emphasizes that an individual's net resilience and vulnerability can be assessed by analyzing the balance of risk (e.g., violence exposure, poverty, racism) and protective factors (e.g., attentive parenting, educational opportunities) in one's life. A similar rationale could support assessing the

balance between stress and support in relationships to understand more about one's "net" support and stress levels (including the particular forces at work), and therefore better understand his or her net resilience and vulnerability. Measuring social stress and support from the child's perspective, rather than relying on some sort of external measure, would therefore be critical to understanding how social stress and support impact development.

Considerable empirical evidence supports the relationship between a person's subjective perceptions about (rather than objective measures of) the availability and quality of social support in his or her life and a variety of academic, psychological, behavioral, and social-emotional outcomes; this has been demonstrated in adults (Cohen & Wills, 1985; Malecki & Demaray, 2003; Sarason et al., 1987) and youth and young children (Campione-Barr & Smetana, 2004; Reid et al., 1989). However, despite strong evidence linking perceived social support to child and adolescent well-being, it remains the case that the majority of research is with adolescents and adults (Shute, DeBlasio & Williamson, 2002).

As urban youth of color are concerned, much remains to be understood with regard to specific subgroups, including young children (Elias & Haynes, 2008). Cultural and contextual specificity are critical considerations in studies of social support. García Coll et al. (1996) and Randolph and Koblinsky (2003) write about the essential importance of culture in defining the nature of one's social ecology. García Coll and colleagues (1996) explain that people of color are constantly creating adaptive culture—values, goals, and behaviors—as a synthesis of their own group's past culture and history as well as their experiences in the present. Trimble and colleagues (2003) argue that that we must "consider not only what exists but what is desirable" in a given culture (Trimble,

Helms, & Root, 2003; p. 247) when we attempt to understand its members. In other words, we must pay attention to phenomenology, to meaning-making (Spencer, 2006), if we are to comprehend how people of a given cultural group interact with one another. The vast majority of participants in this study are African American children from low-income backgrounds; it is therefore critical to explore culturally-specific characteristics of social support networks and patterns of interpersonal interaction in African American-heritage communities, as well as literature dealing more specifically with such networks in New Orleans in particular (location of the study). Unfortunately, it is generally the case that resources and competencies tend not to be as well researched as risk factors in communities of color (Li, Nussbaum, & Richards, 2007); more study is needed, and relevant findings should be integrated into assessment, promotion, prevention, and intervention practices.

The “Africentric Worldview”, described by Randolph and Koblinsky (2003; p. 311) as emphasizing communalism, harmony, cooperation, interdependency, and group goals, might be helpful in interpreting research findings about social support in African American communities. For example, the family (including extended family members) and “fictive kin” (individuals who are not technically relatives but are so close as to be considered family), as well as other community members (i.e., neighbors, church members) are typically relatively interdependent and close knit (Brown, 2008; Hammack et al., 2004), with multiple people contributing to the raising of and developing close bonds with children (Kenny, Gallagher, Alvarez-Salvat & Silsby, 2002). Children and youth tend to receive significant guidance and support from these extended networks, and have been shown to benefit from them in terms of increased coping skills and sense of

self-worth, and decreased internalizing symptoms, risky behavior, and exposure to violence (Hammack et al., 2004; Li et al., 2007; Plybon, Edwards, Butler, Belgrave, & Allison, 2003; Taylor, 2010). Among African American youth, social support from various sources has been associated with positive racial identity development and mental health functioning (Caldwell, Zimmerman, Bernat, Sellers & Notaro, 2002), including reduced incidence of depression (Bean, Barber & Crane, 2006) and anxiety (White, Bruce, Farrell, & Klierer, 1998). In a New Orleans-based study, children (33% African American, M 11.43 years) with higher levels of extrafamilial support experienced reduced levels of PTSD symptoms compared with less supported peers (Pina et al., 2008).

Furthermore, particular groups of African American youth may tend to use specific coping strategies when under stress. Gaylord-Harden and colleagues found that, even controlling for socioeconomic status, urban African American adolescents seek out social support and guidance more often than their White or Latino counterparts (Gaylord-Harden, Gipson, Mance, & Grant, 2008). In a New Orleans-specific study, Salloum and Lewis (2010) investigated the coping strategies of Hurricane Katrina-affected children (ages 7 through 12), finding that their participants relied extensively on “coping assistance” from their kinship networks, reaching out for social support in the form of emotional processing and distraction in order to cope with the stress of Hurricane Katrina. Salloum and Lewis’ arguments are well-aligned with the ecological, phenomenological, and social constructivist theoretical perspectives addressed earlier in this review. Strongly emphasizing the interaction of culture and context, they seek to understand a community’s specific needs, resources, experiences, and existing coping

strategies in order to effectively understand mental health strengths and concerns and plan for future interventions.

As previously mentioned, in general and among specific ethnic and socioeconomic groups of children and youth, empirical evidence links perceived social support to various key outcomes. The fact that higher perceived support from family, peers, community members, and school adults is associated with academic and other school-related outcomes is likely of particular interest to educators and school mental health professionals. Perceived social support is correlated with increased academic competency, student motivation and engagement, and performance on examinations and achievement tests among middle and high school students (Abbott-Chapman, Denholm & Wyld, 2008; Ahmed, Minnaert, van der Werf, & Kuyper, 2010; Daly, Shin, Thakral, Selders & Vera, 2009; Malecki & Demaray, 2006; Rosenfeld, Richman, & Bowen, 2000). Social support might be particularly important to school success for low-income youth and youth of color (Pallock & Lamborn, 2006) as well as immigrant youth (Le, Lai & Wallen, 2009). Moreover, Rey and colleagues found that for a sample of African American elementary school children (grades 3 through 6), more positive teacher-student relationships (as reported by children) predicted better compliance with classroom rules, higher levels of connectedness and involvement with school and school-related activities, and more interest in school (Rey, Smith, Yoon, Somers, & Barnett, 2007). Elementary school children's overall levels of happiness at school have been found to closely align with their feelings about their relationships with their peers and teachers (Booth & Sheehan, 2008).

The benefits of positive social support are associated with numerous psychological and social-emotional strengths among older children and early adolescents (Plybon et al., 2003). Observed strengths have included positive self-image (Booth & Sheehan, 2008), self-esteem (Shute et al., 2002), subjective happiness (Le, Lai & Wallen, 2009), and increased attachment to peers and high parent influence (McElhaney, Porter, Thompson & Allen, 2008). The role of social support in promoting resilience and adaptive coping has received attention in studies of urban youth of color and other children and youth who might be apt to face high-stress conditions, including discrimination and community violence exposure (Bal, Crombez, Van Oost, & Debourdeaudhuij, 2003; Li et al., 2007; Luthar, 2006; Rosario, Salzinger, Feldman & Ng-Mak, 2008). Both Plybon and colleagues (2003) and Le and colleagues (2009) found positive psychological outcomes in samples of urban African American youth and other youth of color. Studies of trauma-affected youth have linked social support with more complete psychological recovery after a traumatic experience (Brady, Dolcini, Harper, & Pollack, 2009; Ferren, 1999); Ellis and colleagues demonstrated that trauma-affected children and youth aged 7 through 17 with strong social support networks experienced fewer depressive and posttraumatic stress symptoms than did youth with fewer supports (Ellis, Nixon & Williamson, 2009). Conversely, Rosario and colleagues (2008) found that among young adolescents exposed to community violence, low social support was associated with poorer mental health; and Brady and colleagues found a correlation between low social support and a tendency to engage in risk-taking behavior (Brady et al., 2009).

Given apparent links between perceived social support and various aspects of well-being as well as interest in improving access to self-reports of well-being among young children in the school context, it seems worthwhile to explore whether assessment of perceived social support in young children could provide insight into their overall psychological health, other key aspects of their functioning, as well as strengths, resources, and risk factors that might affect their life outcomes. In their discussion of key requirements for measures intended to assess social support in children (though they were not specifically discussing conducting such assessment on a universal basis in a school context), Reid and colleagues (1989) argued that a social support measure need be psychometrically strong, developmentally sensitive, interesting and enjoyable for children with varying ages, temperaments, academic skills, and language abilities, and build upon what we know about children's social support, including allowing assessment of the child's perceptions about a full range of key network members. In addition to those requirements set forth by Reid and colleagues, and as previously discussed, any measure intended for population-based use in schools (e.g., universal screening) must lend itself to efficient administration and evaluation. Similar to, but perhaps going a step further than explicitly stated by Reid and colleagues, given the critical importance of cultural and contextual specificity in the study of children's social networks, the measure must be flexible and child-directed enough to allow children to explore and explain the particular characteristics of their own social networks, rather than conforming to practitioner or researcher expectations.

Existing Measures of Social Support

Valid and reliable measures of social support and stress for use with children and youth do exist, and should be evaluated according to the requirements above in order to

assess the potential for using them as universal screening measures with diverse populations of young children. Existing measures include the Network of Relationships Inventory (NRI; Furman & Burhmester, 1985, 1992, 2009), the Survey of Children's Social Support (SCSS; Dubow & Ullman, 1989), the Child and Adolescent Social Support Scale (CASSS; Malecki & Demaray, 2002), the Social Support Scale for Children (SSSC; Harter, 1985), and My Family and Friends (Reid et al., 1989). While a complete discussion of these measures is outside the scope of this paper, an overview of some of the measures' strengths and limitations will help to explain why new measures may be useful.

First, existing measures tend to present the same feasibility problems seen with the more general psychological screening instruments discussed earlier. They are typically written questionnaires, and therefore not validated on or appropriate for young children; or they must be administered individually, detracting from feasibility of use on a universal basis. The NRI, the SCSS, and the CASSS have been utilized successfully with children grades three and above, demonstrating that these children and youth are capable of providing reliable information about their social support networks. For example, Dubow and Ullman (1989) reported that third grade children were able to reliably report about their subjective appraisals about the types of support they received from different network members on the SCSS. The authors emphasized how important the children's self-reports were, as they revealed information that was significantly different from that provided by external sources and were predictive of the extent to which social support would mediate the relationship between stress and adjustment. Using the CASSS, Malecki and Demaray (2003) elicited information from fifth through

eighth graders on various types of perceived social support (e.g., informational, emotional, instrumental), and linked that information to academic, behavioral, and personal adjustment outcomes. However, all three instruments require children to read numerous test items and respond in writing, which would disallow their use with children who lack those academic skills. Even if it were possible to administer these assessments via individual interviews, young children do not always demonstrate ability or interest in discussing detailed, complex situations and emotions in a purely verbal context (Driessnack, 2005; Wesson & Salmon, 2001), as developmental and cognitive factors limit young children's capacity to think through and respond to interview questions.

By contrast, the "My Family and Friends" (Reid et al., 1989) instrument is intended for use with young children, but would present significant feasibility challenges as a universal screening measure. The measure is based in Vygotskian theory, and uses interactive dialogues, drawings, and props to encourage children's active participation and increase their understanding. This measure has helped researchers to reliably assess perceptions of social support, including support availability and satisfaction with support received, in children as young as five years of age. Reid and colleagues have demonstrated that five year old children notice, care about, and differentiate between the types of support they receive from network members, recognize how they and others have distinctive social needs, and are aware that different people have the capacity to provide them with different types of support (Reid et al., 1989). However, despite the contributions of "My Family and Friends", it must be administered via individual interview, most likely making it impossible to use the instrument universally in a school setting.

The other major limitation affecting the aforementioned self-report instruments is their relatively low level of flexibility. Most existing assessments restrict respondents' options for the number and types of relationships that can be selected and evaluated, which may detract from the measures' validity, particularly as regards developmental, contextual, and cultural appropriateness. For example, it is typical to require subjects to select a small number of relationships (e.g., six on the NRI) from a menu of potential network members (i.e., parents, siblings, and friends) and rate their selections according to how much and what type(s) of support they provide. On the NRI (Furman & Buhrmester, 1985; 1992; 2009), for example, if a child has two brothers, he must pick only one relationship to evaluate. Likewise, the SSSC (Harter, 1985) asks children to rate only four categories of people: parent, teacher, classmate, and friend.

In asking respondents to limit their selections, the researcher or clinician risks obtaining biased results. When asked to choose among relationships, a child might base his selections on factors other than the salience of the relationship; for example, he may focus his attention on positive relationships and ignore stressors, providing the researcher with a skewed picture of his network. Limiting the number of relationships described could also hide any effects of particularly large or small networks. In addition, important relationships may fall outside recognized or expected categories. Among young children, for example, pets, toys and imaginary friends have been identified as sources of support (Gleason, 2002), and although perhaps unexpected for the researcher, these perceived supports should not be dismissed out of hand. For many reasons, one may fail to learn about critical sources of support or stress in a child's life, particularly if a child's social network does not conform to administrator expectations or match the standardization

sample. Moreover, if a measure asks the child to evaluate relationships with several designated individuals (mother, father, one sibling, etc.) and the child has an incompatible family structure (e.g., lives with grandparents or in an extended family situation), the measure may seriously underestimate the quality and strength of a child's support network. While "My Family and Friends" does provide the option to add in other types of important relationships, it seemed from Reid and colleagues' (1989) example that the decision to include additional relationship types would happen before the assessment, and not in response to a child's initiative. Because that decision would be administrator-directed, it does not seem to adequately address the issue of administrator bias.

