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Technical Adequacy of the Student Protective Factors Screening Scale (SPF-7) as a Universal Screening Tool

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Abstract

Universal screening is a critical foundation for school-based prevention and early intervention. This study examined the technical adequacy of the SPF-7, an instrument designed to assist school personnel in the early identification of students at-risk for emotional and behavioral concerns. The SPF-7 differs from other measures used in identifying emotionally and behaviorally at-risk students, as the SPF-7 focuses on protective factors rather than risk factors. The results of this study suggest that the SPF-7 has adequate test-retest reliability and criterion validity, but limited inter-rater agreement. The SPF-7 is a potentially promising tool for identifying students in need of support within a multi-tiered system of increasingly intensive interventions.

Keywords

1. Introduction

The early detection of factors that place children at risk for emotional and behavioral challenges is crucial to the prevention of more serious difficulties later in their development. Just as the medical community employs universal screening for the detection and early treatment of cancers originating in the breast, colon, cervix, and prostate, universal screening for emotional and behavioral difficulties in children can reduce the need for more intensive, expensive, and potentially less successful treatment later in a child's school career (Kaplan, 2000; Kazdin, 1987; Lane, Menzies, Oakes, Kalberg, 2012; Severson, Walker, Hope-Doolittle, Kratochwill, & Gresham, 2007). Although it is clear that intervention provided at younger ages has a greater likelihood of success, the key to that success relies in large part on the availability of a reliable method for identifying children in need

of services (Elliott, Huai, & Roach, 2007; Severson et al., 2007). Lacking a reliable, proactive method for recognizing students in need, far too often, schools respond in a reactive manner, waiting for students to exhibit difficulties in behavior before taking action to intervene (Gresham, 2004; Walker & Shinn, 2002).

1.1. A Primary Prevention Approach

The United States Public Health Service describes three levels of "prevention" outcomes: primary prevention, secondary prevention, and tertiary prevention. In this three-tiered model, prevention is considered an outcome in and of itself, rather than simply a means to an end. Primary prevention seeks to prevent harm. Efforts by the medical community to promote wellness through good nutrition, exercise, and a balanced and healthy lifestyle represent the first line of defense in an effective public health program. Until recent advances in school-wide positive behavioral supports (e.g., Anderson & Kincaid, 2005; Horner, Sugai, Todd, & Lewis-Palmer, 2005; Osher, Dwyer, & Jimerson, 2006; Sprague & Horner, 2006; Sugai & Horner, 2002) and response to intervention (Barnett, Daly, Jones, & Lentz, 2004; Brown-Chidsey & Steeg, 2005; Gresham, 2004, 2005; Marston, 2005), primary prevention efforts addressing social and emotional concerns in schools been limited. Instead, the focus has been on secondary prevention, which seeks to reverse harm, and tertiary prevention, which seeks to reduce harm amongst the most behaviorally-challenged students.

In recent years, the three-tiered prevention model has recast in terms of levels of interventions that differ in terms of the nature, comprehensiveness, and intensity (see Gresham, 2004). This model of intervention is composed of three levels of intervention intensity: universal interventions, selected interventions, and targeted/intensive interventions (see Gresham, 2004). The three-tiered approach to intervention provides for the immediate assistance of students who are struggling with academic or behavioral concerns and emphasizes the proactive identification of students at risk. Despite advances in the development and use of universal screening methods for identifying children in need of academic interventions and measuring the outcomes of universal, selected, and targeted interventions, the use of assessment methods for the early identification of emotional and behavioral concerns in schools remains limited. Screening tools that are available and have demonstrable technical adequacy include the Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007), the Social and Academic Behavior Risk Screener (SABRS; Kilgus, Chafouleas, & Riley-Tillman, 2013), the Systematic Screening for Behavioral Disorders (SSBD; Todis, Severson, & Walker, 1990), and the Student Archival Records Search (SARS; Walker, Block-Pegego, Todis, & Severson, 1991). In addition, a number of studies support the use of review of office discipline referrals as a screening system for behavior problems (e.g., Irvin et al., 2006; Irvin, Tobin, Sprague, Sugai, & Vincent, 2004; Putnam, Luiselli, Handler, & Jefferson, 2003; Sugai, Sprague, Horner, & Walker, 2001). All of these screening tools select students based on the presence of established behavioral concerns, rather than assessing students proactively based on their competencies.

