The California School Psychologist
2009, Volume 14

Shane R. Jimerson

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Includes a Special Topic Section:

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CASP | 1020 12th Street, Suite 200 Sacramento California 95814 | 916.444.1595 | www.casponline.org
GUIDELINES FOR AUTHORS

Scope and purpose: The California School Psychologist is a refereed journal published annually by the California Association of School Psychologists (CASP). The California School Psychologist is devoted to contemporary issues in school psychology with the goal of publishing high-quality articles that link theory to practice. The journal is an appropriate venue for articles that: (1) critically review research on topics of general interest to school psychologists in California and nationwide, (2) report research relevant to practicing school psychologists, (3) present promising practices or programs that address the needs of children and youth, and (4) critically reflect on the professional of school psychology and the challenges faced by the profession. It is also the intent of the journal to highlight the diversity of viewpoints in the profession and of the students, parents, and communities served by school psychologists in California and elsewhere.

Indexing and abstracting: Contents of The California School Psychologist are available on international electronic literature databases, including ERIC, developed by the US Department of Education, and PsycINFO, developed by the American Psychological Association. Thus, it is essential to include up to five keywords following the abstract of each manuscript.

Submission and review of manuscripts: Manuscripts should be submitted electronically to cspsubmissions@chapman.edu. General communication to the editors should be sent to csp@chapman.edu. Manuscripts should be between 15-25 pages in length (including references and tables). The entire manuscript must be double spaced with at least 1-inch margins. Authors must include a cover letter stating the title of the manuscript submitted, authors’ names, and a mailing address, phone number, and e-mail address for further correspondence. The cover letter should also specify that the manuscript has not been previously published and is not currently being considered for publication elsewhere.

In preparing manuscripts, authors should attend carefully to the specific guidelines of the latest American Psychological Association Publication Manual, including the abstract, headings, citations, tables, and references. Manuscripts not prepared according to the APA format will be returned to the authors without review.

Selection of articles to be published is determined on the basis of blind peer review. Reviewers examine the importance of the topics addressed, accuracy and validity of the contents, contribution to the profession, implications for the practice of school psychology, originality, and the quality of writing.

Current abstracts and previous volumes are available online: www.casponline.org. www.education.ucsb.edu/school-psychology

The California Association of School Psychologists would like to thank Dr. Shane Jimerson for his dedication to and support of The California School Psychologist. Dr. Jimerson was instrumental in advancing the journal to the quality publication it is today. CASP wishes Dr. Jimerson well in his further endeavors.
### The California School Psychologist

**2009, Volume 14**

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The California School Psychologist
Brings Science to Practice:
University and School Collaborations
to Promote Student Success

Shane R. Jimerson
University of California, Santa Barbara

This volume of *The California School Psychologist* is the last this decade that I will be responsible for in my service as Editor. Thus, prior to a synthesis of articles included in the current volume, it is essential to provide appreciation, commendation, and reflection on the recent volumes of *The California School Psychologist*. In addition, I will provide a brief summary of the history of *The California School Psychologist*.

Accolades to All Who Have Contributed

First and foremost it is essential to recognize and applaud those with whom I collaborated as editor, in particular those who have served as associate editors (Michael Furlong, Brent Duncan, Stephen Brock, and Kristin Powers), and co-editor (Marilyn Wilson, 2000) during the past decade, as their collective efforts have contributed to the quality of the articles published in *The California School Psychologist*. In addition, we are indebted to the many school psychologists (i.e., faculty, practitioners, and students) who have served on the Editorial Board and Student Editorial Panel during the past decade, as it is their reviews that inform necessary revisions and contribute to the quality of and editorial dispositions regarding each manuscript (each Editorial Board and Student Editorial Panel member is listed on the inside cover of each volume). The faculty and students at the University of California, Santa Barbara are to be commended for their incredibly generous support and contributions to *The California School Psychologist*, sustaining and enhancing the high quality of the journal through substantive as well as layout production during most of the past decade. Finally, sincere gratitude is expressed for the copyediting and recent formatting completed within the California Association of School Psychologists office, most notably Heidi Holmblad for ensuring the high quality of the publication.

A Brief History of *The California School Psychologist*

*The California School Psychologist* is an invaluable resource for faculty, students, and practitioners in school psychology across the state of California. For faculty, it represents an important venue for disseminating scholarship. For practitioners and students, the journal provides relevant, peer-reviewed information, bringing science to practice and thus contributing to continuing professional development to school psychologists across the state, as well as those who access the contents across the country and around the world, and emphasizing evidence-based prevention and interventions strategies to enhance student outcomes.

*The California School Psychologist* was established by the California Association of School Psychologists (CASP) 1996 as a member service. The production and layout was completed at the University of California, Santa Barbara up until the 2008 volume, when the CASP office embraced these responsibilities.

Leadership for the first three volumes of *The California School Psychologist* (1996, 1997, and 1998) was provided by Dr. Pauline Mercado, with Dr. Mike Furlong contributing as the associate editor. Dr.
Marilyn Wilson served as editor in 1999 and 2000, with Dr. Shane Jimerson joining her as co-editor in 2000. In 2001, Dr. Jimerson continued as the editor, with Drs. Mike Furlong and Brent Duncan contributing as associate editors. In 2003, Drs. Stephen Brock and Kristin Powers joined as associate editors along with Dr. Furlong until 2007, with Drs. Jimerson (editor), Brock and Powers (associate editors) continuing through 2009. As of 2010 Dr. Michael Hass will provide leadership with Drs. Kelly Graydon and Brian Leung serving as associate editors. It has been both an honor and a privilege to collaborate with colleagues and students to contribute to The California School Psychologist.

Since its inception, efforts have been made on an on-going basis to improve the quality and contributions of The California School Psychologist. Progress toward these objectives during the past decade includes: 1) refined and further enhanced the editorial board infrastructure, including the addition of a student editorial panel; 2) prepared, submitted, negotiated, and successfully included in PsycINFO database; 3) prepared, submitted, negotiated, and successfully included in ERIC database; 4) funding provided by a grant secured by the UCSB Center for School-Based Youth Development to further enhance the content, including added pages; 5) prepared a series of special topic sections (e.g., volume 8 - school engagement, youth development, and school success; volume 9 - strength-based assessment, youth development, and school success; volume 10 - response to intervention approaches: supporting early and sustained success for all students; volume 12 - promoting school success among students with emotional or behavioral disorders; and volume 13 - promoting reading success among students); 6) the content doubled from 80 pages to 160 pages; 7) obtained manuscripts from recognized scholars from across the nation; 8) providing access to the journal on-line one year following publication at www.education.ucsb.edu/school-psychology and at www.casponline.org, and 9) enhanced status such that The California School Psychologist is now nationally recognized.

Collectively, articles in The California School Psychologist have aimed to advance both the science and practice of school psychology, with a special emphasis on promoting the development and addressing the needs of the diverse population of students across California. Considering the breadth of knowledge, talents, and skills among school psychologists, I believe that school psychologists will continue to contribute in many important ways to promoting youth development and the education of all students in California. Each of the titles of the previous introduction articles (see Table 1) is a declaration that identifies several salient contributions of The California School Psychologist (this phrase is used intentionally to simultaneously refer to both the journal as well as the professionals). There is coherence in the content across the past decade, with a broad emphasis on promoting youth development and supporting student success, it is highlighted that The California School Psychologist is a catalyst for change and a quintessential resource, with a central aim to bring science to practice. Topics that have included special emphasis during the past decade include understanding: a) reading success, b) school engagement, b) strength-based assessment, c) response to intervention (RTI), d) autism, e) students with emotional or behavioral disorders, and e) university-school collaboration to promote student success.
TABLE 1:  *Titles of introduction articles 2000-2009, illustrating the many contributions of* The California School Psychologist *to promote the development and education of all students.*

The California School Psychologist brings science to practice: University and school collaborations to promote student success. (Jimerson, 2009)

The California School Psychologist provides valuable information to promote reading success among students. (Jimerson, 2008)

The California School Psychologist provides valuable information to promote school success among students with emotional or behavioral disorders. (Jimerson, 2007)

The California School Psychologist contributes valuable knowledge to support student success. (Jimerson, 2006)

The California School Psychologist provides valuable information regarding Response-to-Intervention approaches to support early and sustained success for all students. (Jimerson, 2005)

The California School Psychologist provides valuable information regarding strength-based assessment, youth development, and school success. (Jimerson, 2004)

The California School Psychologist provides valuable information regarding school engagement, youth development, and school success. (Jimerson, 2003)

The California School Psychologist as a quintessential resource. (Jimerson, 2002)

The California School Psychologist as a catalyst for change. (Jimerson & Wilson, 2001)

The California School Psychologist in the 21st Century (Jimerson & Wilson, 2000)

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The Current Volume

This volume of *The California School Psychologist* continues to bring science to practice with many thoughtful and thought-provoking articles, including articles in the special topic section highlighting university-school collaboration, consultation, and cooperation to promote student success. Each of these articles provides valuable information for school psychologists and other professionals working in the schools, and also contributes to the literature and scholarship that aims to promote the educational success of all students.