A restrictive instrument could present particularly serious problems when administered to individuals from different cultural groups with varied typical social network configurations. For example, as discussed previously, an African American child might be apt to rely on a wide network of extended family members, "fictive kin," or a tightly-knit community of neighbors with similar cultural practices for support (Brown, 2008). Unfortunately, if a given measure requires a child to focus on nuclear family members (or otherwise fails to allow the child to accurately communicate his or her perspectives), there would be no opportunity to identify and describe these important relationships, leaving the administrator with a skewed and/or incomplete picture of a child's social network. Studies involving the NRI were done almost exclusively with middle and upper-middle class White children from two-parent families, and although the samples for studies of "My Family and Friends" were somewhat more racially diverse (including 50% White and 50% African American children), they were still comprised of

middle to upper-middle class children. Given a more heterogeneous sample, such as children facing significant environmental challenges, children at risk for psychopathology, or a specific cultural group in a specific context, the researchers' findings about children's social support networks might vary greatly. It would therefore seem prudent to utilize an assessment flexible and child-directed enough to permit and encourage participants to communicate about their social networks as freely as possible.

Although findings from studies of "My Family and Friends" certainly support the assertion that young children have the capacity to comprehend and communicate about perceived social stress and support (Reid et al., 1989), other researchers have found ways to demonstrate that young children can provide useful and even unique perspectives on their experiences in relationships. In a study of social cognition among four year-old children, Gleason (2002), using a modified version of the NRI, found that his participants could differentiate between relationships based on whether they provided instrumental help or nurturance, and reliably identify issues of power and conflict in their relationships as well. Schermerhorn, Cummings, and Davies (2008) found that kindergarteners could share valuable information about family dynamics. Murray, Murray, and Waas (2008), in their study of teacher relationships with their urban African American kindergarteners, emphasized the necessity of gathering student perspectives in order to gain a full picture of the relationships described. In a study of the link between urban, low-income African American children's attachment styles at 4.5 years of age and their attributions of others' intentions two years later, Anan and Barnett (1999) used their own pictorial scale to measure social support. They found that perceived social support was positively and significantly associated with viewing ambiguous situations as prosocial rather than

aggressive, and that perceived social support mediated the relationship between attachment and adjustment.

Ecomaps as Assessment Tools

Given findings that link perceived social support to psychological and other key outcomes, evidence that young children can provide information about their social networks, and limitations of currently-available measures of social support, this study seeks to explore whether and how Ecomaps, considered as a measure of a child's experiences of social support and social stress, might provide insight into general psychological well-being. If Ecomaps can be administered and analyzed efficiently, and if they in fact yield data about psychological well-being and other outcomes, Ecomaps might be used self-report screening measure in schools, allowing primary school children in particular to contribute their perspectives to the universal screening process.

First described by Hartman (1978, 1995), Ecomaps are simple diagrams that provide a visual summary (a map) of an individual's perceptions about his or her social resources and social stressors (see Figure 1). They are currently utilized for assessment, planning, record-keeping, and therapeutic purposes in many fields, including social work, education, nursing, and the legal system (Carpenter-Aeby, Aeby & Boyd, 2007; Clausson & Berg, 2008; Rickert & Rettig, 2006).

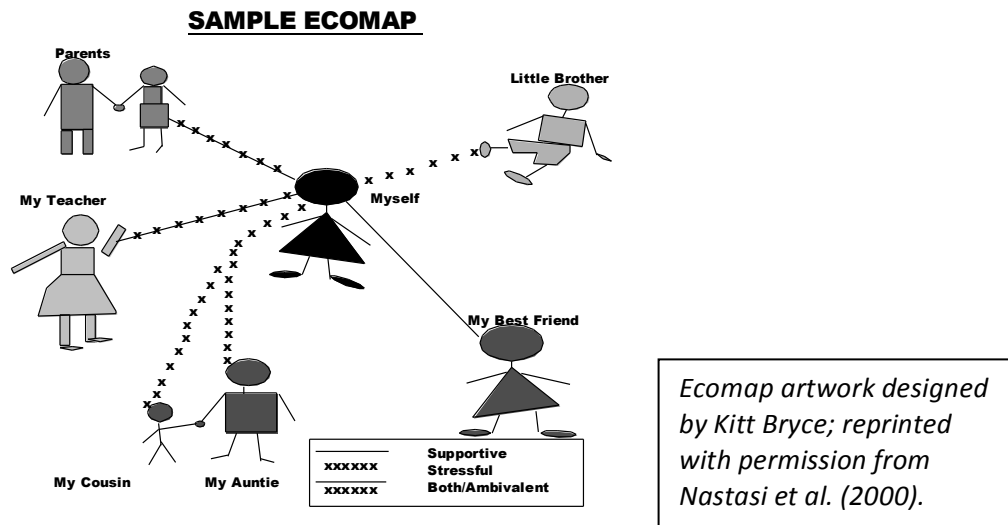


Figure 1. Sample Ecomap depicting a child (“myself”) and her family and friends.

To create an Ecomap, the subject is placed in the center of the drawing and representations of significant individuals, groups, or even organizations are drawn in the surrounding space. The quality of each relationship is noted using a code (often a colored line or pattern). Once completed, the Ecomap can be subjected to a simple, rapid visual analysis, potentially providing a large amount of information about the subject’s perceptions of his or her social network. The Ecomap can therefore serve as a “snapshot” of the subject’s impressions of her social world, offering particular insights into stressful, supportive, and ambivalent relationships.

If desired, the administrator can also ask probing and clarifying questions. Because questions are solely based on the subject’s relationship selections and ratings (e.g., *Tell me about this person; I see you marked her as supportive—tell me about that*), the administrator has the opportunity to learn in-depth information while minimizing the chances of inserting her own biases and perspectives into the assessment.

An Ecomap not only has the potential to elicit self-report information from a young child, but also may be efficient and flexible enough to be useful as a universal screening measure for schools serving culturally diverse groups of children. The link between perceptions of social support and stress and psychological well-being might mean that assessing children's perceptions of their social networks could provide insight into overall well-being, prompting further assessment when particular weaknesses and/or strengths are uncovered.

Ecomaps may provide valid information about children's well-being because they elicit the child's own ecologically-grounded view of his or her place in the world via a summary of perceptions about his or her "social ecology" (Pinkerton & Dolan, 2007). In completing and explaining his or her Ecomap, the child reports her perspective on the multiple resources, types of influences, and contexts that are relevant to her (Malecki & Demaray, 2003). This links back to the importance of taking a phenomenological approach to assessing well-being, in line with Spencer's (2008) PVEST. Assessment of the balance of risk and protective factors (in this case, social stress and social support) can provide the clinician or researcher with a more general view of the child's psychological health, including both vulnerability and resilience.

Ecomaps may serve as a feasible and desirable alternative (or complement) to literacy-based questionnaires and individual interviews in the assessment of well-being among young children, and particularly children of color because of their potential to resolve some of the difficulties presented by currently-available measures of social support and stress.

First, using Ecomaps, researchers and practitioners may be able to gather self-reports from young children, something that has heretofore been difficult to do on a universal basis in schools. Ecomaps can yield complex, nuanced self-report information without requiring significant verbal or literacy skills on the part of the subject (Ray & Street, 2005; Rempel, Neufeld & Kushner, 2007), avoiding obstacles presented by paper-and-pencil questionnaires or individual interviews. Young children may be taught to create the Ecomaps in a group setting, and then be given time to work on them alongside one another under adult supervision, altogether taking considerably less time than individual interviews would. Moreover, the Ecomap's visual simplicity also lends itself to rapid evaluation; because all of the child's influences and contexts are represented in the same visual field, one is able to gather an impression of how different types of stressors and supports from different systems combine and interact to influence the child's well-being (Bronfenbrenner, 1986; Marchant, Paulson & Rothlisberg, 2001). Prior research also indicates that a drawing-based approach may be particularly appropriate for eliciting information from young children. Driessnack (2005) and Wesson and Salmon (2001) found that in young children, drawing (and other forms of nonverbal expression, such as pantomime) allowed interviewers to elicit more detailed and substantive information, particularly about emotionally-laden events, than they were able to glean from verbal interviews alone.

Moreover, because children are free to report and evaluate any and all personally relevant relationships, the measure privileges how the child makes meaning of the multiple ecological systems in which she lives (Bronfenbrenner, 1986; Spencer, 2008). The fact that the child is relatively unrestricted in her choices of who and what to include

on her Ecomap also has positive implications for the measure's cultural and contextual validity, because the child can depict the constellation of relationships that is most relevant to her life, rather than conforming to the demands of a restrictive instrument. As previously discussed, instruments that ask a child to choose among relationships or limit the number of relationships discussed may make it difficult for a child whose social network does not resemble the standardization sample to accurately describe his or her social ecology; by being more child-directed, the Ecomap has the potential to more effectively avoid bias and elicit information that the child considers to be most important.

According to searches of PsycInfo (January 2012), no studies have been done that explore using Ecomaps to assess young children's psychological well-being; neither have any studies been conducted evaluating social support as a potential indicator of general well-being in African American-heritage children in New Orleans. Therefore, this study fills a gap in the literature. We have made an effort to achieve cultural and contextual specificity by identifying a study population that relatively closely mirrors the overall public school population in New Orleans, so that findings might inform local assessment and intervention practices. In Orleans Parish, 89 percent of our public school students are African American (Cowen Institute, 2010). According to the Greater New Orleans Community Data Center (2009), the majority of African American public school students (86.5%) qualify to receive either free or reduced-price meals, which, while not by any means a perfect indicator of poverty or socioeconomic risk, indicates that at least a significant percentage of children live in low-income families. Given the city's high rates of mental health problems and inadequate mental health services (Weisler, Barbee & Townsend, 2006; especially for the poor and people of color; Bendsen et al., 2007),

advances in assessment practices that help researchers and practitioners to better understand and promote mental health in this specific context might be extremely useful.

Evidence from Preliminary Data Analysis (2010)

In the spring of 2010, researchers in Dr. Nastasi's research team (International Psychological Well-Being Research Team) collected a preliminary set of Ecomaps from 42 children in Kindergarten, first, and second grades. Both the data collection process and preliminary analyses of the Ecomaps provided our research team with evidence of the feasibility of collecting Ecomap data from young children, as well as the potential usefulness of such data in analyzing children's perceptions of social support and social stress (Summerville, 2010).

After completing Ecomaps in small groups, children were interviewed individually. The purpose of the individual interview was twofold. First, researchers asked children clarifying questions (e.g., "Which relationships cause bad feelings?"), which helped to ensure clear understanding of children's intentions. Second, children were asked to elaborate on their codes for several relationships (e.g., "What feelings do you have when you are with this person or think about them? Tell me about that."), so that researchers could understand more about why children perceived given relationships as stressful, supportive, or ambivalent.

The Ecomaps and interviews yielded a variety of quantitative and qualitative data (Summerville, 2010). For example, we were able to analyze the balance of supportive, ambivalent, and stressful relationships for individual children as well as across groups of children (the entire group, as well as various configurations grouped by grade, sex, etc.).

We found that although the percentage of relationships coded as “stressful” was fairly consistent across grade levels (between 12 and 14%), the percentage of relationships identified as “ambivalent” increased from 5% in Kindergarten to 25% in first grade and 32% in second grade. It is possible that this is a change associated with typical development; very young children might perceive a relationship as wholly positive, while slightly older children may recognize increased levels of complexity. We were also able to examine the types of relationships represented on Ecomaps (peers were depicted most frequently, followed by cousins, teachers, mothers, and fathers) and to explore how children tended to code each relationship type.

Children’s elaborative statements about their relationships provided interesting qualitative data. For example, there were interesting patterns and commonalities in how children described supportive relationships (e.g., spending enjoyable time with and receiving help from adults, friendships characterized by helpfulness in times of need) as well as stressful ones (e.g., physical punishment, absent or inconsistent parenting, peer conflicts).

Our preliminary data collection process and analyses were valuable to the successful design and execution of the current study. We were satisfied that children were indeed participating effectively in the process and sharing useful and important information. Moreover, as researchers reflected on the procedures, we were able to begin to refine our data collection methods to increase efficiency and effectiveness with young children. During this preliminary phase, however, we did not have enough other information about our participants (e.g., academic, behavioral, or other social-emotional

data) to consider the contribution of Ecomaps in the context of a more general understanding of well-being.

Purpose and Research Questions

Given the above-described research on Ecomaps, as well as the importance of perceived support to psychological well-being, it is reasonable to assume that student-created Ecomaps might be evaluated in order to extract participants' perspectives on the balance and types of stressful and supportive relationships in their lives. This study seeks to explore whether and how such Ecomap-generated data might be correlated with other social-emotional, behavioral, and academic outcomes (measured using school-based archival data, including results of norm-referenced psychological assessment measures, data related to school behavior, and academic records) in primary school-aged public school children.

Hypotheses

This study has the following hypotheses:

1. Children's self-reported Support-Stress Indices (calculated by analyzing the valences of relationships reported on Ecomaps, with higher Support-Stress Indices indicating higher relative levels of stress compared to support) will be positively correlated with indicators of social-emotional risk and negatively correlated with indicators of social-emotional well-being (as measured using the Behavioral Assessment System for Children, 2nd Edition, BASC-2; Reynolds & Kamphaus, 2004).