1.2. The Use of Local Norms for Universal Screening

A local norm is a description of a population's performance on a set of tasks, developed to represent students from a particular school or school system (Habedank, 1995). As such, they provide direct measures of a student's performance in a given instructional context relative to peers within that same ecology. The rationale for developing local norms relies on the recognition that students interact within a unique, contextually-specific ecology, and this context provides an opportunity to make normative comparisons that are unique and contextually sensitive (Gresham, 2004). As such, the use of local norms is wholly consistent with a three-tiered model of intervention, where universal interventions are provided in a manner that is situation-specific and contextually sensitive to the needs of the students in that local classroom or school environment (Ikeda, Neessen, & Witt, 2008).

Experts in measurement have long recognized the benefits of local norms. Local norms are judged to be more appropriate than broad national norms for many testing purposes, such as the prediction of subsequent job performance or college achievement, the comparison of a child's relative achievement in different subjects, or the measurement of an individual's progress over time (Anastasi, 1988). In addition, locally-normed assessments address many of the criticisms of traditional norm-referenced assessments, namely that they are culturally and ethnically biased and function primarily to identify, classify, and sort students. Whereas, nationally-normed assessment measures frequently result in the overrepresentation of culturally, ethnically, and linguistically diverse students attaining "at-risk" status, local norms reflect what is relevant for success within the local context (Can-

ter, Lau, & House, 2002).

1.3. Universal Screening with Protective Factors

The Student Protective Factors Screening Scale (SPF-7) investigated in this study employs the same matrix system used by the Student Risk Screening Scale (SRSS, Drummond, 1993). On the SRSS, first column of the matrix is used to list students' names. Seven behavioral descriptors appear across the top of the rating form: a) stealing; b) lying, cheating, sneaking; c) behavior problems; d) peer rejection; e) low academic achievement, f) negative attitude; and g) aggressive behavior. The classroom teacher compares each student against all others in the classroom as they rate each behavioral descriptor. Every student is assigned a rating, ranging from 0 = "Never" to 3 = "Frequently," for each of the seven descriptors. The SRSS is considered brief, research-based, easily understood, cost efficient, and valid for use in universal screening (Feil, Severson, & Walker, 2002; Lane, Kalberg, Parks, & Carter, 2008; Walker, Colvin, & Ramsey, 1995).

Unlike the SRSS, however, which gathers a teacher's ratings on seven behavioral risk factors (e.g., stealing, negative attitude, aggressive behavior), the SPF-7 involves teacher ratings of individual students on seven protective factors identified by a preponderance of the empirical research on social/behavioral competence and resiliency as strong correlates of positive developmental outcomes: a) demonstrates competence, is optimistic, and has a sense of purpose; b) has effective social skills; relates well to others, has good friendship skills, c) shows respect and concern for others; empathy, d) identifies with a pro-social peer group, e) engaged and motivated to do well in school; f) connected with teachers and school, and g) family is supportive and invested in student's school success. Within the context of a response to intervention model, the SPF-7 could be used to identify specific skills to target for more intensive intervention (e.g., specific social skills interventions, Check In/Check Out: school-wide positive behavioral support).

1.4. Relationships among Protective Factors and Positive Child Outcomes

Protective factors are antecedent conditions associated with a decrease in the likelihood of undesirable outcomes, or an increase in the likelihood of positive outcomes (Kazdin, Kraemer, Kessler, & Kupfer, 1997). In this section, the empirical basis for each of the protective factors used by the SPF-7 will be reviewed.

Competence. Competence refers to a pattern of effective adaption in the environment, either broadly defined in terms of success with the major developmental tasks expected for a child of a given age in the context of his or her culture, or more narrowly defined with respect to achievement in specific domains, such as academics, peer acceptance, or athletics (Masten & Coatsworth, 1998). According to Masten and Coatsworth (1998), competence "carries the dual meaning that there is a track record of such achievement (competent performance) and also that the individual has the capability to perform well in the future. It refers to good adaptation and not necessarily to superb achievement" (p. 206). Competence results from complex interactions between a child and his or her environment. As such, a student's competence (and a teacher's assessment of that student's competence) will change as the child develops and changes or when the context changes.

Academic achievement, conduct (how well one follows the rules), and getting along with other children (social competence) are the three key components of competence for school-age children (Masten & Coatsworth, 1998). DiPerna and Elliott (2000) defined academic competence as "a multidimensional construct composed of the skills, attitudes, and behaviors of a learner that contribute to academic success in the classroom" (p. 1). Social competence is defined as the ability to recruit social networks, to meet the demands of teachers, (who control the classrooms) and peers (who control the playgrounds), and to adapt to changing conditions in one's environment (Walker et al., 1983). Social competence, and competence in general, are evaluative terms based on judgments that a student has performed competently on a task put forth by significant others (e.g., teachers, parents, peers), comparisons to explicit criteria (e.g., number of tasks correctly performed), and/or comparisons to a normative sample (Gresham, 2002).