The first article (Muyskens, Betts, Lau, & Marston, 2009) examines the predictive validity of curriculum-based measures (CBM) of English reading fluency among fifth-grade students who are English language learners. In California particularly, as well as many other regions across the county, the number of students considered “English language learners” continues to expand. Hence, the importance to identify valid and efficient measures of reading for students whose first language is not English. The findings of this study indicate that the CBM reading fluency scores are a significant predictor of later performance on tests for state accountability tests for fifth grade ELL students, including individual language groups of Spanish, Hmong, and Somali. Based on the results of this study, the authors conclude that the measure of CBM English reading fluency has a high level of specificity and, thus, is a good indicator of later status as failing to meet the proficiency level in reading on the state-mandated, proficiency test.

The second article (Rutherford-Becker & Vanderwood, 2009) explores the relationship between literacy and mathematics skills using curriculum-based measures (CBM) with fourth- and fifth-grade students. Specifically this study reports the results of analyses of oral reading fluency (ORF) and Maze reading comprehension, as related to math performance (CBM math computation and applied math). Results revealed that math computation was the best predictor of applied math performance, followed by the Maze task measuring reading comprehension. Furthermore, results ORF did not significantly predict applied math test scores above and beyond math computation and Maze. Based on these results, the authors emphasize that when intervening with students with math difficulties, it is important to keep in mind that reading influences applied math skills. This highlights the importance of making the distinction between students that have difficulty only with math versus students that have difficulty with both math and reading.
The third article (Furlong, Ritchey, & O’Brennan, 2009) shares the results of a study to develop norms for the California Resilience Youth Development Module of the California Healthy Kids Survey (CHKS). With the objective of facilitating broader access to and use of this strength-based instrument, the authors report normative data on the internal assets and school-focused external resources subscales of the RYDM, including grade, ethnicity, and gender patterns. The authors conclude that through better understanding the strengths and needs of specific students related to their internal assets (e.g., self-efficacy, problem-solving, empathy, and awareness) and school resources (e.g., supports, meaningful participation, and connectedness), school psychologists can implement support services, for high-risk students that are linked directly to school-wide youth development efforts.

Recognizing the importance of understanding how schools are coping with incidents of peer victimization, the fourth article (O’Malley, 2009) reports prevailing interventions to address peer victimization at school among California school psychologists. The author highlights that the interventions reported to be the most widely available were a) whole-school no tolerance policies and b) school-to-home communication. Furthermore, interventions endorsed as most important were a) the whole-school no tolerance policy; b) general school climate interventions; c) school to home communication; and d) education of school personnel about bullying. Finally, the author reports that school psychologists report primary intervention (relative to secondary and tertiary) are most important for reducing levels of bullying at their schools.

The fifth article (Neseth, Savage, and Navarro, 2009) examines the impact of acculturation and perceived social support on mathematics achievement amongst Latino/a high school students. The results indicated that one’s level of acculturation did not impact one’s mathematics achievement, while positive correlations between teacher and peer support and mathematics achievement were evident. The authors highlight that those participants who did not feel supported in their lives were also those who did not perform well within the classroom. Furthermore, the authors note that results of this study demonstrated that participants who had a strongly Mexican orientation were just as likely to be successful as those who did not. The authors conclude that by helping to promote knowledge, awareness, and of cultural competence among teachers, administrators, and other educational service providers, school psychologists may be playing an important role in helping Latino students experience academic success.

The articles included in the special topic section highlighting university-school collaboration, consultation, and cooperation emphasize the importance of school psychology faculty, practitioners and graduate students working together to promote student success. As an applied science, engaging in scholarship that informs practice is an essential aspect of school psychology. Collaborative, consultative, and cooperative projects afford opportunities to advance both science and practice. There are important contributions that emerge through engaging in action research and partnering with local schools to addresses targeted needs and promote student success. Indeed, it is vital to consider collaboration, consultation, and cooperation on a continuum as each varies across projects. The projects described in articles in this section serve as examples of contemporary collaborations addressing important topics such as; a) developing an appropriate kindergarten student entrance profile, b) understanding the concurrent validity of behavioral and emotional screening scores and student academic, behavioral, and engagement outcomes, c) the use of universal screening and teacher referral for early identification of behavior and emotion problems among students, d) exploring relationships among positive behaviors and negative functioning among students, e) examining classroom implementation of the Second Step curriculum for impulse control and problem solving, and f) guidelines, considerations, and implications for the use of solution-focused brief counseling. Each of these topics is timely and each of the articles in this section offers information and insights related to conducting action research in collaboration with school partners.

The sixth article (Lilles, Furlong, Quirk, Felix, Dominquez, & Anderson, 2009) shares information regarding the development of the Kindergarten Student Entrance Profile (KSEP). The KSEP is a universal screening measure developed by a school district to assess children’s readiness for school. This action research study reports the psychometric proprieties of the KSEP, including its prediction of academic

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achievement through grade 2. The authors conclude that while further research is warranted, the KSEP has promise because it provides teachers information about the nature of the readiness of students entering kindergarten when used as part of greater kindergarten articulation efforts.

The seventh article (Renshaw, Eklund, Dowdy, Jimerson, Hart, Earhart, & Jones, 2009) reports the results of an action research study examining the relationship between scores on the Behavioral and Emotional Screening System and elementary student academic, behavioral, and engagement outcomes. The results revealed that students’ risk-level classifications were significantly related to school-based outcome criterions and that school-based outcome criterions were deemed to be effective discriminators of students’ risk-level classification. The authors emphasize that school-based universal screening may provide opportunities for early identification and intervention, thus, possible preventing the development of more severe problems and promoting more positive outcomes in the future.

The eighth article (Eklund, Renshaw, Dowdy, Jimerson, Hart, Jones, & Earhart, 2009) presents results of an action research project exploring early identification of behavioral and emotional problems among elementary students. In particular this study reports the results of universal screening and teacher-referral for use in identifying students at risk for emotional and behavioral problems. The results revealed that of the students identified as at-risk by the universal screening measure, only half were previously identified through current teacher referral practices. In considering the results of this study, in addition to the results of previous studies investigating screening for emotional and behavioral risk, the authors conclude that universal screening may be a viable approach to early identification of students at-risk for behavioral, emotional, and academic problems.

The ninth article (Earhart, Jimerson, Eklund, Hart, Jones, Dowdy, & Renshaw, 2009) shares the results of an action research project examining the interrelationships between three measures of positive functioning and one measure of maladaptive behaviors and emotions among elementary students. The authors highlight that as methods of assessment improve and further enhance our understanding of student development, it is crucial to understand the interrelationship among strength-based and traditional – problem-based – measures. The results of this study revealed that the measures assessing positive constructs were significantly positively correlated with each other and negatively correlated with a measure of problem behaviors. The authors note that the use of positive measures may encourage more strength-based assessment and intervention practices in schools.

The tenth article (Hart, Dowdy, Eklund, Renshaw, Jimerson, Jones, & Earhart, 2009) is an action research project that reports the results of a controlled study assessing the effects of the impulse control and problem solving unit of the Second Step Curriculum. The control-comparison, pre-post methodology used in this study may serve as an exemplar for practicing school psychologists who seek to examine the effects associated with classroom interventions. Results revealed that change was evident from pre-to-post test for third- and fourth-grade students, however, relative to the control group of students, there was only a significant difference among the third-grade students. The authors highlight the importance of including control group data, noting that without such data it would not have been possible to evaluate the differential effects of the intervention. The authors also emphasize the importance of the development of measures sensitive to behavioral change.