2. Children's self-reported Support-Stress Indices will be negatively correlated with teacher ratings of student behavior (as measured by report card grades), so that children reporting higher relative levels of stress compared to support will display poorer school behavior.
3. Children's self-reported Support-Stress Indices will be negatively correlated with academic achievement (as measured by TerraNova scores in Reading/Language and Math for children in grades K-2 and by iLEAP scores in Reading/Language and Math for children in grade 3), so that children reporting higher relative levels of stress compared to support will display poorer academic achievement relative to peers with higher relative levels of support.

Method

Data for this study are archival, and were obtained from the school records in de-identified format. Procedures for obtaining and using archival data were reviewed and approved by the Tulane University IRB. The following sections include descriptions of the participants and measures, as well as procedures for conducting universal screening.

Participants

Participants included sixty-one children (40.9% female) enrolled in grades Kindergarten through 3 in a public charter school in New Orleans. In 2010-2011, the school population was predominantly African American (89.5% African American, 9.1% multi-racial, 1.4% White), and the majority of students qualified for free (84.9%) or reduced-price meals (3.2%) (New Orleans Parent Organizing Network, 2011).

Participants ranged in age from 6 to 10 ($M = 7.39$, $SD = 1.19$) (See Table C2, Appendix C, for sample characteristics).

Measures

Measures included psychological, behavioral, and academic indices collected during the Spring semester of 2010-2011 school year. Psychological measures were the Behavioral Assessment System for Children, 2nd Edition (BASC-2; Reynolds & Kamphaus, 2004) and Ecomaps (a self-report measure of stress and support). Student conduct grades on report cards were used as the behavioral measure. Academic measures were TerraNova 3 examinations (CTB/McGraw-Hill, 2008; grades K-2) and the Integrated Louisiana Educational Assessment Program (iLEAP) examinations (Louisiana Department of Education, 2011; grade 3) in both Reading/Language and Mathematics.

Academic achievement data and behavior grades were routinely collected and recorded by school staff. Data on psychological well-being were collected as part of the school's universal screening process for mental health and psychological well-being. The purpose of the screening was to understand and promote social-emotional and behavioral health in the context of the school's larger mission of promoting academic success, and was twofold: (a) to identify and provide interventions for individual children identified as at-risk of psychological distress; and (b), to identify trends that might warrant prevention and/or intervention activities at a select group or population level. The BASC-2 and Ecomaps were administered as part of Tier II screening to a subsample of the school population who had been identified as at risk. School personnel oversaw the universal screening process; Tulane doctoral students assisted by administering both the BASC-2

and Ecomaps. The measures relevant to this study included behavior grades, standardized test scores, BASC-2, and Ecomaps. Each is described in detail.

Behavior Grades

Teachers assign report card grades for behavior on a 1-4 scale. A grade of 1 indicates extremely poor behavior and 4 indicates outstanding behavior.

Academic Achievement Measures: Standardized Test Scores

Standardized tests were administered in mid-late spring 2011. Kindergarten, first, and second grade students took nationally-normed TerraNova 3 examinations (CTB/McGraw-Hill, 2008), which produced scaled scores in Reading, Language Arts, and Math. Third grade students took statewide norm-referenced iLEAP examinations (Louisiana Department of Education, 2011), which produced scaled scores in Language Arts (reflecting reading and other language arts skills) and Math. The school uses these scaled scores (among various other data points) as they evaluate student progress and make placement decisions.

The TerraNova 3 (grades K-2) and the iLEAP (grade 3) reported Reading and Language Arts scores differently. The iLEAP combined reading and language arts and reported as a single Language Arts score. The TerraNova 3 reported separate Reading and Language Arts scores. To facilitate analysis across grade levels, Reading and Language scaled scores from the TerraNova 3 were averaged, yielding a composite Reading/Language score that could be compared to the iLEAP Language Arts score. In addition, all scores were converted to z-scores, with each participant's scores compared to the mean of his or her grade level.

Behavioral Assessment System for Children, 2nd Edition (BASC-2)

The BASC-2 (Reynolds & Kamphaus, 2004) is a nationally-normed assessment of psychological well-being that yields multiple indices of risk for various internalizing and externalizing problems, in addition to measuring some adaptive skills. Children selected for Tier II screening completed either the Self-Report of Personality for Children (SRP-C; ages 8 and older) or the Self-Report of Personality, Interview (SRP-I; ages 6-7). The BASC-2 yields multiple scales that provide information about psychological risk and well-being, and those scales common to both the SRP-C and SRP-I were used in this study. All BASC-2 scores analyzed in this study are self-reported, and thus represent the child's perception of his or her functioning. Six BASC-2 scales were analyzed for this study: (1) Attitude to School (defined as "feelings of alienation, hostility, and dissatisfaction regarding school"); (2) Attitude to Teachers (defined as "feelings of resentment and dislike of teachers; beliefs that teachers are unfair, uncaring, or overly demanding"); (3) Social Stress (defined as "feelings of stress and tension in personal relationships; a feeling of being excluded from social activities"); (4) Anxiety (defined as "feelings of nervousness, worry, and fear; the tendency to be overwhelmed by problems"); (5) Depression (defined as "feelings of unhappiness, sadness, and dejection; a belief that nothing goes right"); and (6) Interpersonal Relations (defined as "the perception of having good social relationships and friendships with peers") (Reynolds & Kamphaus, 2004; p. 74). All scales yield T-scores. On the first five scales listed (Clinical Scales), higher T-scores indicate greater risk (scores of 60-69 are considered "At-Risk", while scores of 70 and above are considered "Clinically Significant"), while on the Interpersonal Relations scale (an Adaptive Scale), a higher T-score indicates greater well-being and a lower score indicates poorer functioning (scores of 31-40 are considered "At-

Risk” and scores 30 and below are “Clinically Significant”) (Reynolds & Kamphaus, 2004).

Students were selected for Tier II screening based on teacher and/or self-report ratings from the Behavioral and Emotional Screening System (BESS, Kamphaus & Reynolds, 2007), an abbreviated version of the BASC-2 (Reynolds & Kamphaus, 2004), designed for use as a universal (Tier I) screening tool. Teachers completed the teacher-report form for all students in grades K-3. In addition, students in grade 3 completed the self-report form. The self-report is not valid for children below grade 3. If a child’s scores (calculated using combined sex norms, with a confidence level of .05) on either self- or teacher-report BESS indicated potential risk for psychological distress (falling in the Elevated [$61 \leq T \leq 70$] or Extremely Elevated [$T \geq 70$] ranges), school personnel sought informed consent from parents or guardians for further assessment. All children for whom consent was received participated in Tier II assessment. Tier II assessment was conducted in the spring of 2011 using the BASC-2 (for children aged six and older; several five year-old children were identified as at-risk for psychological distress, but were too young to complete the BASC-2) and Ecomaps (described in later section). The school asked Tulane doctoral students to administer these psychological assessments as part of an ongoing school-university partnership.

Two different versions of the BASC-2 were administered, based on participant age, as indicated by the BASC-2 manuals. For participants aged 6 and 7, the Self-Report of Personality, Interview (SRP-I) was completed following the test manual for SRP-I (Reynolds & Kamphaus, 2005). Administrators interviewed each child individually, asking each question aloud and recording the child’s answers. Participants aged 8 and

older completed Self-Report of Personality for Children (SRP-C; Reynolds & Kamphaus, 2004), with some deviation from typical protocol. Typically, children are asked to complete the SRP-C independently. Given the range of literacy levels among students, the SRP-C was administered in way that preserved independence of answers while ensuring adequate comprehension of test items. Children were gathered in groups of five or six, with privacy screens (routinely used by the school for various reasons, so children were familiar with them) between them. The test administrator read each question aloud to the whole group, obviating the need for any individual child to speak up and ask for a question to be read to him or her. Children were allowed to ask clarifying questions, and were encouraged (generally successfully) to refrain from other speech during the assessment.

Ecomaps

Participants completed Ecomaps at the same time as the BASC-2. Ecomaps, described previously in this paper, were administered in order to ascertain children's perceptions of the levels of stress and support present in their social relationships. The protocol outlining the Ecomap data collection process was based on the general protocol developed for the Promoting Psychological Well-Being Globally project¹ (PWBG) (Nastasi & International Psychological Well-Being Research Team, 2008, 2010; Nastasi, Jayasena, Summerville, & Borja, 2011) and modified for use with young children; modifications included breaking the activity into short, discreet chunks, simplifying

¹ Dr. Bonnie Nastasi is the principal investigator on the Promoting Psychological Well-Being Globally (PWBG) project. The International Psychological Well-Being Research Team refers to the Tulane Research Team as well as international project partners who participated in the project.

vocabulary, engaging children in discussions about feelings in order to activate prior knowledge, increasing use of visual prompts, and administering the measure in small groups, rather than with a whole class (Nastasi & International Psychological Well-Being Research Team, 2010; Summerville, 2010).

Although the protocol (see Appendix A) provides detailed step-by-step procedures for administering Ecomaps, several key elements of the administration process bear additional explanation here. First, as discussed above, efforts were made to ensure the measure's appropriateness for primary school children. Ecomaps were completed in small groups, with participants matched by grade level, and variable levels of adult assistance were given to children depending on their needs. Sessions lasted approximately 40 minutes. Participants were informed of the voluntary nature of their participation, and received small stickers at the end of the session. Children were encouraged and supported to complete their work without undue influence from other children via separate seating and consistent administrator availability to answer questions and provide pre-determined prompts as necessary. Some children, particularly the older ones in the sample, were able to create their Ecomaps with only minor assistance. Younger children, however, needed significant one-on-one assistance. Administrators monitored children's progress and used their discretion in determining when a transition to one-on-one work would be more productive. Some children finished their drawing and coding while working one-on-one with the administrator before beginning the interview portion of the task.

In addition, efforts were made to ensure the measure's flexibility and to make it as child-directed as possible. Children were free to draw as many people as they liked and

were permitted to include groups of people, places, and even non-human relationships (e.g., pets, toys), although the inclusion of the latter two categories was not specifically encouraged. In order to elicit a range of responses while preserving participant choice, administrators encouraged participants to include at least six relationships, and, if necessary, were prompted to include both adults and children from various microsystems (e.g., home, school). Pre-determined prompts were used in order to minimize bias (See Appendix A). They included questions such as: How about kids? How about adults? How about somebody from school? After completing their drawings of all the people in their social networks, children were asked to “code” each relationship as “supportive” (generating good feelings), “stressful” (generating bad feelings), or “both” (generating both kinds of feelings); children were encouraged to use codes provided by the administrators (a line of dots for “supportive”, a line of x’s for “stressful”, alternating dots and x’s for “both/ambivalent”) but were permitted invent their own. If a child created his or her own code, the administrator drew a key on the Ecomap in order to facilitate interpretation.

The interview portion of the task also helped to ensure the measure’s validity and the administrator’s accurate comprehension of children’s intentions. After the group session (either the same day or within 1-2 days afterward), each child participated in an individual interview (lasting approximately 10 minutes) with an administrator to explain his or her Ecomap. First, the administrator checked to ensure that all relationships were labeled, that the child’s coding system was consistent, and made sure to clarify which relationships were stressful, supportive, and ambivalent. The administrator then asked the child to choose and describe six relationships, encouraging him or her to discuss a variety

of relationships (e.g., stressful and supportive, adults and children, from different microsystems). The decision to limit the number of relationships discussed stemmed from a need to limit the length of the interview, given that some children depicted very large social networks. Several children had fewer than six relationships despite gentle encouragement to include more; these children just described all the relationships they had included. For each relationship chosen, the child was asked (a) to name the feeling(s) that they have about the person or when they are with the person and (b) to “tell more” about having those feelings. Children typically elaborated on reasons for selected feelings or shared an experience associated with those feelings. The administrator recorded the child’s responses.

Ecomaps were analyzed in order to derive several Support-Stress Indices (SSIs) for each participant. First, each coded relationship on the child’s Ecomap was assigned a numerical value. Relationships characterized as *supportive* were given a value of 1, *stressful* relationships were valued at 2, and *mixed/ambivalent* relationships were coded 1.5. For each SSI, relevant values were summed and then divided by the total number of relationships coded; each SSI therefore ranges from 1 (100% of relationships are supportive) to 2 (100% of relationships are stressful).

Seven SSIs were calculated: (1) an Overall SSI, representing all relationships depicted; (2) a Family Adult SSI, representing the child’s perception of relationships with family adults (e.g., parents, grandparents, aunts, uncles); (3) a Family Peer SSI (e.g., brothers, sisters, cousins); (4) a School Adult SSI (e.g., teachers, other school staff); (5) a Peer/Friend SSI (e.g., classmates, friends, other peers); (6) an “Other” SSI, including any relationships depicted that do not fall in any of the above categories (e.g., pets,

celebrities); and (7) a Self SSI, calculated in the event that a participant coded feelings about him- or herself on the Ecomap. While every child was assigned an Overall SSI and a Family Adult SSI (because every child represented at least one family adult on his or her Ecomap), the number of children assigned the other five indices varied from 16 (for the Self SSI) to 58 (for the Family Peer SSI), based on the number of children who included relevant data on their Ecomaps.