The degree to which children and youth exhibit skills characteristic of social competence predicts adequate long-term psychological and social adjustment (Kupersmidt, Coie, & Dodge, 1990; Parker & Asher, 1987). Social competence is associated with a history of lower stress reactivity and higher self-control of attention and behavior (Eisenberg et al., 1997), such that deficits in social competence have been implicated in the development of several childhood disorders characterized by an externalizing behavior pattern such as oppositional defiant disorder, conduct disorder, and attention deficit/hyperactivity disorder (Achenbach, 1985; Hinshaw, 1987;

Kazdin, 1987).

Social Skills. Social skills are specific behaviors that a student exhibits to perform competently on a social task such as making requests, starting a conversation, or giving a compliment (Gresham, 2002). The acquisition and fluent use of specific social skills leads to an overall judgment of social competence, but these terms are not interchangeable (Walker, Colvin, & Ramsey, 1995). According to Gresham (2002), "social skills are behaviors that must be taught, learned, and performed, whereas social competence represents judgments or evaluations of those behaviors within and across situations over time" (p. 1030).

The development of a repertoire of social skills is related to positive short-term and long term outcomes for students (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000). Social skills have been found to be a significant predictor of academic competence, and academic competence, in turn, was a significant predictor of achievement (Malecki & Elliott, 2002). In a longitudinal study investigating protective factors of inner city youth, youth with effective social skills were found to have lower rates of depression (Smokowski, Mann, Reynolds, & Fraser, 2004). Likewise, the relationship between effective social skills and lower rates of externalizing and internalizing behavior problems in youth has been demonstrated consistently in numerous studies (e.g., Alvord & Grados, 2005; Criss, Pettit, Bates, Dodge, & Lapp, 2002; Steinhausen & Metzke, 2001). Students who have not demonstrated the use of appropriate social skills by about third grade are likely to continue to display some degree of antisocial behavior (Kazdin, 1987; Patterson, DeBaryshe, & Ramsey, 1989) and co-occuring learning disabilities (Hinshaw, 1992; Kavale & Forness, 1998) throughout their lives.

Show Respect or Concern for Others (*Empathy*). Empathy is the understanding of and sharing in, another's emotional state. Children who are empathetic are a) capable of experiencing another person's emotions vicariously and b) able to understand the feelings that person is experiencing (de Wied, Goudena, & Matthys, 2005). The capacity to demonstrate empathy is associated with a decreased likelihood for exhibiting externalizing behavior problems. Among a sample of boys aged 8 - 12, those with high levels of aggressive and disruptive behaviors were less likely to demonstrate empathy, whereas boys with low levels of aggressive and disruptive behavior demonstrated a greater capacity to be empathetic (de Wied et al., 2005). Strong links have been found between empathy and prosocial behavior when these constructs were assessed across methods and sources (laboratory tasks and ratings from parents, children, best friends, and teachers) for school-age children (Roberts & Strayer, 1996). Empathy was associated with direct observations of anger and aggression in peer play groups among five-year-old children (Strayer & Roberts, 2004).

Identifies with Pro-Social Peers. It is not enough for a student to demonstrate skills necessary to make friends. Current research suggests that having the right kind of friends is critically important to successful developmental outcomes for students. Children who succeed in school are more likely to adopt and comply with social norms and identify with prosocial peer groups (Catalano & Hawkins, 1996). Conversely, in other peer social contexts aggressive behavior is expected and reinforced (Coie & Jacobs, 1993). Prosocial children tend to choose peers who have prosocial influences and aggressive children tend to choose peers who exacerbate their negative behavior (Masten & Coatsworth, 1998). Not surprisingly, research suggests negative child outcomes are more prevalent among children who have fewer mutual friends, are victimized by peers, or are rejected by classmates (Kochenderfer & Ladd, 1996; Kupersmidt & Coie, 1990; Ladd, Kochenderfer, & Coleman, 1997). Peers may also influence academic achievement either positively or negatively (Epstein, 1983), and for some students, the peer group may be a more powerful determinant of their school competence than their parents (Brown & Huang, 1995; Steinberg, 1996). Affiliation with high-achieving peers can influence satisfaction with school, expectations, grades, and test scores (Epstein, 1983; Mounts & Steinberg, 1995). In contrast, affiliation with antisocial peers can reinforce and intensify antisocial behavior (Bassarath, 2001; Cairns, Cairns, Neckerman, Gest, & Gariepy, 1988; Dishion, Andrews, & Crosby, 1995; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Spoth, Yoo, Kahn, & Redmond, 1996).