Providing counseling in the school context can be challenging, particularly considering the numerous demands on the time of school psychologists. The eleventh article (Jones, Hart, Jimerson, Dowdy, Earhart, Renshaw, Eklund, & Anderson, 2009) explores the use of solution-focused brief counseling (SFBC) with school-age children. The authors provide a brief overview of the extant scholarship regarding SFBC, describe guidelines for implementing this approach, explore considerations and implications for school psychologists who use this approach to provide counseling services, and recommend future directions for scholarship. The authors also share lessons learned through a university and school collaboration to provide student support services. Overall the authors conclude that presently, there is a paucity of empirical evidence supporting the use of SFBC with children and adolescents; however, the extant literature reveals that it may be associated with favorable outcomes. Thus, further research is warranted to determine whether SFBC may be a valuable counseling technique to implement in the schools with children.
The collection of articles included in this volume contributes valuable information that may be used by educational professionals working with children, families, and colleagues to enhance the academic success and promote positive developmental trajectories of students. The authors provide valuable information and insights that advance our understanding of numerous important topics. *The California School Psychologist* continues to contribute important information to promote the social and cognitive competence of all students.

**REFERENCES**


Predictive Validity of Curriculum-Based Measures in the Reading Assessment of Students who are English Language Learners

Paul Muyskens, Joseph Betts, Matthew Y. Lau, & Doug Marston

Minneapolis Public Schools

The inclusion of English Language Learners as a subgroup in the No Child Left Behind legislation has lent additional importance to the need for valid and efficient measures of reading for students whose first language is not English. This study examines the use of Curriculum-Based Measurement (CBM) reading fluency as a predictor of later reading performance on state accountability tests for fifth grade ELL students. The findings of this study indicate that CBM is a significant predictor of later performance on tests for accountability for ELL students as a whole, and for the individual language groups of Spanish, Hmong, and Somali. Implications for these findings are discussed.

One of the greatest contemporary opportunities and challenges in America is the education of culturally and linguistically diverse students whose first language is not English. The general term, English Language Learner (ELL), is used to describe a group of students who are non-native English speakers and who score low on a measure of English language proficiency. The No Child Left Behind Act (NCLB, 2001) refers to this group as students with limited English proficiency, and defines them as students who belong to one of the following categories:

a) Was not born in the United States or speaks a native language other than English;
b) Is a Native American, Alaska Native, or native resident of outlying areas and comes from an environment where language other than English has had a significant impact in the individual’s level of English language proficient, or
c) Is migratory, speaks a native language other than English, and comes from an environment where language other than English is dominant, or
d) May be unable, because of difficulties in speaking, reading, writing, or understanding the English language, to score at the proficient level on state assessments of academic achievement, learn successfully in classrooms where the language of instruction is English, or participate fully in society.

The Number and Achievement of ELL Students

Estimates during the 1990s indicated there was an increase of about 1 million ELL students, which resulted in about 5.5% of all students being served in public schools speaking English as a non-primary language (National Research Council, 1997). Kindler (2002) estimated that the number had climbed even higher during the 1999-2000 year with an estimated 4.4 million ELL students in public schools (about 9% of all students in public education). The US Census Bureau (2000) estimated that about 18% of children between the ages of 5 and 17 speak a language other than English as their primary language in the home.

Unfortunately, the educational achievements of these ELL students have not increased as dramatically as their numbers. While there are differences between home-language groups, studies have found that ELL students in general are lower performing on tests of academic achievement when compared to their English-speaking peers (August & Hakuta, 1997; Moss & Puma, 1995). These types of outcomes
for ELL students, which may be related to the linguistic complexity of the items included in the test, have been found in other research on both mathematics and reading (Abedi, 2002; Abedi, Lord & Hoftstetter, 1998; Cocking & Chipman, 1988; Liu, Anderson, & Thurlow, 2000; Thomas & Collier, 1997). Hopstock and Stephenson (2003) found that when taking state required tests for graduation students with limited English proficiency were much more likely to fail than were the student group as a whole (50% vs. 24%). August and Hakuta (1997) also found higher dropout rates for ELL students. The need for ELL students to accelerate their academic achievement has received new emphasis with the implementation of the No Child Left Behind Act of 2001. Under this law, all children, including the specific subgroup ELL students, are expected to reach a proficient level in reading and math each and every year starting at the third grade.

Curriculum-Based Assessment of Reading

Curriculum-Based Measurement (CBM) as a measure of oral reading fluency has long been shown to be an efficient and valid measure of academic progress for English-speaking general education and special education students. For example, in an examination of 11 studies looking at various measures of the reliability of CBM Marston (1989) found a mean reliability rating of .91. The validity of CBM measures has also been established through numerous studies showing a strong relationship between measures of oral reading fluency and a variety of standardized reading assessments (Fuchs & Deno, 1981; Fuchs & Fuchs, 1999; Shinn, Good, Knutson, Tilly & Collins, 1992). It has also been shown to be a good measure of reading comprehension across grades (Kranzler, Miller & Jordan, 1999; Shinn et al., 1992) and with specific subgroups (Deno, Fuchs, Marston, & Shin, 2001; Hintze, Callahan, Matthews, Williams, & Tobin, 2002).

One recent development in CBM research is to examine the relationship between oral reading fluency and student performance on state accountability tests (Deno, 2003). Several studies have reported moderate to high correlations between CBM and state assessments (e.g., Good, Simmons, & Kame’enui, 2001; McGlinchey & Hixson, 2004; Pearce & Gayle, 2009; Sibley, Biwer, & Hesch, 2001; Stage & Jacobsen, 2001). In addition, the validity of using benchmark goals or cut scores on CBM measures to predict pass and fail rates on high-stakes assessments has also been supported (Hintze & Silberglitt, 2005).

Despite the extensive study of CBM, and its widespread use, published research on the use of CBM for ELL students is limited. Baker and Good (1995) investigated the reliability and validity issues of CBM in English with bilingual Hispanic students. They concluded that CBM was as reliable and valid for Hispanic bilingual students as for their English speaking peers. The convergent and discriminant data from this study provided further support for CBM as a measure of English proficiency in reading and comprehension for bilingual students.

In another relevant study that included Hispanic and Caucasian youth, Klein and Jimerson (2005) examined the potential bias of oral reading fluency as a predictor of future reading proficiency, considering gender, ethnicity, home language, and socioeconomic status. Analyses of longitudinal data from 398 students enrolled grades 1-3 revealed consistent intercept bias effects for the combination of ethnicity and home language factors at grades one, two, and three. Specifically the results indicated that, when using a common regression equation, oral reading fluency probes overpredicted the reading proficiency (as measured by the Stanford Achievement Test – Ninth Edition (SAT-9) Total Reading) of Hispanic students whose home language is Spanish and underpredicted the reading proficiency of Caucasian students whose home language is English. More recent research development in this area involves investigations using nonsense word fluency (NWF) to predict reading performance. Studies have found early literacy skills such as alphabetic understanding and phonological recoding ability measured by NWF have a significant predictive value on real-word reading and reading performance on standardized measures such as state accountability tests (e.g., Vanderwood, Linklater, & Healy, 2008 and Fien et al., 2008). With few studies examining CBM among ELL students, further research is warranted.

The ability to evaluate and predict reading ability of students can be particularly challenging with students whose primary language is not English. It is not uncommon for school-based professionals to
question the validity of CBM measures with ELL students by pointing out that reading fluency does not necessarily correspond to comprehension. These professionals maintain that ELL students can at times decode words without having the contextual or topical knowledge needed to understand what they are actually saying. This may result in fluency scores that indicate mastery, while the student does not really understand what they have read, and thus they are likely to suffer on comprehension based assessments. Based upon this argument, some ELL advocates promote a portfolio or theme-based assessment system. For instance, Sudweeks, Glissmeyer, Morrison, Wilcox, & Tanner (2004) recommended oral retellings to assess ELL students’ reading comprehension. On the other hand, in a study of 66 third grade students in Pacific Northwest, Hamilton & Shinn (2003) reported that “word callers” (students who can read fluently but do not understand what they read) scored fewer correct words per minutes and earned significantly lower scores on comprehension measures. Understanding that the participants of this study were not ELL students, it seems evident that students who read poorly and without fluency are also likely to comprehend poorly.

The complexity of the issues related to language acquisition and reading fluency and comprehension are also related to the nature and the characteristics of the home language spoken by the student. For example, Spanish and English are phonetic-based languages that share many underlying cognates, or common word origins, the teaching of which can be used as a strategy to enhance vocabulary development (Carlo, August, Mclaughlin, Snow, & Dressler, 2004). Hmong, however, has distinctly different grammatical and phonemic usage than English and belongs to a group of languages, often referred to as the Miao-Yao languages, spoken in Southeast Asia and Southern China. Unlike English, Hmong is mostly a monosyllabic language. Moreover, it is a tonal language, meaning pitch variations are used to signal a difference in meaning among words. One the other hand, Somali language is a member of the Cushitic languages spoken mostly in Somalia and nearby Djibouti, Ethiopia, and Kenya. While this language has a tonal component, there is also significant overlap with the English alphabet. Both of these cultures have an emphasis on oral tradition.