Results

Data Screening

Data screening was conducted prior to running statistical analyses (Tabachnick & Fidell, 2001). The dataset was verified to ensure the accuracy of the data entry. As previously mentioned, participants were selected based on their participation in the Tier II level of the school's universal screening process. All 61 students who had completed both the Ecomap and the BASC-2 were included in the study. Academic achievement scores were also available for all participants; Behavior Grades were available for all participants but one. In performing correlations, pairwise deletions were used for any missing data points, leading to varying sample sizes for some analyses (e.g., one child did not have a behavior grade, and individual variations in Ecomaps meant that while most children included a "school adult", some did not), but no participants were excluded from the study.

Assumptions of univariate normality were tested by examining the skew and kurtosis in each of the study variables (see Table C4, Appendix C). Moderate to extreme skew and kurtosis were observed in several variables. However, given the exploratory

nature of the study and the fact that participants were drawn from a specifically high-risk population (students identified as at-risk for psychological distress), the decision was made to analyze the data without transforming the variables. This is discussed further when study limitations are addressed.

Preliminary Analyses

Descriptive Statistics

Across the entire sample ($N = 61$), the means of all BASC-2 Clinical and Adaptive scales analyzed fell within the Average range (<60 for Clinical Scales, 47.2 for “Interpersonal Relations”, the only Adaptive Scale analyzed; scales were calculated using combined sex norms, with a confidence level of .05). The average participant included 13.15 relationships on his or her Ecomap (the number of relationships depicted will be hereafter referred to as “Network Size”). The means of Ecomap SSIs ranged from 1.16 (“Other” SSI) to 1.35 (School Adult SSI); the fact that mean SSIs were all lower than 1.5 indicate that the average relationship was more likely to be coded as supportive than stressful. Participants earned a mean Behavior Grade of 2.47, with assigned grades ranging from 1 to 4. Means and standard deviations for all study measures are found in Table 1.

Table 1

Means and Standard Deviations for All Study Measures

	<i>M</i>	<i>SD</i>	<i>N</i>
Ecomaps			
Network Size	13.15	5.76	61
Overall Stress-Support Index (SSI)	1.22	.13	61
Family Adult SSI	1.20	.20	61
Family Peer SSI	1.29	.20	58
School Adult SSI	1.35	.32	44
Peer/Friend SSI	1.20	.22	53
Other SSI	1.16	.24	42
Self SSI	1.25	.37	16
BASC-2 Scales			
Attitude to School	54.11	11.11	61
Attitude to Teachers	58.48	15.03	61
Social Stress	54.54	10.67	61
Anxiety	54.62	10.08	61
Depression	56.20	10.75	61
Interpersonal Relations	47.74	12.03	61
Behavior Grade	2.47	.79	60
Reading/Language Arts Score	.000	.97	61
Mathematics Score	.000	.97	61

Note. Reading/Language Arts Score and Mathematics Scores were converted to z-scores. Means and standard deviations for scaled scores (by grade) are indicated in the Appendix (Appendix C, Table C3).

Preliminary analyses were performed to examine correlations between sex, grade level, network size, and other study variables. Two-tailed zero-order correlations revealed variations across sex and grade level (see Appendix C, Table C1 for complete zero-order correlations). According to zero-order correlations, sex was statistically significantly correlated ($p < .05$) with scores on several BASC-2 scales, including Attitude to School ($r = .312, p = .014, N = 61$), Depression ($r = .269, p = .036, N = 61$), and Interpersonal Relations ($r = -0.311, p = .015, N = 61$). These findings indicate that girls in the sample were more likely to report poorer attitudes toward school, more risk factors for

depression, and poorer functioning in interpersonal relationships than were boys in the sample. Grade level was significantly correlated ($p < .05$) with Ecomap Network Size ($r = .424, p = .001, N = 61$), Ecomap Peer/Friend SSI ($r = .306, p = .026, N = 53$), Behavior Grades ($r = .322, p = .012, N = 60$), and BASC-2 Interpersonal Relations scores ($r = .255, p = .047, N = 61$). This indicates that, in our study sample, children in higher grades are more likely to report having larger social networks, greater stress and less support from friends and/or peers, better behavior grades, and better functioning in interpersonal relationships than children in earlier grades. (Note that Ecomaps and Behavior Grade scores, unlike BASC-2 and academic achievement scores, were not adjusted for age.)

Zero-order correlations also revealed statistically significant relationships between the size of social networks reported on Ecomaps and other study variables, including mathematics achievement scores ($r = .263, p = .041, N = 61$), and BASC-2 Attitude to Teacher ($r = .293, p = .022, N = 61$) and Anxiety ($r = .324, p = .011, N = 61$) scores. These correlations indicate that participants who reported larger social networks were more likely to be at higher grade levels, have higher math achievement scores, and report poorer attitudes toward their teachers and more symptoms of anxiety than participants who reported smaller social networks.

Given findings from preliminary analyses, sex, grade, and network size were used as control variables in testing the study's hypotheses. Thus, in addition to zero-order correlations, partial correlations were performed controlling for sex, grade, and network size in separate analyses (see Appendix C, Tables C5-C7, for partial correlations). Instances in which partial correlations altered the zero-order relationships are noted in the

subsequent sections; if no notation is made, it should be assumed that partial correlations did not substantially alter the zero-order relationships.

Results by Hypothesis

Hypothesis 1: Ecomap Support-Stress Indices & BASC-2 Scale Scores

Hypothesis 1, that children's self-reported Support-Stress Indices (SSIs) would be positively correlated with indicators of social-emotional risk and negatively correlated with indicators of social-emotional well-being (as measured using the Behavioral Assessment System for Children, 2nd Edition, BASC-2; Reynolds & Kamphaus, 2004), was supported.

Zero-order correlations revealed several statistically significant correlations between Ecomap SSIs and BASC-2 scale scores (see Table 2). The Overall SSI and the BASC-2 Attitude to Teacher scale were moderately positively correlated ($r = .312, p = .015, N = 61$), indicating that participants who reported higher levels of social stress and lower levels of social support overall were more likely to report poorer attitudes toward their teachers than were other participants. In addition, when controlling for sex, the correlation between Overall SSI and the BASC-2 Interpersonal Relations scale is statistically significant ($r = -.255, p = .049, N = 61$); children who reported higher levels of social stress and lower levels of support on their Ecomaps also reported poorer relationships with others on the BASC-2.

Moreover, two Ecomap sub-indices, the School Adult SSI and the Peer-Friend SSI, were moderately correlated with the BASC-2 Attitude to Teacher scale ($r = .313, p = .038, n = 44$; $r = .380, p = .005, n = 53$), indicating that participants who reported higher

levels of stress and lower levels of support in teacher and peer relationships on their Ecomaps also reported poorer attitudes toward their teachers on the BASC-2. When controlling for Network Size, the significance of the correlation between the Peer-Friend SSI and the BASC-2 Attitude to Teacher score decreased slightly, but was still statistically significant at $p < .05$ ($r = .330$, $p = .017$, $n = 53$). In addition, the Family Adult SSI was significantly positively correlated with the BASC-2 Anxiety scale ($r = .282$, $p = .028$, $N = 61$), indicating that children who reported higher levels of stress and lower levels of support in relationships with family adults (e.g., parents, grandparents, etc.) on their Ecomaps also reported more anxiety symptoms on the BASC-2.

Table 2

Bivariate Correlations between Ecomap Indices and BASC-2 Scales

	BASC-2 Scales					
	Attitude toward School	Attitude toward Teachers	Social Stress	Anxiety	Depression	Inter-personal Relations
Ecomap: Overall SSI	.06 (61)	.31* (61)	.24+ (61)	.23+ (61)	.16 (61)	-.23+ (61)
Ecomap: Family Adult SSI	.06 (61)	.14 (61)	.14 (61)	.28* (61)	.24+ (61)	-.10 (61)
Ecomap: Family Peer SSI	-.11 (58)	-.01 (58)	.15 (58)	.07 (58)	-.05 (58)	-.09 (58)
Ecomap: School Adult SSI	.11 (44)	.31* (44)	.03 (44)	.16 (44)	.02 (44)	-.15 (44)
Ecomap: Peer/Friend SSI	.22 (53)	.38** (53)	.08 (53)	-.02 (53)	.13 (53)	-.04 (53)
Ecomap: Other SSI	-.03 (42)	.20 (42)	.09 (42)	.20 (42)	.17 (42)	-.05 (42)

Note. Numbers in parentheses refer to sample size (n) by analysis. Numbers in bold indicate statistical significance at the $p < .05$ or $p < .01$ levels.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level; two-tailed)

Hypothesis 2: Ecomaps & Behavior

Hypothesis 2, that children's self-reported Support-Stress Indices (SSIs) would be negatively correlated with teacher ratings of student behavior (as measured by report card grades, with children reporting higher stress and lower support also earning poorer behavior grades), was supported.

Zero-order correlations between Ecomap SSIs and behavior grades yielded no statistically significant correlations, although the correlation between Overall SSI and Behavior Grades approached significance ($r = -0.235, p = .070, N = 60$). When controlling for grade level, the correlation between Overall SSI and Behavior Grades was statistically significant ($r = -0.258, p = .049, n = 60$). This statistically significant negative correlation between Overall SSI and Behavior Grades indicates that participants reporting higher social stress and lower support on their Ecomaps demonstrate poorer school behavior, according to teacher ratings.

Hypothesis 3: Ecomaps & Academic Achievement

Hypothesis 3, that children's SSIs would be negatively correlated with standardized Reading/ Language Arts and Math Achievement Scores, was not supported. Overall SSIs were not significantly correlated with academic achievement scores. Bivariate correlations between Ecomap sub-indices and academic scores did reveal one interesting result contrary to the hypothesis: There was a statistically significant positive correlation between children's Family Adult SSI and Math achievement scores ($r = .284, p = .027, N$

= 61), indicating that higher stress and lower support in relationships with family adults was associated with higher (not lower, as was hypothesized) achievement in math.

Secondary Analyses

The Self SSI, which we chose to calculate and analyze after noticing that 16 participants coded themselves on their Ecomaps, was significantly and moderately correlated with the BASC-2 Depression ($r = .542, p = .030, n = 16$) and Interpersonal Relations ($r = -.599, p = .014, n = 16$) scales. These correlations indicate that children who coded themselves as “stressful” on the Ecomaps were very likely to report increased depressive symptoms and poorer interpersonal relations when compared with other children, as measured on the BASC-2. When controlling for Grade, the statistical significance of the relationship between the Self SSI and the BASC-2 Interpersonal Relations score increased to the $p < .01$ level ($r = -.653, p = .008, n = 16$); a similar increase in significance occurred when controlling for Network Size ($r = -.647, p = .009, n = 16$). Although the sample size was small, these relationships merit further investigation in future studies.

Discussion

This study examined the potential for the Ecomap to be utilized as a school-based psychological assessment measure for children in grades Kindergarten through 3. The rationale for this study emerged from a need to improve schools’ capacity to efficiently evaluate all children’s psychological well-being so as to inform school-wide programming and the provision of targeted prevention and intervention services. This

discussion will summarize and explore our major findings and explain several study limitations.

Although the study was exploratory in nature, findings are promising in that the calculated Ecomap Support-Stress Indices (both the overall Index and sub-scales) were correlated with participants' scores on the BASC-2, a well-validated self-report measure of psychological well-being, and with participants' Behavior Grades (Hypotheses 1 & 2). These findings affirm conclusions of previous research linking perceived social support with greater psychological well-being and school adjustment.

Children whose Ecomaps revealed that they perceive higher stress and lower support in relationships in general and specifically with school adults and their peers or friends also were more likely to report stress in relationships with teachers and others on the BASC-2, providing evidence of Ecomaps' convergent validity. In addition, children who reported having higher stress levels in relationships with family adults (e.g., parents, grandparents, etc.) on their Ecomaps also were more likely to report increased anxiety symptoms on the BASC-2. Finally, children with more positive overall assessments of their relationships on Ecomaps also tended to receive better Behavior Grades from their teachers.

Taken together, these findings affirm existing research linking elementary school children's perceptions of their relationships with overall psychological well-being, including incidence of both externalizing and internalizing behaviors. Moreover, the specific links between perceptions of relationships with school adults and peers, teacher reports of student behavior, and children's attitudes toward their teachers and peers echo

research findings that link perceptions of relationship quality with school engagement, involvement in school activities, happiness, feelings of connectedness, and compliance with classroom rules (Booth & Sheehan, 2008; Rey et al., 2007).

That children aged six² through eight were able to contribute information about their social support networks and that their reports corresponded with their self-reported psychological well-being (as found in their BASC-2 scores) supports the assertion that these young children are reliable informants. This aligns both with previous research about young children's capacity for providing reliable information about their social support networks (Anan & Barnett, 1994) and with ecological-phenomenological theory (Bronfenbrenner, 1986; Spencer, 2008), both discussed in the introduction section. Gathering self-report information on children's psychological well-being via Ecomaps privileges the child's approach to making meaning of the multiple ecological systems affecting his or her life and development.