Engaged and Motivated to Do Well in School. Although there is little consensus in the theoretical and research literatures regarding the definition of engagement and how it is operationalized and measured (Appleton, Christenson, & Furlong, 2008; Fredericks, Blumenfeld, & Paris, 2004; Furlong et al., 2003; Jimerson, Campos, & Greif, 2003), there is consensus that student engagement is a multidimensional construct, that includes behavioral, affective, and cognitive dimensions (Finn, 1989; Fredericks et al., 2004; Jimerson et al., 2003). Behavioral engagement is characterized by positive conduct, attendance, active participation, and effort. Affective engagement reflects a sense of belonging, identification, interest, and a positive attitude about learning. Cognitive engagement refers to perceiving that school is relevant to future aspirations, investment in learning, and

self-regulation. Some definitions of engagement include a fourth dimension, academic engagement, which reflects the amount of time a student spends engaged in learning (Reschly & Christenson, 2006a, 2006b).

Engagement was identified by DiPerna, Volpe, and Elliott (2002) as a key "academic enabler" predictive of student achievement. In two large-scale studies, engagement (operationalized as participation) was associated with academic achievement among eighth students, such that a) identification with school was related to participation, and b) participation was related to achievement, and c) levels of participation predicted the variation in reading and math achievement of at-risk students (Finn, 1993). Similar findings were obtained among a sample of economically disadvantaged African American and Hispanic students in Grades 8 to 12 (Finn & Rock, 1997). In addition to increases in academic achievement, engagement, defined as classroom participation, was found to be a strong predictor of decreases in antisocial behavior among a sample of fifth and sixth grade students (Morrison, Robertson, Laurie, & Kelly, 2002).

A primary focus of the theoretical and research literatures on engagement has examined the relationship between engagement as an alterable variable to prevent dropout (Christenson et al., 2001; Connell, Halpern-Felsher, Clifford, Crichlow, & Usinger, 1995; Doll, Hess, & Ochoa, 2001) and a potential target for intervention to promote student achievement (National Research Council & Institute of Medicine, 2004).

Connected with Teachers and School. Connectedness reflects youths' activity with and affection for the people, places, and activities within their life (Baumeister & Leary, 1995). Youth who feel a connection to school and their teachers experience a sense of belonging in their interactions with members of the school community. These youth typically have personal connections with one or more teachers who serve as mentors during their school years and beyond.

A caring relationship with one or more adults has been cited as a powerful protective factor for children at risk for a variety of problematic social behaviors, including substance abuse and school dropout (Doll & Lyon, 1998). Studies have shown a positive association between the quality of student-teacher relationships and variables contributing to school success, such as academic motivation, engagement, and attitudes toward school (Anderman & Maehr, 1994; Birch & Ladd, 1997; Eccles et al., 1993; Henricsson & Rydell, 2004; Murray & Greenberg, 2000; Pianta, Steinberg, & Rollins, 1995). Conversely, low connectedness to school predicts adolescent depression, risk taking, underachievement, and alienation from peers, teachers, and parents (Bonny, Britto, Klostermann, Hornung, & Slap, 2000; Karcher, 2002; Karcher, Davis, & Powell 2002; Kuperminc, Blatt, & Leadbeater, 1997).

Family is Supportive and Invested in Student's School Success. Family involvement in a student's education in any form can be a powerful predictor of school success. Family members have a positive effect on achievement through their attitudes and behavior, for example, by communicating strong educational values (Majoribanks, 1987), conveying the value of effort (Stevenson, Chen, & Lee, 1993), expecting and encouraging their child to succeed academically (Reynolds & Wahlberg, 1991), and monitoring or helping with their child's schoolwork at home (Clark, 1993; Scott-Jones, 1995).

Ample evidence is available to suggest that parental involvement in education is related to a child's academic achievement (Booth & Dunn, 1996; Ryan, Adams, Gullotta, Weissberg, & Hampton, 1995) and short-term longitudinal evidence indicates that increasing parental involvement leads to academic improvements (Steinberg, Lamborn, Dornbusch, & Darling, 1992). More generally, students who perceive their family as more supportive experience lower rates of maladaptive behaviors (Dunn & Tucker, 1993; Piko, Fitzpatrick, & Wright, 2005), whereas students with low family support have higher risk of suicide (Morano, Cisler, & Lemerond, 1993), depressive symptoms and conduct problems (Garnefski & Diekstra, 1996).