The Present Study

The purpose of this study was to investigate the concurrent and predictive validity of a CBM measure of oral reading fluency for ELL students. One objective was to provide validity evidence for CBM as a predictor of a state-mandated proficiency level assessment of reading for ELL students. These results would be used to validate the ability to make inferences from ELL student’s CBM scores to reading in general, and also in predictions of proficiency status on a high-stakes assessment. This study focused on three distinct ELL populations represented by their home languages, which are Spanish, Hmong, and Somali.

The findings of this study potentially add an important piece to the CBM literature regarding the use of oral fluency measures on students who speak a native language that is very different from the primarily phonetic-based English and Spanish languages. All three of these language groups, along with dozens of others, are commonly grouped together for instruction; yet, their backgrounds and instructional needs may be very divergent. It would be helpful to know if we can use a common method scaled on a common metric for monitoring their progress in reading. This would also be particularly useful if the unit of measurement could be used as a formative assessment. CBM has been used as one of the tools that can provide efficient and reliable data for this purpose with English speaking students; however, it is necessary to determine if CBM is valid in this role with ELL students.

METHOD

Participants

This study took place during the 2003-2004 school year in a large urban school district located in the Midwestern United States. Participants were fifth-grade students who had received an ELL status in the district and reported their home language was Spanish, Somali, or Hmong (N=1,529). The rationale for not including all non-English languages was due to the fact that the selected language groups make
up the great majority of ELL students (around 88%). The remaining ELL students comprised 72 other languages and were excluded due to the small number of students in each language group. Due to mobility and absences, 1,205 students (78% of possible participants) were measured on both CBM and the Minnesota Comprehensive Assessment (MCA). Table 1 delineates the demographic percentages in the targeted population and the corresponding percentages in the sample. The sample appears to be a representative sample and it is assumed that any loss of students was the result of random processes that did not relate to systematic procedures or the students actual reading ability.

**TABLE 1: Demographic Information**

<table>
<thead>
<tr>
<th>Demographic Information</th>
<th>Population (N = 1,529)</th>
<th>Sample (N = 1,205)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>52%</td>
<td>52%</td>
</tr>
<tr>
<td>Female</td>
<td>48%</td>
<td>48%</td>
</tr>
<tr>
<td>Home Language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spanish</td>
<td>48%</td>
<td>46%</td>
</tr>
<tr>
<td>Hmong</td>
<td>42%</td>
<td>44%</td>
</tr>
<tr>
<td>Somali</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>SES Proxy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eligible for Free/Reduced Lunch</td>
<td>95%</td>
<td>94%</td>
</tr>
<tr>
<td>Not Eligible for Free/Reduced Lunch</td>
<td>5%</td>
<td>6%</td>
</tr>
</tbody>
</table>

**Materials & Procedure**

The CBM oral reading fluency measures used in this study were grade-level passages drawn from the district basal reading text, *Invitations to Literacy* which was published by Houghton Mifflin in 1999. Passages were selected so as to represent the subjects, authors and styles found within the curriculum. Readability levels and pilot studies with district students were also used to ensure that the passages were of similar difficulty. Completion of CBM data collection involved the students reading three different passages for one minute each and the calculation of the median number of words read correct for data analyses. All data were collected following the standardized procedures outlined in the district manual, “Performance Assessment of Reading in the Problem Solving Model” (Minneapolis Public Schools, 2003). These CBM administration and scoring procedures have been described by Marston and Magnusson (1985), and Shinn (1989). All participants were administered a CBM measure in September as part of their school’s building-wide continue progress monitoring system.

The Minnesota Comprehensive Assessment (MCA) is a measure of reading proficiency (Minnesota Department of Education, n.d.) On the fifth grade test students read passages and answered multiple-choice and constructed response items requiring them to write short answers related to the purpose of the passage and the main idea. In addition, the student must be able to synthesize information in the story to develop conclusions and make inferences. All items were designed to be aligned with the Minnesota High Standards, and are scored. In order to minimize variance all items are scored by the test vendor.

Two types of scores are derived from the MCA, a level score and a standard score. The level scores range from 1 to 5. A student scoring at level 1 is described as having gaps in knowledge and skills. Those scoring at level 3 are described as having solid on-grade level skills, while those at level 5 are considered to have superior performance beyond grade level. Level 3 is the level where students are considered to be
proficient, and corresponds to a standard score of 1420 or a raw score of 40. The raw scores on the MCA ranged from 0 to 58, with a mean of 45.81, a standard deviation of 10.34, and a reliability coefficient of .92 (Minnesota Department of Education, n.d.). The difficulty of the MCA was determined through use of the Degrees of Reading Power (DRP). According to MDE, the 5th grade passages used on the MCA have an average DRP of 54, which is the level of a typical fifth grade textbook.

For this study, the CBM data were collected shortly after school began in the fall of 2003 as part of the building-wide progress monitoring system. The MCA was administered in late April. Therefore there was about a six-month intervening period between the CBM and MCA.

Data Analysis

Data analyses examined whether a CBM measure at the beginning of the school year could be helpful in predicting scores for ELL students toward the end of the year on a state-mandated, high-stakes, standards-based assessment in reading. Simple regression analyses were completed to address this question (Neter, Kutner, Nachtsheim, & Wasserman, 1996). Logistic regression models (Hosmer & Lemeshow, 1989) were used to assess the predictive validity of using CBM to estimate proficiency on the MCA. The MCA score of 1420 is the state-mandated cut-score for proficiency levels. Thus any score greater than or equal to 1420 was coded as ‘pass’ and any score less than 1420 was coded as ‘fail’. It should be recognized that the student does not actually fail the test but rather fails to get a score that indicates proficiency in the area of reading. This model allows for the computation of diagnostic accuracy statistics. The basis for this is the generation of a predicted p-value from the model (Hosmer & Lemeshow, 1989; Neter, Kutner, Nachtsheim, & Wasserman, 1996). For this analysis, we utilized a p-value of 0.5 as the cut-point for classification. Thus, students with a predicted p-value of greater than 0.5 were predicted to pass, while those less than 0.5 were predicted to fail.

Furthermore, in the analyses examined the following eight measures of diagnostic accuracy (Swets, Dawes & Monahan, 2000): total correct classifications, total incorrect classifications, sensitivity, specificity, false positives, false negatives, positive predictive power and negative predictive power. The total correct classification is defined as the number of students who were predicted to pass and did actually pass plus the number of students predicted to fail who actually did fail. This sum is then divided by the number of students in the study. It is also obvious that one minus the sum gives a measure of the misclassification of the model.

Sensitivity is defined as the conditional probability of getting a logistic regression p-value of greater than 0.5 given the student actually got a passing score. The basic interpretation is that it tells us the percent of students we predict to pass out of the subset of students who actually did pass. More directly, it computes the probability that the CBM scores correctly identified a student as passing from the subset of all students who actually did pass the MCA proficiency level in reading. This expresses how sensitive the scores from the CBM are at identifying students who will make the proficiency standard.

Specificity is defined as the conditional probability of getting a logistics regression p-value of less than 0.5 given the student actually did fail to reach the 1420 cut-point for proficiency. The basic interpretation is that it tells us the percent of students we predicted to fail out of the subset of students who did actually fail. More directly, it computes the probability that a CBM score will correctly identify a student as not meeting the proficiency level out of the subset of students who actually did not meet the proficiency level. The probability expresses the ability of the CBM scores to specify those who are unable to meet the proficiency level.

There are other methods of defining sensitivity and specificity. Many researchers will reverse the definitions of sensitivity and specificity to highlight the ability of a procedure to be sensitive to deficits in some area. This would be akin to reversing our definitions and would highlight an attempt to be sensitive to reading problems in ELL students. Under these circumstances, one could simply reverse the identifications in the above definitions. This is pointed out to alleviate any potential confusion this might engender with respect to the literature on diagnostic accuracy measures of deficits or identifiable disabling conditions.
In addition, analyses examined the amount of error associated with the classification predictions, by analyzing the extent to which incorrect classifications were observed. Besides using one minus the correct classification, it is also possible to specify the number of false positive and false negative identifications. False positives are defined as those students predicted to pass (p-value > 0.5), who did not actually pass. This is similar to a Type I error. False negatives are defined as those students predicted to fail (p-value < 0.5), who did actually pass. This is similar to a Type II error.