By contrast, the hypothesized correlations between perceived social support and stress and academic achievement (Hypothesis 3) were not observed; achievement test scores were not significantly correlated with the indices of perceived stress and support we derived from Ecomaps. On one hand, this may provide evidence of discriminant validity, as we are exploring using Ecomaps as a measure of psychological well-being and do not purport to use it to measure academic achievement. However, as previously discussed, some literature does link psychological well-being, and specifically perceived social support and stress, with academic achievement, particularly among middle and

² Five-year-old children were included in the study and created Ecomaps, but were too young to complete the BASC-2.

high school students (Abbott-Chapman et al., 2008; Ahmed et al., 2010; Daly et al., 2009; Malecki & Demaray, 2006; Rosenfeld et al., 2000). Moreover, Pallock and Lamborn (2006) argue that the link between perceived social support and academic achievement may be particularly strong among low income youth and youth of color. The fact that this relationship did not appear in our study may be due to the youth of our participants. Perhaps children in our study sample were too young for such academic differences to clearly emerge, or, if such differences did exist, the assessment measures used do not pick them up. Following the children in this sample over time may yet reveal a link between perceived support or stress and academic achievement. For example, at primary school age, stress in school relationships might affect levels of externalizing behaviors, and therefore behavior grades, and while stress might also provoke feelings of anxiety or depression, these internalizing emotions might not impede academic achievement in young children the way that they can in older children and adolescents. As previously noted, higher levels of stress associated with family adults was actually correlated with better mathematics achievement scores among children in our sample. It would be worth examining links between stress and support and achievement in future studies, particularly given that this unexpected result contrasts with other research that has identified links between positive parenting and academic success among low income, African American children ($M = 10.37$ years; Gaylord-Harden, 2008).

Study Limitations

This study has a number of limitations that bear mentioning. First, any relationships between our variables are correlational, and therefore should not be construed as implying causality. Next, Behavior Grades are not assigned in a

standardized way, limiting our ability to draw reliable conclusions about the relationships between behavior and other variables. However, being that they were the only behavioral measures available at the school, and that they do provide at least some information about teacher perception of student behavior in the classroom, we opted to include them.

Because these grades were found to correlate with Ecomap and BASC-2 scores, it would be worthwhile to consider further investigating the interplay of student behavior with other psychological indicators, including more robust or at least a greater variety of data points for assessment of student behavior and perhaps coding for cohort effects to control for differences in how grades are assigned by different teachers.

The fact that this study was completed with a small population of children, all of whom were already identified as at risk for adjustment problems, presents certain limitations that should be addressed in future research. It is not possible to assume that the relationships found between Ecomap indices, BASC-2 scales, and behavior grades would hold in the general population. One might expect, for example, that if data from Ecomaps, BASC-2 and/or BESS, academic achievement scores, and behavior grades were analyzed as part of a universal screening process, there might be more variation in all types of scores than when only children scoring in the At-Risk range are included. Having a broader population of students might strengthen or weaken the argument for using the Ecomap as an assessment tool. As discussed earlier, moderate to extreme skew and kurtosis was observed in several variables, but the decision was made to move forward in analyzing variables because skew and kurtosis might likely be due to the fact that the population was so restricted—in a broader study, one could evaluate the accuracy of this assumption.

This paper addresses how data gleaned from Ecomaps might be quickly quantified and analyzed for the purpose of identifying children in psychological distress. While quantification may make it possible to use the Ecomap as a screener, it is important to recognize that the qualitative data we gathered as children explained their Ecomaps could help to shed light on some outstanding questions. For example, perhaps in their conversations with the researchers, children gave clues about the mystifying correlation between higher family adult stress and better mathematics achievement, or about the interaction between sex, grade level, and stress in peer relationships. Engaging in a mixed-methods study would likely add increased depth to our understanding of children's experiences. Looking to the social support literature, we might also code children's statements and explanations to further tease out variations in definitions and types of social support (Gleason, 2002; Malecki & Demaray, 2003). The concept of perceived social support has been defined and explained in various ways. For a review, see Malecki & Demaray, 2002. In the current study, as can be seen in the Ecomap Protocol (Appendix A), we took a very broad approach to the concept, partly because of the youth of the participants and partly because we hoped to maintain the open-ended nature of the assessment; to this end, we focused on "good feelings" or "bad feelings", but in the future, it would be worth examining qualitative data to try to tease out culture- and context-specific definitions of social support and stress.

Conclusion and Future Directions

In analyzing the data from this study, we became aware of a variety of interesting and sometimes unexpected results that offer many possibilities for future investigations. First, while we were able to demonstrate several statistically significant correlations between

data gleaned from Ecomaps and psychological well-being as measured by the BASC-2, even more relationships approached significance. For example, participants' Overall SSIs correlated at a trend level ($p < .1$) with the BASC-2 Social Stress, Anxiety, and Interpersonal Relations scales, with higher SSIs correlating with higher levels of social stress, higher levels of anxiety, and poorer interpersonal relations. While these results are not statistically significant, they may provide a foundation on which to base future analyses with a larger dataset; with larger sample sizes, we may find that the SSI correlates with even more BASC-2 subscales than were identified in this study.

In addition, the Self SSI, though calculated post hoc based on a very small sample of children ($n = 16$), also offers a very interesting possibility for future research. As previously explained, some children took it upon themselves to draw the interpersonal relationship codes presented by the examiner (for “stressful/supportive/ambivalent” or “good feelings/bad feelings/both”) around the pictures of themselves on their Ecomaps. Although this idea was wholly child-generated and executed, we decided to do an exploratory analysis of these codes and found that children who coded themselves as “stressful” were very likely to also report symptoms of depression and anxiety on the BASC-2. This is particularly compelling given prior research indicating that relying on teacher reports during universal screening may result in the under-identification of children with psychological problems (Kamphaus et al., 2007; Renshaw et al., 2009; Summerville et al., 2011). If Ecomaps could be administered universally, and if they do in fact help to identify children with internalizing problems, they might help to address the limitations of teacher report measures, such as the BESS, for young children. In future Ecomap administrations, children could be encouraged to code themselves, helping

examiners to identify children whose internalizing problems might have escaped the notice of their teachers.

In future studies, we may want to more closely examine variations that may exist in children's perceptions of their social networks across sex, grade level, and network size. We did not hypothesize about how these variables might affect children's perceptions of themselves and others, or about whether sex, grade level, network size, or other variables might mediate or moderate experiences of stress or support. For example, as previously discussed, girls in our study reported more psychological distress (including symptoms of depression, poorer attitudes toward school, and more troubled interpersonal relationships) on the BASC-2 than did boys, but no sex differences appeared in our Ecomap analyses. In addition, grade level differences were also relevant, initially masking the relationship between the Overall SSI and children's behavior grades; in constructing their Ecomaps, older children were more likely to report experiencing stress in relationships. Future studies could explore how well children of different ages and/or in different cohorts are able to express feelings about stress in relationships; these initial findings beg the question of whether the younger children actually feel happier and more supported, or whether differences simply result from developmental shifts in communication and perceptive skills. In their study of largely low-income, African American preschoolers ($M = 55.56$ months), Garner and Lemerise (2007) explored social information processing, finding that a child's understanding of feelings and ability to appraise emotions in himself or herself and others had an impact on the quality of his or her relationships with peers. Presumably these abilities develop over time and would in general improve with age; if this is true, then other variables likely influence the older

child's tendency to feel increased relationship stress. The relevance of network size also merits further exploration; that children who report larger social networks tend to have higher levels of academic achievement could mean that kids with higher cognitive ability and/or academic skills make more friends, or it could mean that kids with higher cognitive ability and/or academic skills worked more quickly and were able to recall and report a greater number of relationships on their Ecomaps than were other children. Similarly, children reporting larger social networks were more likely to report symptoms of depression and anxiety on the BASC-2. In each case where social network size is correlated with other variables, it may be that a third variable is really at play; what that variable might be has not yet been explored. It would be interesting to further explore whether and how sex, grade level, and network size differences are manifested in a larger, broader study sample.

This study fills several gaps in the literature and suggests a potential application of Ecomaps in universal screening. First, it begins to develop a method for extending the study of social support and social stress into younger and more diverse populations and offers data on perceived social support, stress, psychological well-being, and school success among African American children in New Orleans. As previously discussed, the Ecomap yields complex information very quickly while requiring no literacy skills on the part of the participant; the fact that it is a drawing-based assessment also allows the examiner to capitalize on the strengths of young children, who tend to share more detailed information when they draw than when they participate in verbal interviews alone (Driessnack, 2005; Wesson & Salmon, 2001).

The fact that the Ecomap is participant-directed, allowing the child (in this case) to focus on the people most important to him or her, enables the assessment to be more developmentally appropriate but also more culturally specific and valid than other existing assessments of social support, which limit the types and/or number of relationships a child can describe. Given that the population of children we are studying is African American, it is also potentially valuable to focus attention on social support and stress when attempting to evaluate psychological well-being. As previously discussed, social connectedness may be particularly important in African American communities, and thus exploring a child's perception of his or her social networks might help to illuminate both strengths and tensions that might go unnoticed if children are given a psychological assessment that either does not emphasize social relationships and allow a child to accurately reflect the relationships in his or her own life. While the data gleaned from any study of one group of people in a single place and time is limited in its generalizability to other groups, such a study also allows for the possibility of uncovering deep and culturally specific information with the potential to inform both research and practice. A child's Ecomap represents his or her perceptions of his or her social network at one moment in time; therefore, future studies might include multiple Ecomap administrations over time to track how a child's perspective (and/or his or her social network itself) changes over time. The Ecomap has potential to be a sensitive measure of what is really going on in a child's life.

An additional potential strength of the Ecomap as a measure of psychological well-being is that it allows for consideration of both support and stress in attempting to understand a child's perspectives on his or her life. Some other measures, such as "My

Family and Friends” (Reid et al., 1989), focus entirely on support, whereas Ecomaps allow the consideration of a broad continuum of experiences and perspectives. Reid and colleagues consider it unethical to focus on negative emotions and social situations with children because of the discomfort and potential feelings of internal conflict the children might experience if they feel they are casting a negative light on others. They also argue that children might become less willing to engage with an examiner, particularly a stranger, as a result of being engaged in discussions of negative situations. Certainly, ethical considerations are critical, particularly given the omnipresence of sensitive and emotionally-charged information, and require that we find ways to handle negative information sensitively and capitalize on the strengths of the Ecomap while avoiding ethical violations.

The Ecomap is entirely child-directed and thus examiners are not providing children with information about negative situations, but are only listening if such information is shared. This may be different from other assessments, which ask children to respond and relate to pictures or scenarios (Reid et al., 1989). Opening the assessment process to the possibility of negative emotions and scenarios allows and welcomes children’s honest appraisals of their feelings and experiences, which could be seen as an invitation to share more, not less. Anecdotally, throughout our data collection process, we found that a number of children came forward to reveal critical information about previously unreported experiences of danger, grief, and trauma, and that these revelations led directly to interventions on behalf of children and families, often starting with promoting dialogue between children and parents. Theory and research support addressing and evaluating both positive and negative life circumstances and events,

factors that contribute to a person's resilience and vulnerability (Spencer, 2008) when evaluating psychological well-being in general and the health of one's social support networks in particular (Huurre, Eerola, Rahkonen & Aro, 2007; Olsson, 2009).

We are still in the early stages of developing protocols for administering and analyzing the Ecomap as an assessment tool for use in school-based universal screening. Through several administrations over the past few years, we have worked to refine and standardize our procedures, and we have learned much. The protocol included in the Appendix is the result of efforts to streamline the process and make it accessible for groups of young children. For example, instructions have been organized into simple, consistent prompts using vocabulary and visual aids specifically tailored to primary school students. And yet we had by no means perfected the process at the time this data was collected and analyzed. For example, by the time of this writing, our team of researchers has developed much more efficient, accurate ways of quantifying student responses than we utilized in this administration, now using a worksheet that allows for immediate member-checking if the examiner is not sure what the child intended to communicate in his or her drawing. Further revisions to the protocol should continue to promote ease of administration and coding while improving developmental, cultural, and contextual appropriateness. We might find ways to directly assess children's levels of comprehension, cooperation, and enjoyment as they participate in the assessment process, as these factors may affect the quality of our data.

As a next step, it would make sense to administer concurrently the Ecomap, the BESS (Teacher Report and, for children who are old enough, Self-Report), and the BASC-2, and then to compare and contrast the groups of children who are identified by

each as in distress and groups of children identified by each as “normal”. Only then could conclusions be drawn about the relative usefulness of Ecomaps and the BESS as universal screeners.

School psychologists and other school-based mental health professionals are hard at work attempting to understand and improve the psychological well-being of children in their care; the link between psychological well-being and school success is well-established. This study’s results indicate that Ecomaps may be useful in assessing psychological well-being in young children. If further research supports our findings, and further protocol refinements make administration more and more efficient, then school psychologists will have a developmentally-appropriate and culturally-specific tool with which to analyze the psychological well-being of our youngest school children.