1.5. Purpose of the Current Study

The purpose of this study is to investigate the reliability and validity of a universal screening instrument developed by the authors that can be used to create local behavioral norms based on protective factors. The Student Protective Factors Screening Scale (SPF-7) employs the same matrix system used by the SRSS. Unlike the SRSS, however, which gathers a teacher's ratings on seven behavioral risk factors (e.g., stealing, negative attitude, aggressive behavior), the SPF-7 involves teacher ratings of individual students on seven protective factors (See Appendix). These protective factors were selected for the screening scale for two reasons. First, they have been identified by empirical research as strong correlates of positive developmental outcomes. Second, these protective factors are readily observable and measurable by teachers within the school context. The SPF-7 represents a positive, prevention approach to the early detection and intervention of behavioral and emotional

concerns. Used within a response to intervention model, the SPF-7 has the potential utility of other instruments validated for use in universal screening: a) administered to an entire class/grade/school/district using either individual or group format; b) an indicator that there is a potential problem in need of further investigation; c) an answer to the question: Which and how many students are potentially in need of additional support? d) quantitative; e) one piece of information required to determine additional needs; f) cost effective in terms of teacher time, student time, and dollar cost for testing and scoring; g) relevant for pre-K-12 grades; h) a sampling of one point in time; i) a sample of a skill; j) capable of identifying students who exceed or fall below the expectations/ standards, k) results in an action or decision: information must be used, l) easily administered, scored, and interpreted, m) used proactively. Teachers typically spent about one minute per student when assessing a class using the SPF-7, a process that would be completed at three benchmark periods (i.e., Fall, Winter, Spring) during the school year.

2. Method

2.1. Participants

The participants in this study were 84 teachers serving students in Grades K-8 who were asked by their building school psychologist to provide ratings of the students in their classes. Fifty-nine teachers served students in urban, public elementary schools, 21 teachers served students in urban, Catholic elementary schools, and 4 teachers served children in suburban, public schools. Among the participating teachers, 75 (89.3%) were female and 7 (8.3%) were male. Two teachers did not provide information about their gender. Sixty-four (76.2%) of the participating teachers identified their race as White, 14 (16.7%) as African American, 2 (2.4%) and Hispanic, and 2 (2.24%) as Multi-Racial. Two teachers did not provide information about their race. The mean number of years of teaching experience (self-reported) was 15.2, with a range of 0 - 35 years.

2.2. Sample

The sample of students for whom teacher ratings were provided was comprised of 1,594 students. There were 785 female students (49.2%) and 805 male students (50.5%). The gender of four students in the sample was not reported. The racial distribution of the sample was as follows: 801 (50.2%) were African/African American, 619 (38.8%) were White, 82 (5.1%) were Multi-Racial, 54 (3.4%) were Hispanic, and 30 (1.9%) were Asian/Pacific Islander. The race of eight students in the sample was not reported. There were 245 (15.4%) students in the sample with an identified disability. Among these students with disabilities, 78 (4.9%) had a Speech and Language Disability, 70 (4.4%) had a Specific Learning Disability, 49 (3.1%) had a Cognitive Disability, 13 (<0.1%) had an Other Health Impairment, 12 (<0.1%) had an Emotional Disturbance classification, 8 (<0.1%) were classified as having a Multiple Disability, 7 (<0.1%) had Autism, 2 (<0.1%) had a classification of Preschool Disability, and 1 (<0.1%) student had each of the following disabilities: Traumatic Brain Injury and Visual Impairment. The disability classification was not reported for four students flagged as having an educational disability.

2.3. Instrument

The Student Protective Factors Screening Scale (SPF-7) was comprised of a matrix with students' names for an entire class listed in the first column and individual ratings on the seven behavioral descriptors to be provided by the teacher under each heading in the next seven columns (see Appendix). Across the top of the rating form, the headings for each column included seven protective factors identified by a preponderance of the empirical research on social/behavioral competence and resiliency as strong correlates of positive developmental outcomes: a) demonstrates competence, is optimistic, and has a sense of purpose, b) has effective social skills; relates well to others, has good friendship skills, c) shows respect and concern for others; empathy, d) identifies with a pro-social peer group, e) engaged and motivated to do well in school; f) connected with teachers and school, and g) family is supportive and invested in student's school success. As presented by the school's school psychologist, the classroom teacher was asked to compares each student against all others in the classroom as they rate each behavioral descriptor using the following scale: 0 = Never, 1 = Rarely, 2 = Occasionally, 3 = Frequently. In this study, the SPF-7 was presented as a paper-pencil measure, although it would lend itself to electronic administration in future studies and in practice. Teachers typically spent about one minute per student when assessing a class using the SPF-7, a process that would be completed at three benchmark periods (i.e., Fall, Winter, Spring)

during the school year.