The positive and negative predictive power gives us an estimate of how well the CBM scores predict passing or not passing status. The positive predictive power provides the conditional probability that given a person is predicted to pass the reading proficiency level (p < 0.5) they actually do pass the proficiency level. This provides a relative likelihood of the student actually passing the proficiency level given the fact that they are predicted to pass based on the CBM scores. The negative predictive power is the conditional probability that a given student is predicted not to pass the MCA, how likely it is that they actually do not pass. These measures should not be confused with sensitivity and specificity which are conditional probabilities computed over different base groups.

Finally, analyses of the logistic regression were considered by using a receiver operating characteristic (ROC) curve analysis. This provides a measure of discrimination in using the CBM scores to classify later MCA proficiency (Hanley & McNeil, 1982; Hosmer & Lemeshow, 1989). Each of the three language groups were compared individually to examine whether the CBM has any differential functioning between the groups. Analyzing the area under the curve (AUC), statistic from the ROC analysis and using the predicted values from the logistic regression give us a measure of the ability of the CBM to discriminate between pairs of individuals. AUC results of greater than or equal to 0.9 are considered to provide outstanding discrimination, values between 0.8 and 0.9 are considered excellent, and values between 0.7 and 0.8 are considered acceptable (Hosmer & Lemeshow, 1989).

RESULTS

The results of descriptive statistics indicated that the median number of words read correctly on CBM was about 80 with a standard deviation of about 33. The average MCA score was about 1313 with a standard deviation of about 170. Given the proficiency level cut-score of 1420 on the MCA, this indicated that approximately 74% of the students did not reach the proficiency level.

The results of the regression analysis indicate that the use of the fall CBM measure appears to be a significant predictor of the MCA reading score in the spring of the year, $F(1,1203) = 749.79; p < 0.001; r^2 = 0.39$. This significant test result along with resulting in a large effect size (Cohen, 1988) indicated fairly strong validity evidence, suggesting a meaningful index of validity.

In addition, we observe that both the intercept ($\beta_0 = 1064.02$) and slope parameters ($\beta_1 = 3.22$) from the model were significant ($p < 0.001$). The results indicate that for every single word increase in CBM scores in the fall, there is an expected increase in MCA reading scores of about three points. Therefore, from this result one would expect a score of 1420 on the MCA with a fall median CBM score of about 111 words read correct per minute.

The CBM score predictions of student classification with respect to the passage of the state-mandated test were also investigated. Passage on the test indicates proficiency levels in the area of reading and is also utilized for Adequate Yearly Progress (AYP) calculations for schools. Therefore, it is helpful to know how well it predicts passing on the mandatory, high-stakes test. This investigation was completed through two steps. The first step was to analyze the logistics regression of MCA status (where 1=pass and 0=not pass) on CBM scores. The second step was to analyze these results by a ROC procedure to identify how well CBM discriminated between those two groups.

The logistics regression results indicated that the CBM measure was a significant predictor of proficiency status on the MCA reading ($\chi^2 = 285.833; p<0.001$) and accounted for about 30% (Nagelkerke’s $r^2 = 0.297$) of the maximal variance. Based on the results from the logistic regression, the diagnostic accuracy indices were tabulated (see Table 2).
TABLE 2. Classification Matrix Based on the Logistic Regression

<table>
<thead>
<tr>
<th></th>
<th>Predicted</th>
<th></th>
<th>Marginal Percent Correct</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pass</td>
<td>Not Pass</td>
<td></td>
</tr>
<tr>
<td>Actual</td>
<td>166</td>
<td>211</td>
<td>44.0</td>
</tr>
<tr>
<td>Not Pass</td>
<td>87</td>
<td>741</td>
<td>89.5</td>
</tr>
<tr>
<td>Marginal Percent Correct</td>
<td>65.6</td>
<td>77.8</td>
<td>75.3</td>
</tr>
</tbody>
</table>

By using the CBM scores, one can achieve an approximate correct classification percentage of about 75%. This indicates that about three out of four ELL students can be correctly classified on later proficiency status based on their CBM scores from the beginning of the school year. Therefore about one out of four will be incorrectly classified. Overall, the CBM appears to lend validity to inferences about later reading proficiency outcomes as measured by a state-mandated, high-stakes test.

To get a better understanding of the diagnostic accuracy associated with classification, the other measures were examined. The sensitivity of CBM to predict passing, given a student actually passes, was about 44%. The Specificity was about 90%. False positives were about 34% and false negatives were about 22%. The positive predictive power was about 66% and the negative predictive power was about 78%. It should be noted that any changes in the cut-point for classification can and will change these proportions. For our analysis we used the p-value of greater than or equal to 0.5 based on the logistic regression computations. From the regression analysis the predicted cut-point for classification was about 111 words read correct per minute. If this cut-point is changed in any manner, the associated diagnostic accuracy indices will also be changed. To identify the potential trade-offs in these indices the receiver operating characteristic (ROC) curve can be used (see Figure 1). This figure visually represents the associated trade-offs between sensitivity and 1-specificity related to different cut-points over the range of CBM scores.

FIGURE 1. ROC Curve Indicating Tradeoff in Diagnostic Accuracy.
The second part of the analysis evaluated the discrimination ability of the CBM measure. For this a ROC analysis was completed. This method allows us to evaluate the effectiveness of the model to discriminate between the two different groups (those that passed and those that did not) based on the CBM scores, in general, and then within the different language groups (see Table 3). For this analysis the p-value computed from the logistic regression was utilized. The area under the curve (AUC) provides a useful metric about how well the model using the CBM score discriminates between students who later pass or do not pass the MCA reading proficiency. The closer the value is to unity, the better job it does at discriminating.

The ROC analysis indicated significant results and acceptable discrimination for the overall group and for each group individually. These results suggest that in about 78% of all possible pairs of cases (AUC = 0.78) in which one student passed and another student failed, using only the CBM score from the Fall semester, the logistic model assigns a higher probability of passing to those who actually passed. This suggests that the CBM scores are a valid indicator of later reading passing status on a state mandated proficiency tests.

Next, the analysis was run on the different language groups. This will allow for the analysis of whether the CBM discrimination index is different between the groups. The results of this analysis indicate that the different language groups have overlapping confidence intervals with respect to the area under the curve (see Table 3). This implies that the model works just as well for each group and that the CBM is equally discriminating within all the language groups.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Area under the curve</th>
<th>Standard Error</th>
<th>Asymptotic Significance</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Groups</td>
<td>0.784</td>
<td>0.014</td>
<td>p &lt; 0.001</td>
<td>0.758</td>
<td>0.811</td>
</tr>
<tr>
<td>Spanish</td>
<td>0.796</td>
<td>0.023</td>
<td>p &lt; 0.001</td>
<td>0.751</td>
<td>0.840</td>
</tr>
<tr>
<td>Hmong</td>
<td>0.779</td>
<td>0.021</td>
<td>p &lt; 0.001</td>
<td>0.737</td>
<td>0.821</td>
</tr>
<tr>
<td>Somali</td>
<td>0.778</td>
<td>0.047</td>
<td>p &lt; 0.001</td>
<td>0.686</td>
<td>0.870</td>
</tr>
</tbody>
</table>

**DISCUSSION**

A basic tenant of data-based procedures is the necessity of using well-grounded and psychometrically sound measures to accumulate information on student standing and progress. While CBM has a long history as a valid and reliable measure of reading (Deno, 2003), the provisions of NCLB have brought renewed focus to the importance of establishing the generalization of CBM measures to students of all backgrounds. This study provides additional information regarding the validity of using CBM oral reading fluency measures in English with English Language Learners. These measures, when used at the beginning of the fifth grade school year, provided a good predictor of later reading status on a state mandated proficiency level test.

These results are particularly relevant because of the rapid growth in the ELL student population. ELL students can pose unique challenges for school staff, as they are challenged to learn about varied cultures, language backgrounds, levels of vocabulary development, etc. In addition, little information may be available on each student’s specific background and development in reading. Efficient and reliable methods of early assessment are necessary for teachers and support staff to be able to direct interventions toward those students at-risk of failing to meet state proficiency standards. This study suggests that the long-standing findings related to the validity of CBM measures are also applicable to ELL students. The findings of this study also support the notion that these results are applicable across three
very divergent language groups (Spanish, Hmong, and Somali). This is particular interesting because
the limited previous research data supporting the use of CBM with ELL students has primarily focused
upon Spanish-speaking students, but no study, as we aware, has been conducted for Hmong and Somali
students.

The establishment of CBM as a valid tool for the purposes of screening and progress monitoring
with ELL students can provide a practical framework for implementation of a Problem-Solving Model or
RTI type approach to intervention and decision making. This approach seems particularly well suited to
ELL students, for whom the use of norm-referenced assessment measures for special education eligibil-
ity decisions has long been in dispute.