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APPENDIX A: Ecomap Protocol

Source:

Nastasi, B. K., & International Psychological Well-being Research Team. (2010). *Promoting Psychological Well-Being Globally project procedures--Revised*. New Orleans, Tulane University Department of Psychology. (reprinted with permission)

Students will meet in small groups (approximately four students per group) to complete their Ecomaps, with one-on-one assistance provided as needed. It is expected that most children will need one-on-one assistance, and that although each child will begin his or her individual Ecomap in the group setting, that the researcher will help the child to complete his or her Ecomap in the beginning of the individual interview period.

Materials: Drawing paper, index cards, colored markers, Sample Ecomaps (A&B; see Appendix B), interview protocols

1) INTRODUCTION (Small group)

“Today you are going to draw a special kind of picture. You will draw yourself and people who are important to you. We will help you with your drawings.”

“While you are with us in this group, it is important that you understand that this is a safe place. The things we talk about are between us, which means that no one will hear what you say or be mad or have sad feelings. The only time when we would need to tell someone what you say is if something happened or might happen that sounds like it might not be safe, either for you or somebody else. Then we would figure out a way to get help to make sure people are safe.”

“Thank you for helping us today. We are trying to learn about how kids your age think and feel. If you don’t want to talk with us, that is okay. Please tell us. We will not be mad. We hope today will be fun for everyone.”

2) CHILD DRAWS SELF-PORTRAIT (Small group):

“Now, draw a picture of yourself on this index card.”

(After pictures are complete, the researcher assists each students in gluing his or her picture in the center of drawing paper. Having the self-portrait on the index card ensures proper sizing and placement of the child’s picture.)

3) CHILD DRAWS OTHERS ON ECOMAP (Small group):

Researcher shows and explains **Sample Ecomap A** (without lines or other codes) and explains the task of drawing important people from different areas of life on the Ecomap: “This is another kid’s example of this special drawing. I will show you what to do, but you can do it in your own way. The picture of the child who made it is in the middle, like yours. Then, the kid drew a bunch of pictures of other important people around the outside.”

(The researcher should go around and point out the different people on the sample Ecomap.)

“Now you will do the same thing for the important people in YOUR life. You can put people on it from home (like your family), from your neighborhood or things you do outside of school, and from in school. Adults and kids can both be in the drawing. You can have a few people or many people. It is up to you. The people do not have to be people that you like—they just have to be important people—you can have good or bad feelings about them. I know that this child (*reference Sample Ecomap A*) gets mad at her uncle sometimes, but he is still on the Ecomap because she thinks about him a lot or sees him a lot.”

As children draw, the researcher moves around to assist them, offering the following prompts:

- a. “How about people in your family?”
- b. “How about people from school?”
- c. “How about people from outside school?”
- d. *For each location, the researcher can ask, “How about kids?” or “How about adults?” as needed.*
- e. *If children express a desire to put non-humans (like pets or toys) or persons unknown to them (such as athletes) on their Ecomaps, this is acceptable. Occasionally, a child will try to put a number of toys or movie stars or athletes on the Ecomap. In this case, the researcher should encourage the child to “just pick one or two” and move on to “people that you know.” More leeway should be given if a child wants to put several pets on the Ecomap.*
- f. *If a child indicates that he or she does not want to put someone on the Ecomap because he or she dislikes that person or is angry at them, encourage child to put ANY important people down, even if they might feel bad feelings.*

4) CHILD CODES RELATIONSHIPS AS SUPPORTIVE, STRESSFUL, OR AMBIVALENT (“BOTH”) (Small group and/or one-on-one, depending on need):

After children have been given a few minutes to draw, the researcher can decide whether to introduce Ecomap coding in the group or transition to individual interviews to explain and help children complete coding one-on-one. In general, we have found that the slightly older children are quite able to at least begin the process in the large group, and might only need minimal one-on-one assistance, while many kindergartners and first graders might benefit more from moving immediately to the one-on-one setting. Researchers should be prepared with activities that other children in the group can work on quietly and independently (drawing, puzzles, etc.) while waiting for their individual turns.

“Now I will show you what to do next.” Show children **Sample Ecomap B** (same as Sample Ecomap A, but with relationships coded). “Some relationships we have with people give us good feelings.” Engage student(s) in listing “good feelings” (happy, excited, loving, friendly, proud, safe, calm, etc.). “Sometimes those people help or support us.” Engage student(s) in listing helpful things people do and ways they make us feel good. “The child who made this drawing used dots to show good and helpful

feelings.” *Show how line of dots goes from self to other person. Give specific examples: “Sister shares her toys with me, so I feel happy.”*

“Sometimes relationships give us bad feelings.” *Engage student(s) in listing “bad feelings” (angry, sad, scared, worried, lonely, embarrassed, etc.). “Sometimes those people seem to make things hard for us, or they don’t help, so we don’t feel good. Sometimes we can call that ‘stressed.’” Engage student(s) in listing unhelpful or stressful things people do or ways they cause bad feelings. “The child who made this drawing used Xs to show bad and stressful feelings.” Show how line of Xs goes from self to other person. Give specific examples: “Uncle teases me about my hair, which makes me feel angry.”*

“Some relationships have *BOTH* kinds of feelings. We feel happy sometimes, and angry or sad other times. The child who made this drawing used dots AND Xs to show that he/she felt BOTH good feelings and bad feelings.” *Show how line of dots and Xs goes from self to other person. Give specific examples: “Teacher tells me I did a good job on my math test, which makes me feel happy and proud, but he also yells at the kids, which makes me scared and mad.”*

Spend a few moments making sure that the child understands how the Ecomap codes work.

“It is very important to remember that no one will see these but us (the researchers). No one will be mad at you if you say that someone gives you bad feelings. You can be very honest. We are trying to learn about how kids think and feel.”

Assist children in coding their Ecomaps. Using different symbols and codes (e.g., hearts or other shapes, color codes, etc.) is acceptable; however, it is critical for the researcher to draw a key explaining any code changes.

5) RESEARCHER INTERVIEWS CHILD ABOUT ECOMAP (one-on-one):

**Before beginning the interview, make sure that the child has completed his or her Ecomap, and that the codes are clearly understandable. Make sure all individuals are labeled by type of relationship (e.g., sister, mother, father, friend from school; names can also be used, but type of relationship is necessary). Assist the child if needed.*

*Using the **Interview Protocol** as a guide and to take notes, ask the child to describe up to six of his or her relationships. Almost all children should have six or more relationships on their Ecomaps, because they will be encouraged to pick kids and adults from different settings. However, this is not absolutely required if a child does not respond to those prompts or cannot think of important people.*

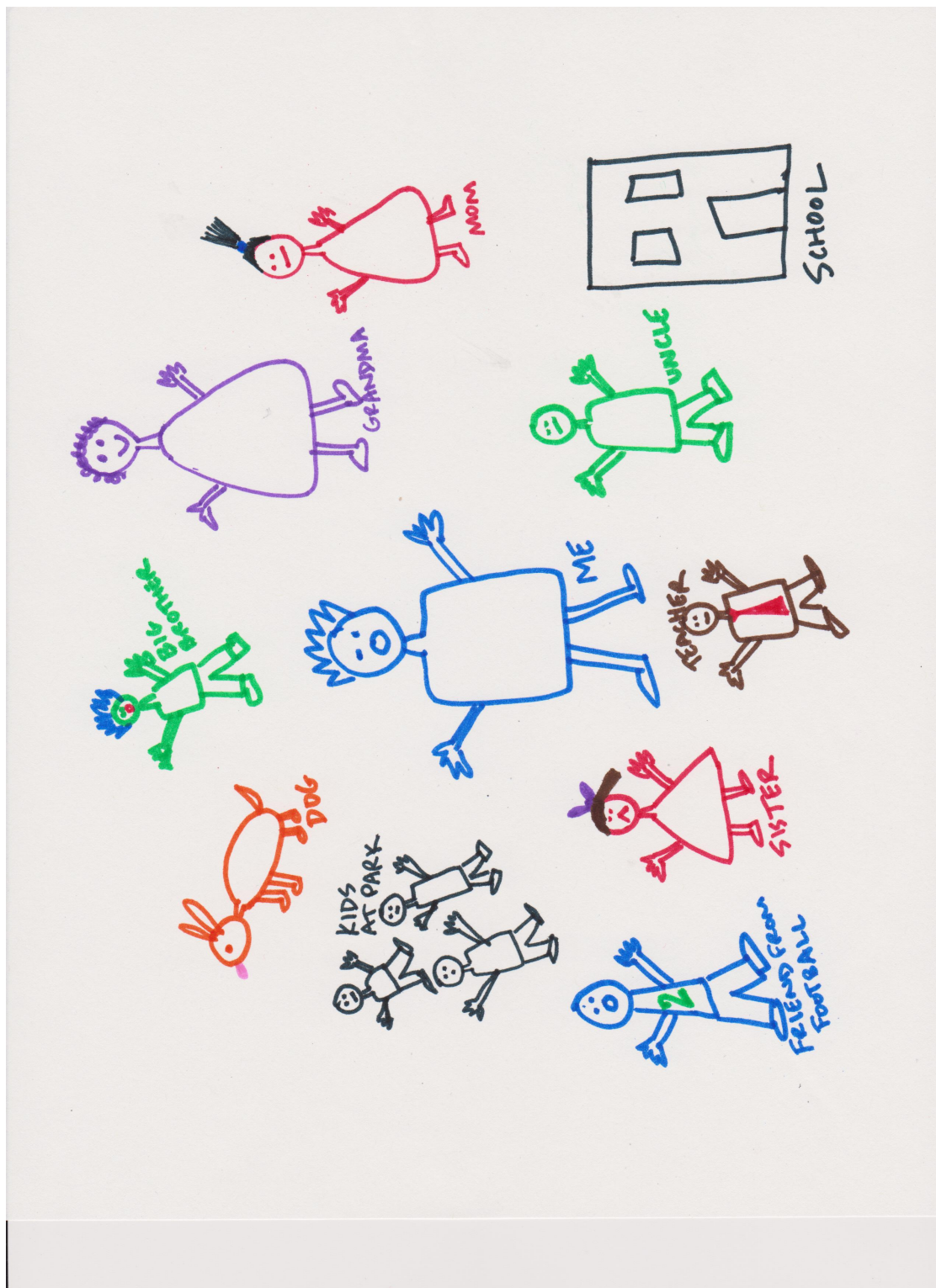
For each relationship selected, double-check child’s categorization (good feelings/supportive, bad feelings/stressful, both/ambivalent), ask the following questions, and record the child’s answers on the Interview Protocol:

- a. "Tell me what feeling(s) you have about this person or when you are with them."
- b. "Tell me about feeling _____ about (with) this person." *Make sure to ask about all feelings that the child identifies.*

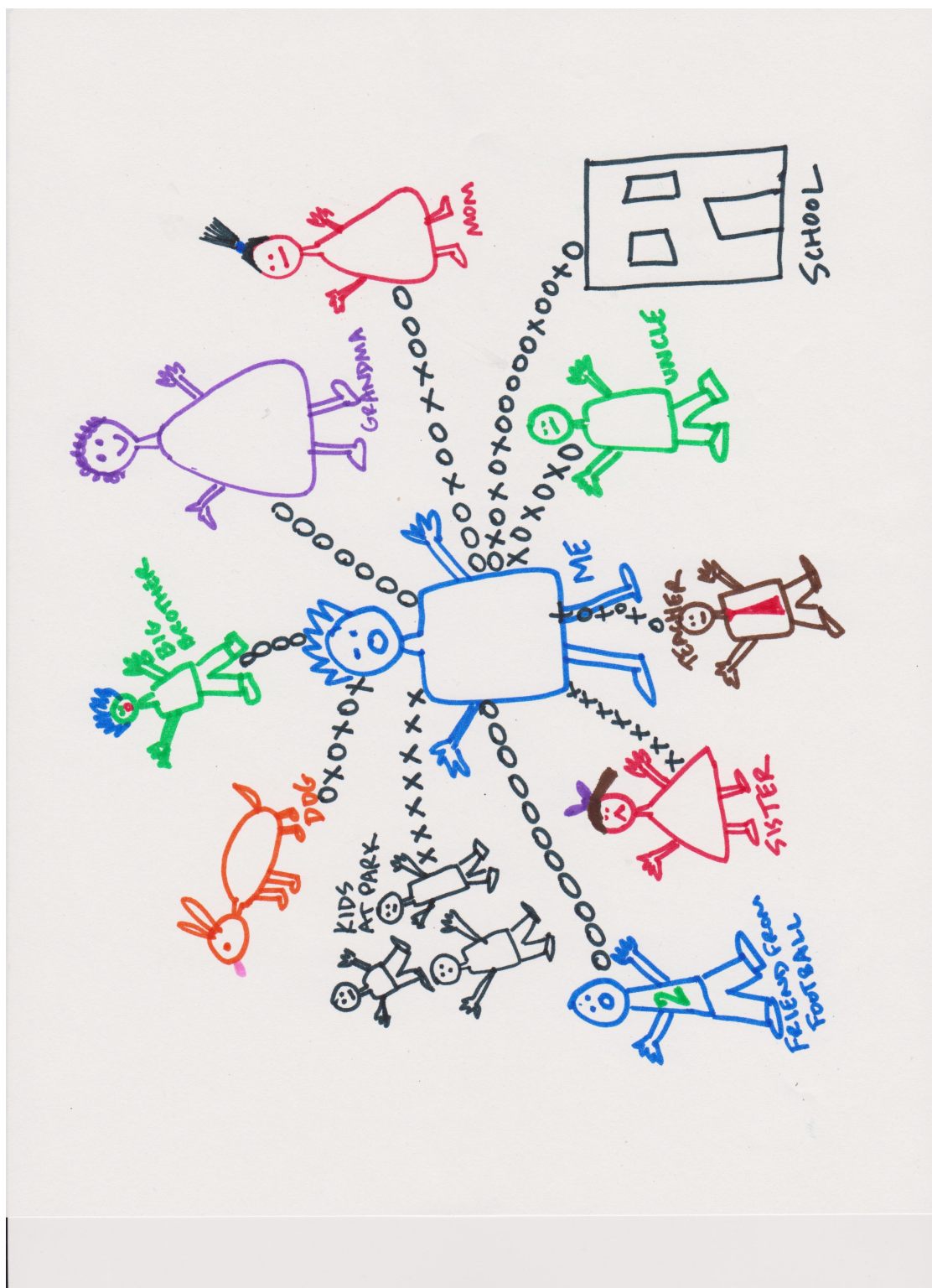
Thank the child for talking with you. If needed, remind the child that no one will be angry with him or her for his or her answers.