2.4. Design and Procedures

In this study, school psychologists gathered teachers' individual ratings for each student in their class with respects to seven protective factors on the SPF-7. The teachers supplied demographic information for themselves and the students in their class. Technical adequacy (i.e., test-retest reliability, inter-rater agreement, and criterion validity) was determined in the following fashion:

Test-retest reliability. Nine classroom teachers from eight different schools provided individual ratings of 138 students on the SPF-7 on two occasions spanning a 2-week period. Collectively, the teachers had an average of 14 years of teaching experience, with their years of teaching experience ranging from 3 - 32 years. Three classroom teachers from two schools provided individual ratings of 84 students on the SPF-7 on two occasions spanning an 18-week period. Collectively, the teachers had an average of 13 years of teaching experience, with their years of teaching experience ranging from 5 - 30 years.

Inter-rater agreement. Six homeroom teachers from two schools provided individual ratings of 89 students. A second teacher, judged by the principal to be familiar with the students in the class, provided independent ratings for each of the students in this subsample.

Criterion validity. Three teachers from two schools provided individual ratings of 91 students on the SPF-7. These ratings were compared with the students' overall school status as measured by the Student Archival Records Search (SARS). The SARS involves the systematic recording and quantification of archival school records using 11 archival variables (e.g., disciplinary referrals, negative narrative comments, within-school referrals, out-of-school referrals) (Walker et al., 1991). Research suggests that the SARS is a technically adequate instrument that can be used as a tool to identify students with behavioral and emotional concerns (Walker et al., 1991). School Psychology graduate students completed the SARS for each of the students in this subsample.

2.5. Data Analyses

This study employed correlational research methods to calculate the strength of the relationship between raters (inter-rater agreement), across measurement occasions (test-retest reliability), and in relation to the SARS (criterion validity). Pearson *r* correlation coefficients were calculated to determine test-retest reliability, inter-rater reliability, and criterion validity. A multiple regression was used to determine the degree to which the seven protective factors, individually and collectively, predicted students' school status, as measured by the SARS (criterion variable). Descriptive statistics were used to summarize the teachers' ratings of the students on the SPF-7. The distribution of teacher ratings was examined by grade level and disability classification.

3. Results

3.1. Test-Retest Reliability

Pearson *r* correlation coefficients were calculated to determine test-retest reliability (see **Table 1**). All seven protective factors were found to have adequate test-retest reliability across a 2-week timeframe, with coefficients ranging from .84 - .95. All seven protective factors were found to have adequate test-retest reliability across an 18-week timeframe, with coefficients ranging from .76 - .93.

3.2. Inter-Rater Agreement

Pearson *r* correlation coefficients were calculated to determine inter-rater reliability (see **Table 2**). None of the seven protective factors were found to have adequate inter-rater reliability, as determined by the following Pearson *r* correlation coefficients: Competence (.42), Empathy (.55), Engaged (.57), and Family (.44), Social Skills (.25), Pro-social Peers (.22), Connected (.24). The results indicate that the independent judgments of classroom teachers are context-specific and do not agree necessarily with ratings provided by other educators outside of the classroom setting.

3.3. Criterion Validity

A multiple regression was used to determine the degree to which the seven protective factors, individually and

Table 1. Test-retest reliability at 2 weeks and 18 weeks.

Protective factor	2 weeks $N = 138$	18 weeks $N = 64$
Competence	.88**	.88**
Social skills	.84**	.77**
Empathy	.88**	.84**
Pro-social peers	.95**	.78**
Engaged	.91**	.83**
Connected	.93**	.93**
Family	.91**	.76**

**p < 0.01.

Table 2. Inter-rater agreement for factors on the SPF-7 ($N = 89$).

Protective factor	Same value	Within ±one	Correlation coefficient
Competence	56.2%	95.5%	.42**
Social skills	49.4%	89.9%	.25*
Empathy	49.4%	98.9%	.55**
Pro-social peers	46.1%	88.8%	.22*
Engaged	57.3%	97.8%	.57**
Connected	48.3%	86.5%	.24*
Family	54.5%	93.5%	.44**

*p < 0.05. **p < 0.01.

collectively, predicted student school status on the SARS. Collectively, the seven protective factors were able to predict the overall SARS score ($R = .736$, $p = .00$). Thus, the seven protective factors were able to account for 54.2% of the variance in the overall SARS score.