However, despite this strong overall predictive ability, CBM provided better classification informa-
tion for students who did not pass the proficiency level test, while providing weak classification informa-
tion about the later status of students who actually did pass the proficiency level. These results suggest
that the CBM has a high level of specificity and, thus, is a good indicator of later status as failing to
meet the proficiency level in reading on the state-mandated, proficiency test. While the ability to have
correctly predicted the classification of those students who do not pass proficiency exams seems more
important than correct prediction of those who eventually pass the test, it may be that the addition of
additional variables into the process would enhance overall sensitivity.

LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

While this study attempted to limit the variability of the sample somewhat by restricting the lan-
guage groups studied to three languages, the background of the sample remained very diverse. The ELL
sample in this study varied on many important factors, including the number of years they have lived in
the U.S., their level of acculturation, formal and informal educational background, and type of English
language support services received. Such variability may actually increase the generalizability of these
findings, but point out the need for caution in applying these findings to any individual student. Another
limitation of this study was that the CBM data used were collected by school staff members as part of
their annual fall screening activities, and not as a part of a designed research study. Although the district
has implemented a standardized data collection procedure with published reading probes and an instruc-
tion manual based on best practices, there is no specific procedure in placed to monitor the fidelity of
data collection.

In terms of implications for future research, it would be helpful to compare the cut score points for
the ELL sample to that of their English speaking peers and to further break down the sample by ethnicity.
We are currently working on a larger study of differential prediction which will look at issues of both
race and language history. This study can be extended downward to determine if the same methodology
works for younger students who are farther from the required high-stakes assessments. It is also possible
that this type of research will provide a method for administrators to make differential decisions based on
costs and benefits related to different cut-off levels for classification. This study used a basic probability
outcome level of 0.5 as the cut-off point. However, the utilization of different cut-off points and their ef-
fects on classification can be assessed by the ROC analysis. As noted by Hintze and Silberglikt (2005) it
may helpful to set separate cut scores for different decision purposes (e.g., screening, classification, and
entitlement). The ROC graph provides a flexible and visual method to assess the relationship between
the changes in sensitivity and the false negative error rate (1 – specificity).
REFERENCES


Predictive Validity of Curriculum-Based Measures


Evaluation of the Relationship Between Literacy and Mathematics Skills
As Assessed By Curriculum-Based Measures

Kristy J. Rutherford-Becker, Michael L. Vanderwood
University of California, Riverside

The purpose of this study was to evaluate the extent that reading performance (as measured by curriculum-based measures [CBM] of oral reading fluency [ORF] and Maze reading comprehension), is related to math performance (as measured by CBM math computation and applied math). Additionally, this study examined which of the two reading measures was a better predictor of applied math performance. Results of multiple hierarchical regression analyses indicated that math computation was the best predictor of applied math performance, followed by the Maze task. Also, results indicated that ORF did not significantly predict applied math test scores above and beyond math computation and Maze. Thus, from these results it appears that for fourth and fifth grade students, reading comprehension as measured by the Maze plays a more important role in predicting applied math performance than oral reading fluency.

While in school, deficiencies in mathematical competence have been found to seriously limit a student’s educational opportunities (Hanich, Jordan, Kaplan, & Dick, 2001). Once out of school and employed, individuals proficient in math earn approximately 38% more than those who are not (Clarke & Shinn, 2004).

The National Council of Teachers of Mathematics (NCTM) set standards that delineate the goals for all students’ math achievement (1989, 1991, 1995). These standards include five general math goals for children: to learn to value mathematics, to become confident in their ability to do mathematics, to become mathematical problem solvers, to learn to communicate mathematically, and to learn to reason mathematically (Foegen & Deno, 2001).

Despite these lofty goals, however, the actual math performance of students in the United States falls far short of expectations. In 1996, the National Assessment of Educational Performance (NAEP) published findings regarding student math performance. Only 21% of fourth graders were found to be at or above proficiency in math, while 36% of fourth graders fell in the below basic category of math performance. This pattern is similar for eighth and twelfth graders. Eighty percent of eighth graders could not solve modestly difficult problems, while only 16% of eighth graders had mastered the content of typical eighth grade math. Also, the NAEP indicated that only 8% of eighth graders could answer math questions requiring problem-solving skills (Clarke & Shinn, 2004; Thurber, Shinn, & Smolkowski, 2002).

Math Curriculum-Based Measurement

Most research of mathematics performance has supported a two factor model of mathematical assessment, the two factors being basic math computation and math application (Thurber et al., 2002). Computation is the ability to perform math facts, whereas application requires a person to use knowledge and math skills and apply them to word problems. These two components have been found to be distinct conceptually. As evidence of these two separate constructs, validity studies indicate measures typically conceived as measuring computation were correlated more highly with other computation measures and not correlated strongly with tools traditionally conceived as measures of math applications. The reverse was also found to be true (Thurber et al., 2002). These findings highlight the degree to which these two math components are distinct measures, however, the two types of math measures are also highly related.
There is a degree of dependence among the math constructs, both applied and computation, indicating that the skills in one area are necessary for success in the other (Thurber et al., 2002).

Once students have begun explicit instruction in math, it is possible to identify students at risk for math academic problems through math computation and applied problem CBM measures (Clarke & Shinn, 2004). Math CBM appears to be a strong measure of individual and developmental differences with respect to math calculations skills (Hintze et al., 2002). Math CBM has reported interscorer agreement rates between .93 and .98 and internal consistency and test-retest reliabilities are about .93 (Clarke & Shinn, 2004). Alternate forms reliability has been reported from .66 to .91 (Thurber et al., 2002). Although there is limited research in this area, math CBM appears to be an un-biased predictor for students from diverse racial groups (Evans-Hampton, Skinner, Henington, Sims, & McDaniel, 2002).

Math CBM is also instructionally useful and acceptable. Students of teachers who found CBM highly acceptable and implemented the assessments with fidelity had greater growth slopes than students of teachers who did not use the progress monitoring with math CBM (Allinder, 1996; Allinder & Oats, 1997). However, it also appears that teachers need consultation support to help make appropriate revisions when progress monitoring with CBM. Without consultation support, students did not demonstrate as high of a level of outcomes (Fuchs et al., 1991). The conclusion can therefore be made that math CBM can be effectively utilized for instructional purposes that lead to improved outcomes when consultation assistance is provided.

Despite the areas of demonstrated success, more research with math CBM is necessary. As previously discussed, math is often thought of as a constellation of related, but not necessarily unified, constructs, skills, and content areas (Foegen & Deno, 2001). For example, research has indicated that peer-assisted learning strategies (PALS) promoted computational skills for students with disabilities, but not application skills (Calhoon & Fuchs, 2003). This would seem to indicate that perhaps there are other factors that affect applied math skills. Of these proposed skills, one thought to exert the largest influence on math performance is reading.

Reading Curriculum-Based Measurement

Reading has been defined as the decoding and comprehension of written text (Fewster & MacMillan, 2002). Of the existing CBM methods to assess reading components, two especially have demonstrated high levels of empirical validation. These measures are oral reading fluency (ORF) and the Maze cloze reading comprehension task (Faykus & McCurdy, 1998). Despite the fact that these tests are designed to assess different aspects of reading, performance on both reading tasks is highly correlated (Markell & Deno, 1997). Many studies indicate that oral reading fluency is a better predictor of reading comprehension than most reading comprehension tests are of each other (Shinn, Good, Knutson, Tilly, & Collins, 1992). In fact, oral reading fluency was found to be a better predictor of both total reading achievement and comprehension skills than the Maze, and was found to consistently correlate as high or higher with standardized measures of comprehension over any other alternative CBM measure, such as the Maze (Deno, Mirkin, & Chiang, 2004; Fuchs, Fuchs, & Maxwell, 1997). Further research has indicated that when conducting universal screenings, the Maze would not provide a significant amount of information regarding students’ reading abilities beyond that explained by reading CBM (Ardoin et al., 2004). Thus, it appears the contribution of CBM ORF to the prediction of reading comprehension is significant and substantial, especially when compared to the Maze, which is specifically designed to measure reading comprehension (Kranzler et al., 1998).

The significant contribution of ORF to total reading achievement may be due in part to the strong technical qualities of ORF as a reading measure. Research has indicated an overall robustness for criterion validity, and strong developmental growth rates for the ORF as an index of proficiency (Fuchs & Deno, 1991). ORF shows the strongest criterion related validity with adequate construct and concurrent validity of all reading measures (Hintze et al., 1997). For reading CBM, the alternate form reliability typically exceeds .90. Test-retest reliability typically falls in the range of .82 - .97. The criterion validity typically falls in the range of .60 to .80 between ORF CBM and reading achievement tests (Hamilton & Shinn, 2003). In addition to the technical qualities, CBM oral reading rate was an effective metric for
use with students who were instructed in a literature based reading series (Bradley-Klug et al., 1998), and was found to not be biased by the curriculum used in the general education setting (Fuchs & Deno, 1991). Additionally, research has indicated that CBM ORF is not a biased predictor of reading for students from diverse racial groups (Hintze, Callahan, Matthews, Williams, & Tobin, 2002).