6) CLOSING THE SESSION

Thank all the children for helping you understand how kids think and feel, and for doing such a good job on their drawings and in the interviews. Allow each child to select a small prize, such as a sticker or safe school supply item (pencil, eraser), and accompany children back to their classes.

APPENDIX B: Sample Ecomaps**SAMPLE ECOMAP A**

SAMPLE ECOMAP B



APPENDIX C: Tables

Table C1

Zero-order Correlations of Study Variables

	1	2	3	4	5	6	7	8	9	10
1. Sex	1	-.14 (61)	.15 (61)	-.04 (61)	.07 (61)	-.22 (58)	-.06 (44)	.18 (53)	-.12 (42)	.18 (16)
2. Grade		1	.42** (61)	.03 (61)	-.19 (61)	-.03 (58)	.06 (44)	.31* (53)	.05 (42)	.11 (16)
3. Ecomap: Network Size			1	.08 (61)	.10 (61)	-.10 (58)	.04 (44)	.26+ (53)	.06 (42)	.27 (16)
4. Ecomap: Overall SSI				1	.65** (61)	.53** (58)	.55** (44)	.59** (53)	.46* (42)	.33 (16)
5. Ecomap: Family Adult SSI					1	.11 (58)	.18 (44)	.32* (53)	.29+ (42)	.30 (16)
6. Ecomap: Family Peer SSI						1	.18 (41)	.14 (50)	.20 (40)	.03 (15)
7. Ecomap: School Adult SSI							1	.25 (41)	.00 (33)	.20 (10)
8. Ecomap: Peer/Friend SSI								1	.19 (36)	.03 (12)
9. Ecomap: Other SSI									1	-.34 (10)
10. Ecomap: Self SSI										1
11. BASC-2: Attitude to School										
12. BASC-2: Attitude to Teacher										
13. BASC-2: Social Stress										
14. BASC-2: Anxiety										
15. BASC-2: Depression										
16. BASC-2: Interpersonal Relations										
17. Behavior Grade										
18. English Language Arts Score										
19. Math Score										

Note. Sex coded 0 for males and 1 for females. Numbers in parentheses refer to sample size (*n*) by analysis.
 ** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C1, continued

Zero-order Correlations of Study Variables

	11	12	13	14	15	16	17	18	19
1. Sex	.31* (61)	.17 (61)	.10 (61)	.13 (61)	.27* (61)	-.31* (61)	-.05 (60)	.16 (61)	.09 (61)
2. Grade	.13 (61)	.14 (61)	-.11 (61)	.05 (61)	-.09 (61)	.26* (61)	.32* (60)	.00 (61)	.00 (61)
3. Ecomap: Network Size	.20 (61)	.29* (61)	-.02 (61)	.32* (61)	.23+ (61)	.08 (61)	.15 (60)	.24+ (61)	.26* (61)
4. Ecomap: Overall SSI	.06 (61)	.31* (61)	.24+ (61)	.23+ (61)	.16 (61)	-.23+ (61)	-.24+ (60)	-.06 (61)	-.03 (61)
5. Ecomap: Family Adult SSI	.06 (61)	.14 (61)	.14 (61)	.28* (61)	.24+ (61)	-.10 (61)	-.17 (60)	.20 (61)	.28* (61)
6. Ecomap: Family Peer SSI	-.11 (58)	-.01 (58)	.15 (58)	.07 (58)	-.05 (58)	-.09 (58)	-.04 (57)	-.13 (58)	-.12 (58)
7. Ecomap: School Adult SSI	.11 (44)	.31* (44)	.03 (44)	.16 (44)	.02 (44)	-.15 (44)	-.17 (44)	-.11 (44)	-.05 (44)
8. Ecomap: Peer/Friend SSI	.22 (53)	.38** (53)	.08 (53)	-.02 (53)	.13 (53)	-.04 (53)	-.06 (52)	.03 (53)	.06 (53)
9. Ecomap: Other SSI	-.03 (42)	.20 (42)	.09 (42)	.20 (42)	.17 (42)	-.05 (42)	-.11 (42)	.11 (42)	.03 (42)
10. Ecomap: Self SSI	.16 (16)	.36 (16)	.24 (16)	.30 (16)	.54* (16)	-.60* (16)	.38 (15)	-.34 (16)	-.25 (16)
11. BASC-2: Attitude to School	1	.60** (61)	.28* (61)	.11 (61)	.24+ (61)	-.31* (61)	-.06 (60)	.01 (61)	.05 (61)
12. BASC-2: Attitude to Teacher		1	.47** (61)	.24+ (61)	.43** (61)	-.43** (61)	-.28* (60)	-.11 (61)	.03 (61)
13. BASC-2: Social Stress			1	.58** (61)	.63** (61)	-.62** (61)	-.22+ (60)	-.18 (61)	-.02 (61)
14. BASC-2: Anxiety				1	.68** (61)	-.28* (61)	.09 (60)	-.02 (61)	.11 (61)
15. BASC-2: Depression					1	-.46** (61)	-.03 (60)	-.12 (61)	.04 (61)
16. BASC-2: Interpersonal Relations						1	.23+ (60)	.15 (61)	.05 (61)
17. Behavior Grade							1	.18 (60)	.08 (60)
18. English Language Arts Score								1	.68** (61)
19. Math Score									1

Note. Sex coded 0 for males and 1 for females. Numbers in parentheses refer to sample size (*n*) by analysis.

***p*<.01 (two-tailed); **p*<.05 (two-tailed); +*p*<.10 (trend-level)

Table C2

Descriptive Statistics for Study Sample

	Complete Sample (n = 61)
Sex	
Male	59.0%
Female	40.9%
Grade	
Kindergarten	21.3%
First	24.6%
Second	24.6%
Third	29.5%
Race	
Black or African American	98.4%
Other	1.6%

Table C3

Means and Standard Deviations for Measures by Sex and Grade

	Kinder- garten (<i>n</i> =13)	Grade 1 (<i>n</i> =15)	Grade 2 (<i>n</i> =15)	Grade 3 (<i>n</i> =18)	Overall Sample		
					Males (<i>n</i> =36)	Females (<i>n</i> =25)	Total (<i>N</i> =61)
Ecomaps							
Network Size	9.46 (2.57)	12.60 (2.85)	12.80 (3.69)	16.56 (8.47)	12.44 (6.51)	14.16 (4.41)	13.15 (5.76)
Overall Stress-Support Index (SSI)	1.23 (.13)	1.22 (.17)	1.17 (.08)	1.25 (.10)	1.22 (.13)	1.21 (.12)	1.22 (.13)
Family Adult SSI	1.25 (.23)	1.25 (.28)	1.16 (.15)	1.17 (.14)	1.19 (.22)	1.22 (.18)	1.20 (.20)
Family Peer SSI	1.28 (.23) (<i>n</i> =12)	1.31 (.22) (<i>n</i> =14)	1.26 (.19) (<i>n</i> =14)	1.28 (.19)	1.32 (.21) (<i>n</i> =34)	1.23 (.18) (<i>n</i> =24)	1.29 (.20) (<i>n</i> =58)
School Adult SSI	1.45 (.40) (<i>n</i> =6)	1.32 (.28) (<i>n</i> =13)	1.18 (.29) (<i>n</i> =12)	1.49 (.31) (<i>n</i> =13)	1.37 (.31) (<i>n</i> =25)	1.33 (.34) (<i>n</i> =19)	1.35 (.32) (<i>n</i> =44)
Peer/Friend SSI	1.16 (.24) (<i>n</i> =7)	1.10 (.17)	1.19 (.20) (<i>n</i> =13)	1.29 (.23)	1.16 (.20) (<i>n</i> =31)	1.24 (.23) (<i>n</i> =22)	1.20 (.22) (<i>n</i> =53)
Other SSI	1.11 (.20) (<i>n</i> =7)	1.22 (.34) (<i>n</i> =12)	1.10 (.16) (<i>n</i> =11)	1.20 (.22) (<i>n</i> =12)	1.19 (.30) (<i>n</i> =24)	1.13 (.15) (<i>n</i> =18)	1.16 (.24) (<i>n</i> =42)
Self SSI	1.25 (.42) (<i>n</i> =10)	1.20 (.27) (<i>n</i> =5)	N/A (N/A) (<i>n</i> =0)	1.5 (N/A) (<i>n</i> =1)	1.19 (.26) (<i>n</i> =8)	1.31 (.46) (<i>n</i> =8)	1.25 (.37) (<i>n</i> =16)
BASC-2 Subscales							
Attitude to School	57.69 (9.54)	48.67 (7.20)	49.13 (10.05)	60.22 (12.16)	51.25 (8.98)	58.24 (12.68)	54.11 (11.11)
Attitude to Teacher	61.38 (12.14)	53.27 (11.90)	52.13 (11.78)	66.00 (18.34)	56.42 (13.99)	61.44 (16.24)	58.48 (15.03)
Social Stress	59.31 (11.36)	51.87 (8.82)	52.93 (10.97)	54.67 (11.01)	53.64 (9.83)	55.84 (11.86)	54.54 (10.67)
Anxiety	56.85 (7.40)	51.53 (9.16)	52.87 (10.95)	57.06 (11.45)	53.58 (10.54)	56.12 (9.39)	54.62 (10.08)
Depression	61.15 (8.38)	53.33 (8.77)	53.33 (11.81)	57.39 (12.06)	53.81 (9.69)	59.64 (11.45)	56.20 (10.75)
Interpersonal Relations	38.38 (11.79)	51.00 (10.10)	51.67 (9.71)	48.50 (12.68)	50.83 (9.85)	43.28 (13.62)	47.74 (12.03)

Note. Each cell contains mean and standard deviation in *M*(*SD*) format. In some cases, *n* differs from that listed in column heading; in those cases, the revised *n* is noted below the *SD*.

Table C3, continued

Means and Standard Deviations for Measures by Sex and Grade

	Kinder- garten (<i>n</i> =13)	Grade 1 (<i>n</i> =15)	Grade 2 (<i>n</i> =15)	Grade 3 (<i>n</i> =18)	Overall Sample		
					Males (<i>n</i> =36)	Females (<i>n</i> =25)	Total (<i>N</i> =61)
Behavior	2.08	2.20	2.80	2.67	2.50	2.42	2.47
Grade	(.67) (<i>n</i> =12)	(.94)	(.78)	(.59)	(.78)	(.83) (<i>n</i> =24)	(.79) (<i>n</i> =60)
English	0	0	0	0	-.12	.18	.000
Language	(1)	(1)	(1)	(1)	(1.08)	(.78)	(.97)
Arts Score							
Mathematics	0	0	0	0	-.07	.11	.000
Score	(1)	(1)	(1)	(1)	(1.18)	(.58)	(.97)

Note. Each cell contains mean and standard deviation in *M(SD)* format. In some cases, *n* differs from that listed in column heading; in those cases, the revised *n* is noted below.