Individually, only Engaged ($r = -.694$, $p = .00$) was found to be a strong predictor of the overall SARS score. The beta value for each of the seven protective factors from the multiple regression analysis is presented in **Table 3**.

3.4. SPF-7 Ratings by Grade Level and Disability Classification

The percentage of students whose needs exceeded universal intervention based on teacher ratings on the SPF-7 was calculated for grade level and for disability classification. Each of the seven protective factors was considered independently. The criteria used to determine whether a student's needs exceeded universal intervention was a teacher rating of 0 = Never, or 1 = Rarely on each of the seven protective factors. For teacher ratings on the SPF-7 at the grade level, the percentage of students whose needs exceeded universal intervention ranged from 6.4% to 25.9% (see **Table 4**). For teacher ratings on the SPF-7 by disability classification, the percentage of students whose needs exceeded universal intervention ranged from 18.6% to 58.3% (see **Table 5**).

4. Discussion

Universal screening is a critical foundation for school-based prevention and early intervention (Stoner, 2006). To date, advances in the development and use of universal screening methods for identifying children in need of academic interventions have outpaced the development of universal screening methods for the prevention and early identification of emotional and behavioral concerns. This study represents a first step in examining the use

Table 3. Relative predictive value of the seven individual protective factors.

Protective factors	Beta	T	p
Engaged	−.548	−3.838	.000
Connected	.222	1.490	.140
Empathy	−.186	−1.551	.125
Pro-social peers	−.181	−1.126	.264
Social skills	−.091	−.578	.565
Family	−.043	−.379	.706
Competence	.025	.160	.873

Table 4. Percentage of students whose needs exceed universal intervention (Tier 1) Based on teacher ratings on the SPF-7 by grade level.

	Grade level								
Sample composition	K	1	2	3	4	5	6	7	8
N of classrooms	10	14	23	21	13	11	9	5	6
N of students	172	149	277	253	206	162	159	95	120
Protective factors									
Competence	11.0%	16.2%	14.8%	15.4%	11.7%	16.7%	22.0%	12.6%	25.9%
Social skills	11.6%	17.5%	14.1%	12.0%	11.2%	16.0%	16.9%	5.3%	15.0%
Empathy	12.2%	16.8%	10.4%	13.6%	13.2%	17.9%	21.4%	6.4%	23.3%
Peers	9.3%	20.8%	13.7%	13.1%	11.6%	18.5%	17.1%	6.4%	14.2%
Engaged	11.1%	14.4%	14.9%	17.5%	15.1%	19.7%	23.9%	20.0%	20.8%
Connected	11.1%	17.5%	9.1%	15.5%	12.2%	14.2%	26.5%	11.6%	14.1%
Family	15.2%	14.1%	23.1%	21.2%	12.6%	35.2%	20.7%	8.7%	24.8%

Table 5. Percentage of students whose needs exceed universal intervention (Tier 1) Based on teacher ratings on the SPF-7 by disability classification.

Protective factor	Disability classification					
	CD (N = 49)	ED (N = 12)	OHI (N = 13)	SH (N = 78)	SLD (N = 70)	Non-disabled (N = 1348)
Competence	42.8%	41.7%	38.8%	19.2%	42.9%	12.6%
Social skills	26.5%	33.4%	30.8%	20.5%	21.4%	11.3%
Empathy	20.8%	50.0%	23.1%	16.7%	20.0%	13.4%
Pro-social peers	28.5%	33.4%	25.0%	20.8%	32.8%	11.4%
Engaged	43.8%	58.3%	30.8%	21.8%	30.0%	14.4%
Connected	29.2%	25.0%	23.1%	19.3%	22.9%	12.7%
Family	34.1%	50.0%	15.4%	26.4%	18.6%	18.9%

Key to Disability Classification Codes CD: Cognitive Disability ED: Emotional Disturbance OHI: Other Health Impairment; SH: Speech or Language Impairment; SLD: Specific Learning Disability.

of a universal screening tool based on protective factors for identifying students in need of more intensive intervention. If further validated by future research, the SPF-7 may have potential as one piece of information that is easily administered, cost effective, and used proactively in the context of a response to intervention model to

answer the question: which and how many students are potentially in need of additional support? There is no expectation that the SPF-7 should be used as a sole measure for sorting students for intervention or diagnosis.