While the Maze task does have decent technical qualities, there is currently not as much research support for it as a reading comprehension measure. In fact, when compared to ORF, research has indicated that the Maze task may not be as sensitive in assessing growth over time as reading aloud (Shin et al., 2000) and in general ORF appears to be currently the strongest CBM reading measure.

**Relationship Between Math and Reading**

There is currently little research on the relationship between math and reading assessment tools. This is especially true for CBM measures, and the extent of the relationships between reading CBM and math CBM. Most of the research in this area tends to be focused on the comparison of four groups of students: students with math and reading difficulties, students with only math difficulties, students with only reading difficulties, and students that are normally achieving (Fuchs et al., 2004).

In general, students with challenges in both academic areas tend to perform lower on math assessments than students with difficulty in just one area (Fuchs et al., 2004). This is what one would expect. Students with math and reading difficulties are characterized by weaknesses in both problem solving and arithmetic fact mastery (Jordan, Hanich, & Kaplan, 2003). More importantly, deficits in both math and reading as early as second grade are pervasive and stable over the second and third grades, even when IQ is held constant (Jordan, Hanich, & Kaplan, 2003). It also appears that math computation difficulties may contribute more to math problem solving learning problems than do reading comprehension difficulties (Fuchs et al., 2004).

It appears that children with math deficits only should be considered separate from children with math and reading deficits (Hanich et al., 2001). To support this, research has demonstrated that children with math deficits only show a different pattern of cognitive deficits than do kids with both math and reading deficits (Jordan, Kaplan, & Hanich, 2002). Unlike students with both math and reading difficulties, children with math deficits only were strong on untimed conditions of math computation tests when compared to normally achieving students. However, this trend did not hold true on timed math computation tests (Jordan et al., 2003). As such, children with math difficulties only may have deficits associated with problem solving speed rather than with basic problem comprehension (Hanich et al., 2001). Another difference is students with deficits in math only appear to use counting strategies more effectively and have a better grasp of counting principles than students with math and reading deficits (Hanich et al., 2001).

Students with reading only deficits and students with deficits in both math and reading demonstrate academic progress at about the same rate in reading achievement (Jordan et al., 2003). Thus, it would appear that math abilities do not seem to have a significant influence on reading growth. Reading difficulties, regardless of specific or general nature, tend to remain stable (Jordan et al., 2002).

Math deficits, on the other hand, seem to be ameliorated by competence in reading (Jordan et al., 2003). It appears that some areas of math in particular, such as word problems and number combinations, may be mediated by language and reading due to the nature of the task (Jordan et al., 2002). Interestingly, in one recent study reading comprehension was highly correlated with both math computation, .69, and math applications, .76. In this study reading correlated to each measure of mathematics skill almost as much as the two math skills correlated to each other (.88), (Thurber et al., 2002). In addition to these high correlations, validity coefficients among math measures were improved when reading competence was included in a prediction equation (Thurber et al., 2002). To summarize, reading may be a necessary and important component in overall math competence and as such should not be overlooked when drawing conclusions about math skills (Thurber et al., 2002).

**Research Questions**

There is a clear need to provide educators tools necessary to better understand the performance of
students who struggle to acquire math skills. One technique that clearly can lead to improved student outcomes in math is progress monitoring (Fuchs, Fuchs, & Prentice, 2004) of students receiving intervention. Yet, to properly understand the outcomes of math assessment and specifically math progress monitoring, we need to clearly understand what is measured with math CBM tools. However, it appears that poor math performance is not necessarily solely an indication of math difficulties. Reading skill may be an important component of math skill, and as such it is difficult to say to what degree measures of mathematics are actually reflecting mathematical skills and weaknesses. It is therefore essential to understand the extent to which reading performance is related to math performance in order to gain a better understanding of what CBM math tests measure.

For the current study, two hypotheses were generated. First, applied mathematic assessments, such as the applied math CBM, could be measuring more than just mathematical skills due to the large amount of reading inherent in the problem types. As such, reading may influence performance on the applied mathematics test, and explain a significant amount of the variation in scores. Second, it would seem that reading comprehension would account for more variance in applied mathematics scores than reading fluency. However, based upon current research with reading CBM measures, ORF could possibly be a better predictor of applied mathematic performance, despite the fact that Maze was the CBM measure designed for assessing reading comprehension. Thus, two research questions are tested:

1. To what extent does reading, as measured by ORF and Maze, significantly predict performance on applied math performance, as measured by CBM applied math?
2. What measure more strongly predicts applied math performance, Maze or ORF?

METHODS

Participants and Setting

All student participants in this study were fourth (N=97) and fifth (N=83) grade students from one southern California urban elementary school. The total number of student participants was 180 students. Participants in this study were primarily instructed in the general education setting, with 11 (6%) receiving pull-out resource specialist program (RSP) services for up to 10 hours each week. One hundred two (53%) of the students participating in this study were female and 78 (43%) of the students were male. Of the 180 student participants, there were 126 (67%) Hispanic students, 22 (12%) Caucasian students, 20 (11%) African American students, 4 (2%) Filipino students, 4 (2%) Vietnamese students, 2 (1%) Korean students, and 1 (0.5%) Chinese student. Additionally, 83 (46%) of the students were classified as English language learners (ELL), with 3 (3%) of these students falling in the fluent/proficient range.

Materials

*CBM oral reading probes.* Three oral reading fluency (ORF) passages were obtained from AIM-SWeb (www.edformation.com), and were administered to each participant. These passages were written at grade level to be representative of the general curriculum for that grade. Standardized reading curriculum-based measurement (R-CBM) scoring procedures were utilized (Shinn, 1989), where participants are asked to read aloud from each passage for one minute. While the student read the passage aloud, the examiner scored the number of words read correctly. Words read correctly included words pronounced correctly in the given reading context and self-corrected errors that occurred within three seconds of the first attempt at the word. Words read incorrectly were words that were mispronounced, omitted, or substituted. Students were provided the word by the examiner if the student struggled or hesitated with a word for three seconds. This was also scored as an error. The ORF score used for analysis for each student was the median words read correctly score for the three reading probes.

The alternate form reliability for ORF typically exceeds .90. Test-retest reliability typically falls in the range of .82 -. .97. The criterion validity typically falls in the range of .60 to .80 between ORF R-CBM and reading achievement tests (Hamilton & Shinn, 2003).

*Maze reading comprehension probes.* The curriculum-based measurement Maze (CBM-Maze) task

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is a multiple-choice cloze task that students complete silently. One Maze reading comprehension passage was obtained from AIMSWeb (www.edformation.com) for each grade, fourth and fifth. This assessment was constructed using the procedures described by Parker, Hasbrouck, and Tindal (1992). As such, the first sentence of the passage is left intact. Thereafter, every seventh word was replaced with a set of three words in parentheses. One of the three words is the exact word from the original story, while the other two words are distracters that were incorrect in the context of the story. One of the distracters is a word that is the same part of speech as the correct, original word, however does not preserve the meaning of the text or makes no sense. The other distracter is a randomly selected word that makes no sense in the context of the passage. The Maze score used for analysis was the percent of words correctly selected from the passage.

CBM-Maze passages demonstrate acceptable technical quality. Criterion related validity correlations with ORF are reported to fall between .80 and .89 (Fuchs & Fuchs, 1992; Jenkins & Jewell, 1993). Additionally, criterion related validity with other published, norm-referenced tests of reading comprehension, such as the Stanford Achievement Test-Reading Comprehension subtest, is reported to fall between .77 and .85 (Fuchs & Fuchs, 1992). The test-retest reliability over a one month period is reported as .83 (Shin, Deno, & Espin, 2000).

Basic mathematics computation. Two basic math computation probes, one for each grade both fourth and fifth, were selected from the Monitoring Basic Skills Progress – Second edition and used in this study (Fuchs, Hamlett, & Fuchs, 1990). Each test is designed to represent and measure the math computation curriculum for the entire year, and as such, within each grade level, the types of problems presented on each test are constant. However, the exact numbers used and the position of each problem (e.g. first, third, etc.) are randomly presented on each test. For the fourth and fifth grade levels, the types of problems presented are division of whole numbers, multiplication, decimals, and fractions. Each test has 25 math computation problems. The scores used for analysis were the total number of correct digits for each probe. This is calculated by simply adding the number of correct digits for each answer, and summing them for the grand total for the probe. As such, it is possible to receive partial credit for an answer that is only part correct.