Table C4

Skewness and Kurtosis for Study Variables

	Skewness		Kurtosis	
	Statistic	Standard Error	Statistic	Standard Error
1. Sex	.376	.306	-1.923	.604
2. Grade	-.137	.306	-1.364	.604
3. Ecomap: Network Size	1.503	.306	2.784	.604
4. Ecomap: Overall SSI	1.325	.306	3.781	.604
5. Ecomap: Family Adult SSI	1.492	.306	3.334	.604
6. Ecomap: Family Peer SSI	.553	.314	.170	.618
7. Ecomap: School Adult SSI	.525	.357	-.687	.702
8. Ecomap: Peer/Friend SSI	.622	.327	-1.135	.644
9. Ecomap: Other SSI	1.737	.365	2.908	.717
10. Ecomap: Self SSI	1.174	.564	.144	1.091
11. BASC-2: Attitude to School	.896	.306	.005	.604
12. BASC-2: Attitude to Teacher	.770	.306	.133	.604
13. BASC-2: Social Stress	.433	.306	-.968	.604
14. BASC-2: Anxiety	.122	.306	-.336	.604
15. BASC-2: Depression	.364	.306	-.730	.604
16. BASC-2: Interpersonal Relations	-1.009	.306	.119	.604
17. Behavior Grade	-.205	.309	-.394	.608
18. English Language Arts Score	-1.080	.306	3.716	.604
19. Math Score	-1.001	.306	2.670	.604

Table C5

Partial Correlations, Controlling for Grade

	1	2	3	4	5	6	7	8	9
1. Ecomap: Network Size	1	.07 (61)	.20 (61)	-.09 (58)	.02 (44)	.15 (53)	.05 (42)	.24 (16)	.16 (61)
2. Ecomap: Overall SSI		1	.67** (61)	.53** (58)	.55** (41)	.61** (53)	.45** (42)	.38 (16)	.06 (61)
3. Ecomap: Family Adult SSI			1	.11 (58)	.20 (44)	.41** (53)	.31* (42)	.33 (16)	.08 (61)
4. Ecomap: Family Peer SSI				1	.18 (41)	.16 (50)	.20 (40)	.03 (15)	-.11 (58)
5. Ecomap: School Adult SSI					1	.25 (41)	.00 (33)	.20 (10)	.11 (44)
6. Ecomap: Peer/Friend SSI						1	.18 (36)	-.00 (12)	.19 (53)
7. Ecomap: Other SSI							1	-.35 (10)	-.04 (42)
8. Ecomap: Self SSI								1	.15 (16)
9. BASC-2: Attitude to School									1
10. BASC-2: Attitude to Teacher									
11. BASC-2: Social Stress									
12. BASC-2: Anxiety									
13. BASC-2: Depression									
14. BASC-2: Interpersonal Relations									
15. Behavior Grade									
16. English Language Arts Score									
17. Math Score									

Note. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C5, continued

Partial Correlations, Controlling for Grade

	10	11	12	13	14	15	16	17
1. Ecomap: Network Size	.26* (61)	.03 (61)	.34** (61)	.30* (61)	-.03 (61)	.02 (60)	.26* (61)	.29* (61)
2. Ecomap: Overall SSI	.31* (61)	.25+ (61)	.23+ (61)	.16 (61)	-.24+ (61)	-.26* (60)	-.62 (61)	-.29 (61)
3. Ecomap: Family Adult SSI	.17 (61)	.12 (61)	.30* (61)	.22+ (61)	-.06 (61)	-.11 (60)	.21 (61)	.29* (61)
4. Ecomap: Family Peer SSI	-.01 (58)	.15 (58)	.08 (58)	-.05 (58)	-.09 (58)	-.03 (57)	-.13 (58)	-.12 (58)
5. Ecomap: School Adult SSI	.31* (44)	.04 (44)	.16 (44)	.03 (44)	-.17 (44)	-.20 (44)	-.11 (44)	-.05 (44)
6. Ecomap: Peer/Friend SSI	.36** (53)	.12 (53)	-.03 (53)	.17 (53)	-.13 (53)	-.18 (52)	.03 (53)	.06 (53)
7. Ecomap: Other SSI	.20 (42)	.10 (42)	.20 (42)	.17 (42)	-.06 (42)	-.14 (42)	.11 (42)	.03 (42)
8. Ecomap: Self SSI	.35 (16)	.26 (16)	.30 (16)	.56* (16)	-.65** (16)	.37 (15)	-.34 (16)	-.25 (16)
9. BASC-2: Attitude to School	.59** (61)	.30* (61)	.10 (61)	.25+ (61)	-.35** (61)	-.10 (60)	.01 (61)	.05 (61)
10. BASC-2: Attitude to Teacher	1	.49** (61)	.24+ (61)	.45** (61)	-.49** (61)	-.34** (60)	-.11 (61)	.03 (61)
11. BASC-2: Social Stress		1	.58** (61)	.63** (61)	-.61** (61)	-.19 (60)	-.18 (61)	-.02 (61)
12. BASC-2: Anxiety			1	.68** (61)	-.31* (61)	.08 (60)	-.02 (61)	.11 (61)
13. BASC-2: Depression				1	-.46** (61)	-.00 (60)	-.12 (61)	.04 (61)
14. BASC-2: Interpersonal Relations					1	.16 (60)	.16 (61)	.06 (61)
15. Behavior Grade						1	.19 (60)	.08 (60)
16. English Language Arts Score							1	.68** (61)
17. Math Score								1

Note. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C6

Partial Correlations, Controlling for Sex

	1	2	3	4	5	6	7	8	9
1. Ecomap: Network Size	1	.08 (61)	.09 (61)	-.07 (58)	.05 (44)	.24+ (53)	.08 (42)	.25 (16)	.17 (61)
2. Ecomap: Overall SSI		1	.65** (61)	.53** (58)	.55** (44)	.61** (53)	.45** (42)	.34 (16)	.08 (61)
3. Ecomap: Family Adult SSI			1	.13 (58)	.19 (44)	.32* (53)	.31+ (42)	.30 (16)	.04 (61)
4. Ecomap: Family Peer SSI				1	.17 (41)	.19 (50)	.17 (40)	.07 (15)	-.04 (58)
5. Ecomap: School Adult SSI					1	.27+ (41)	-.00 (33)	.22 (10)	.14 (44)
6. Ecomap: Peer/Friend SSI						1	.21 (36)	-.00 (12)	.17 (53)
7. Ecomap: Other SSI							1	-.32 (10)	.01 (42)
8. Ecomap: Self SSI								1	.11 (16)
9. BASC-2: Attitude to School									1
10. BASC-2: Attitude to Teacher									
11. BASC-2: Social Stress									
12. BASC-2: Anxiety									
13. BASC-2: Depression									
14. BASC-2: Interpersonal Relations									
15. Behavior Grade									
16. English Language Arts Score									
17. Math Score									

Note. Sex coded 0 for males and 1 for females. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C6, continued

Partial Correlations, Controlling for Sex

	10	11	12	13	14	15	16	17
1. Ecomap: Network Size	.28* (61)	-.04 (61)	.31* (61)	.20 (61)	.14 (61)	.16 (60)	.22+ (61)	.25+ (61)
2. Ecomap: Overall SSI	.32* (61)	.25+ (61)	.24+ (61)	.17 (61)	-.26* (61)	-.24+ (60)	-.06 (61)	-.03 (61)
3. Ecomap: Family Adult SSI	.13 (61)	.13 (61)	.28* (61)	.23+ (61)	-.09 (61)	-.16 (60)	.20 (61)	.28* (61)
4. Ecomap: Family Peer SSI	-.03 (58)	.18 (58)	.10 (58)	.01 (58)	-.17 (58)	-.05 (57)	-.10 (58)	-.10 (58)
5. Ecomap: School Adult SSI	.33* (44)	.04 (44)	.17 (44)	.04 (44)	-.18 (44)	-.17 (44)	-.10 (44)	-.05 (44)
6. Ecomap: Peer/Friend SSI	.36** (53)	.07 (53)	-.04 (53)	.09 (53)	.02 (53)	-.05 (49)	.00 (53)	.04 (53)
7. Ecomap: Other SSI	.23 (42)	.10 (42)	.22 (42)	.21 (42)	-.09 (42)	-.12 (42)	.13 (42)	.04 (42)
8. Ecomap: Self SSI	.34 (16)	.23 (16)	.29 (16)	.52* (16)	-.58* (16)	.40 (15)	-.38 (16)	-.27 (16)
9. BASC-2: Attitude to School	.59** (61)	.26* (61)	.07 (61)	.17 (61)	-.23+ (61)	-.04 (60)	-.05 (61)	.02 (61)
10. BASC-2: Attitude to Teacher	1	.46** (61)	.23+ (61)	.41** (61)	-.40** (61)	-.27* (60)	-.14 (61)	-.01 (61)
11. BASC-2: Social Stress		1	.57** (61)	.63** (61)	-.62** (61)	-.21 (60)	-.20 (61)	-.03 (61)
12. BASC-2: Anxiety			1	.67** (61)	-.26* (61)	.09 (60)	-.04 (61)	.10 (61)
13. BASC-2: Depression				1	-.41** (61)	-.02 (60)	-.17 (61)	.02 (61)
14. BASC-2: Interpersonal Relations					1	.23+ (60)	.21 (61)	.09 (61)
15. Behavior Grade						1	.19 (60)	.08 (60)
16. English Language Arts Score							1	.68** (61)
17. Math Score								1

Note. Sex coded 0 for males and 1 for females. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C7

Partial Correlations, Controlling for Network Size

	1	2	3	4	5	6	7	8
1. Ecomap: Overall SSI	1	.65** (61)	.54** (58)	.55** (44)	.59** (53)	.45** (42)	.32 (16)	.05 (61)
2. Ecomap: Family Adult SSI		1	.13 (58)	.18 (44)	.31* (53)	.29+ (42)	.29 (16)	.04 (61)
3. Ecomap: Family Peer SSI			1	.19 (41)	.18 (50)	.20 (40)	.06 (15)	-.09 (58)
4. Ecomap: School Adult SSI				1	.25 (41)	.00 (33)	.20 (10)	.11 (44)
5. Ecomap: Peer/Friend SSI					1	.18 (36)	-.04 (12)	.18 (53)
6. Ecomap: Other SSI						1	-.37 (10)	-.04 (42)
7. Ecomap: Self SSI							1	.11 (16)
8. BASC-2: Attitude to School								1
9. BASC-2: Attitude to Teacher								
10. BASC-2: Social Stress								
11. BASC-2: Anxiety								
12. BASC-2: Depression								
13. BASC-2: Interpersonal Relations								
14. Behavior Grade								
15. English Language Arts Score								
16. Math Score								

Note. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level)

Table C7, continued

Partial Correlations, Controlling for Network Size

	9	10	11	12	13	14	15	16
1. Ecomap: Overall SSI	.30* (61)	.24+ (61)	.22+ (61)	.14 (61)	-.24+ (61)	-.25+ (61)	-.08 (61)	-.05 (61)
2. Ecomap: Family Adult SSI	.11 (61)	.14 (61)	.27* (61)	.22+ (61)	-.11 (61)	-.19 (60)	.19 (61)	.27* (61)
3. Ecomap: Family Peer SSI	.02 (58)	.15 (58)	.11 (58)	-.03 (58)	-.08 (58)	-.03 (57)	-.11 (58)	-.10 (58)
4. Ecomap: School Adult SSI	.32* (44)	.03 (44)	.16 (44)	.01 (44)	-.15 (44)	-.18 (44)	-.12 (44)	-.06 (44)
5. Ecomap: Peer/Friend SSI	.33* (53)	.09 (53)	-.11 (53)	.08 (53)	-.06 (53)	-.11 (52)	-.03 (53)	-.01 (53)
6. Ecomap: Other SSI	.20 (42)	.09 (42)	.19 (42)	.16 (42)	-.05 (42)	-.12 (42)	.10 (42)	.01 (42)
7. Ecomap: Self SSI	.30 (16)	.25 (16)	.24 (16)	.51+ (16)	-.65** (16)	.34 (15)	-.43 (16)	-.34 (16)
8. BASC-2: Attitude to School	.58** (61)	.29* (61)	.04 (61)	.20 (61)	-.33** (61)	-.09 (60)	-.05 (61)	-.01 (61)
9. BASC-2: Attitude to Teacher	1	.50** (61)	.16 (61)	.39** (61)	-.48** (61)	-.34** (60)	-.19 (61)	-.05 (61)
10. BASC-2: Social Stress		1	.61** (61)	.65** (61)	-.62** (61)	-.22 (60)	-.18 (61)	-.02 (61)
11. BASC-2: Anxiety			1	.65** (61)	-.33** (61)	.04 (60)	-.10 (61)	.03 (61)
12. BASC-2: Depression				1	-.50** (61)	-.07 (60)	-.19 (61)	-.02 (61)
13. BASC-2: Interpersonal Relations					1	.22+ (60)	.14 (61)	.03 (61)
14. Behavior Grade						1	.58** (60)	.61** (60)
15. English Language Arts Score							1	.67** (61)
16. Math Score								1

Note. Numbers in parentheses refer to sample size (*n*) by analysis.

** $p < .01$ (two-tailed); * $p < .05$ (two-tailed); + $p < .10$ (trend-level).

Biography

Meredith Summerville, raised in Brooklyn, New York, graduated from Hunter College High School in 1997 and received her B.A. from Yale University in 2001, with a major in history. After graduating college, Meredith entered the field of education, beginning her career teaching elementary school in New Orleans, Louisiana, as a Teach for America corps member. After completing her two-year commitment, Meredith went on to work in education policy and programming with the New York City Department of Education and then earned her Master of Education degree from Harvard University. In 2006, inspired to continue her pursuit of educational equity, Meredith returned to New Orleans; she taught eighth grade at a charter school, led the first summer teacher-training institute for teachNOLA, and served as a school administrator at two extremely high-need schools within the Recovery School District. It was during her tenure in school administration that she decided to pursue graduate studies in School Psychology; she sought to understand how a school might support, teach, and nurture the development of children experiencing trauma, with the goal of applying this understanding to schools attempting to serve whole populations of children affected by violence and poverty. As a student in Tulane University's School Psychology program, Meredith specializes in trauma-focused school psychology and is working to develop her skills in both direct clinical services and in school consultation. Meredith plans to devote her career to improving life outcomes for our most vulnerable public school students.