The SPF-7 differs from other measures used for universal screening of emotional and behavioral concerns in that it focuses on protective factors rather than risk factors. Consequently, the SPF-7 is not vulnerable to the criticisms of anti-screening groups, such as the Church of Scientology and Concerned Women for America, who contend that the use of universal screening for mental health concerns usurp parental authority, enable pharmaceutical companies to market their products to school children, and promotes labeling children as mentally ill (Stoner, 2006).

As an initial step in examining the reliability and validity of the SPF-7, the findings suggest that the SPF-7 has modest potential a universal screening tool, although additional empirical investigations are needed. Teacher ratings on the SPF-7 yielded strong test-retest reliability coefficients for all seven protective factors across the 2-week and 18-week timeframes.

Inter-rater agreement coefficients were inadequate for all seven of the protective factors. This finding is consistent with previous research that suggests that the frequency of office disciplinary referrals is influenced by teachers' differing criteria, definitions of and tolerance for problem behavior, and reactivity to program implementation (Kern & Manz, 2004).

The results of this study suggest that the SPF-7 demonstrated adequate criterion validity for the purpose of identifying behaviorally and emotionally at-risk students. The SPF-7 ratings were compared to overall SARS scores. When all seven protective factors were considered collectively, the SPF-7 accounted for 54.2% of the variance in SARS scores. When the seven protective factors that comprise the SPF-7 were considered individually, only Engaged was found to be a strong predictor of the overall SARS scores. This might suggest that of the seven protective factors on the SPF-7, a student's level of engagement and motivation to do well in school is the single best predictor of behavioral and emotional concerns, but the inclusion of additional protective factors increases the predictive value.

For a universal screening instrument to have practical value, the percentage of students identified by the measure should be equivalent to the number of students within the given population that would be expected to need additional support. One criticism of the Teenscreen is that too many students are being identified as at-risk for mental health concerns, overwhelming the resources available for intervention and consequently making school districts liable for meeting the needs of students identified (Anderson-Butcher, personal communication April 21, 2005). The teacher ratings on the SPF-7 identified 6.4% to 25.9% of students in the sample as having needs exceeding universal interventions. This finding is promising given that research suggests that universal interventions should meet the needs of 80% - 90% of all students in any given student population, with 10% - 20% of students requiring additional support (Sugai et al., 2002). The SPF-7 identified 18.6% to 58.3% of students with disabilities in the sample as having needs exceeding universal interventions. A higher percentage would be expected when considering students with disabilities, because these students have already been identified through the special education qualification process as needing extra interventions and supports beyond what is provided at the primary and secondary prevention levels.

Future Directions and Implications

The development, validation and use of protective factors in universal screening is in its infancy. Future research should replicate this initial study using a larger and more diverse student population. For example, recent research has investigated the use of the SPF-7 for developing micro-norms for language minority students (Morrison, Kobayashi, & Bolognone, 2007). Another area for future research is to explore the utility of the SPF-7 as a screening instrument with students in secondary schools.

The SPF-7 has the potential to function as a cost effective, efficient screening tool at the elementary school level. Students who are identified by teacher ratings on the SPF-7 as behaviorally and emotionally at-risk could receive immediate support as opposed to waiting until the discipline records indicate there is a concern.

Information garnered from the SPF-7 could be used to identify the need for both selected (secondary prevention) and universal (primary prevention) interventions. Students who earn low ratings on a particular protective factor could be targeted for selected interventions. For example, several students within a particular classroom or grade level might all receive low ratings for the Social Skills factor. Further assessment would need to be conducted with the students to identify individual areas of need using a problem-solving approach. An intervention

could be selected to target the problem area(s), and a plan developed as to monitor the student's progress throughout the intervention.

At the school-wide level, information from the SPF-7 could be used to inform the development and implementation of universal supports. For example, if low ratings on the connected factor were noted across a school, further assessment and problem solving would enable educators to understand the exact nature of the lack of connectedness. The result might be the development of a school-wide intervention to help students feel more connected to their teachers and to the school (e.g., a teacher-student mentoring program or a faculty-student volleyball game). Given its potential to identify students' needs proactively, the use of the SPF-7 could be the centerpiece on which a multi-tiered positive behavioral and academic intervention program is based.

Acknowledgements

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Appendix

Student Protective Factors Screening Scale (SPF-7)

Directions: Please rate each student in your class using the following scale: 0 = Never, 1 = Rarely, 2 = Occasionally, 3 = Frequently.

Student name	Demonstrates competence, is optimistic, and has a sense of purpose	Has effective social skills (relates well to others, has good friendship skills)	Shows respect and concern for others (empathy)	Identifies with pro-social peer group(s)	Engaged and motivated to do well in school	Connected with teachers and school	Family is supportive and invested in student's school success