The internal consistency for both the fourth and fifth grade probes on the basic math computation test is .97. Criterion validity for the basic math computation probes was established based on correlations to the California Tests of Basic Skills (CTBS) computation subtest scores. The correlation between the CTBS-computation subtest and the basic math computation scores was .74 for fourth grade, and .67 for fifth grade (Fuchs et al., 1990).

Basic mathematics concepts and applications. Four basic math concepts and applications probes, two for each grade both fourth and fifth, were selected from the Monitoring Basic Skills Progress – Second edition and used in this study (Fuchs et al., 1990). Each test is designed to represent and measure the math concept and application curriculum for the entire year, and as such, within each grade level, the types of problems presented on each test are constant. There are between 18 and 25 questions on each probe. The skills assessed on each probe include number concepts, measurement, names of numbers and vocabulary, grid reading, charts and graphs, decimals, fractions, word problems, and geometry. Again, the scores used for analysis were the total number of correct digits for each probe. The internal consistency for both the fourth and fifth grade probes on the basic math concept and application tests is .97. Criterion validity for the basic math concept and application probes was established based on correlations to the California Tests of Basic Skills (CTBS) subtest scores. The correlation between the CTBS subtest and the basic math concept and application scores was .75 for fourth grade, and .81 for fifth grade (Fuchs et al., 1990).

Procedures

Four graduate level students enrolled in a doctoral-level school psychology program at a major Pacific Southwestern university were trained to administer and score all assessment materials. Each graduate student successfully completed three graduate level courses in test assessment and scoring
procedures. Additionally, each data collector was given a set of standardized instructions for each assessment given.

**Administration procedures.** All tests (CBM-Maze, basic math computation, and basic math concepts and applications) were administered to groups of participants in their classrooms, except for ORF R-CBM. The ORF probes were individually administered at a quiet location outside of the classroom. Two data collectors went to each classroom, and took turns either reading the directions for the test to the class or distributing, collecting, and proctoring the tests. The group assessments were administered first to each class, and took approximately 15 to 20 minutes to complete. The accommodated and non-accommodated applied math tests were given first, in a counterbalanced order, followed by the computation math test, then the Maze task. Following the group administrations, students were pulled out one at a time for the individually administered ORF probes. This took approximately four minutes per student. The present study was a part of a larger accommodation study, however the current study will not utilize the scores for the accommodated basic math concepts and applications test. However, as part of the larger study, both the order of administration for the accommodated and non-accommodated math concepts and applications tests and the specific test, out of the two per grade level, that was accommodated for each grade was counterbalanced to control for both order and probe effects.

As previously stated, standardized administration protocols were developed to administer the three group-administered assessments. Again, testing began with either the accommodated or non-accommodated applied math test given in the classroom in group format. The second group test administered was the second applied math test, either accommodated, if previously given the non-accommodated, or non-accommodated, if previously given the accommodated version. After the group administered applied math tests, the participants were then given the computational math test. Fourth, the students were given the Maze also in a group administered format. Last, the participants were individually administered the ORF reading task at a quiet location outside of the classroom.

The precise standardized administration protocols for the CBM-Maze test and the ORF test can be found on AIMSWeb (www.edformation.com), along with the probes and alternate forms of the probes. For the computation math test, students were given the probe and then told by the examiner, “We are going to do some more math. Please write your name on the paper. I want you to do as many problems as you can. Work carefully and do the best you can. When I say begin, start at the top left, working from left to right. Keep working until I say stop. Do you have any questions? Begin.” Students were then given five minutes to work on the test. At the end of five minutes, the examiner said, “Stop,” and the tests were collected.

The administration protocol for the application math test with accommodation began with the examiner passing out the test. The examiner then said, “As soon as I give you your test, write your first name, your last name, and the date. I want you to do as many problems as you can. Remember, start at the first problem, work down the first column, and then the second column. Then move on to the next page. When you come to a problem you know you can do, do it right away. When you come to a problem that is hard for you, skip it and come back to it later. When I say begin, start to work. Work for the whole test time. Write your answers so I can read them. If you finish early, check your answers. At the end of five minutes, I will tell you to stop and put your pencils down. Are there any questions?” Following this, the examiner then said, “Before we begin, I will read the questions on the test aloud to you. Please follow along with me on your test.” The examiner then read the questions on the test aloud, with the entire class following along. After reading the questions, the examiner then instructed the students to begin. Participants were given five minutes to work on the test, and then were told to stop, and the test was collected. The administered protocol for the application math test without accommodation was exactly the same, except the questions were not read aloud, neither were the directions regarding reading the questions aloud. As previously indicated, the current study will not utilize the scores for the accommodated basic math concepts and applications test.
RESULTS

Descriptive Statistics and Correlational Analysis

The means and standard deviations for the two reading measures, ORF (oral reading fluency, words read correctly per minute) and Maze (reading comprehension task, percent correct words selected in three minutes), and two math measures, basic math computation (Computation, CM, digits correct in five minutes on basic math skills probe) and basic math concepts and applications (Applied, AM, digits correct in five minutes on math concepts and applications probe) are presented in Table 1.

TABLE 1: Descriptive Statistics for All Predictor and Outcome Variables

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maze</td>
<td>180</td>
<td>77.85</td>
<td>22.78</td>
</tr>
<tr>
<td>ORF</td>
<td>178</td>
<td>107.57</td>
<td>38.77</td>
</tr>
<tr>
<td>Computation</td>
<td>180</td>
<td>36.35</td>
<td>24.52</td>
</tr>
<tr>
<td>Applied</td>
<td>179</td>
<td>7.63</td>
<td>4.74</td>
</tr>
</tbody>
</table>

Pearson correlations among the four measures included in the analyses are presented in Table 2. The correlations between ORF and Maze, ORF and CM, ORF and AM, Maze and AM, and CM and AM were all statistically significant (p<.01). The correlation between Maze and CM was also statistically significant (p<.05). A significant, large correlation (as determined by Cohen, 1988) is shown between ORF and Maze. A significant, moderate correlation (Cohen, 1988) is shown between ORF and CM, ORF and AM, Maze and AM, and CM and AM. Finally, a significant, small correlation (Cohen, 1988) is shown between Maze and CM.

TABLE 2: Correlation Matrix Between Predictor Variables and Outcome Variable

<table>
<thead>
<tr>
<th>Source</th>
<th>ORF</th>
<th>MAZE</th>
<th>Computation</th>
<th>Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORF</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAZE</td>
<td>0.57**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computation</td>
<td>0.34**</td>
<td>0.18*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Applied</td>
<td>0.37**</td>
<td>0.36**</td>
<td>0.35**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. N = 180. *p < .05; **p < .01
Regression Analysis

The two aims of this study were explored by conducting multiple hierarchical regression analyses. Hierarchical regression analysis is an approach that allows one to determine unique variance attributable to a particular variable, after controlling for the effects of covariates (Myers & Well, 2003). In all of the analyses, the criterion variable of applied math (AM) was regressed on ORF, Maze, and computation math (CM) in order to determine their predictive value.

Prediction of applied math performance by ORF vs. Maze. The first hierarchical regression consisted of entering CM on the first step, followed by entering Maze on the second step, and ORF on the third. This was done to assess for the unique variance explained by ORF. The second hierarchical regression involved entering CM first, ORF second, and Maze last. This was done to allow for the determination of the independent contribution of Maze to predict AM. The third hierarchical analysis consisted of entering ORF and Maze on the first step, followed by entering CM on the second step. This was done to control for the combined effects of ORF and Maze on AM.

Results from the multiple hierarchical regression analyses are delineated in Table 3. The first hierarchical regression analysis was performed to look at the unique effect of ORF on AM after controlling for individual performance on CM and Maze. Results from this analysis indicate that controlling for the effect of CM, Maze was able to predict AM above and beyond that of CM. However, when controlling for the effects of CM and Maze, ORF was not able to independently contribute to the prediction of AM. As Table 3 displays, CM, Maze, and ORF individually accounted 13%, 9%, and 1% of AM variance respectively.

**TABLE 3: Hierarchical Regression Analyses Predicting Applied Mathematics**

<table>
<thead>
<tr>
<th>Source</th>
<th>Summary Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$Df$</td>
</tr>
<tr>
<td>First Hierarchical Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>Step 1: Computation math</td>
<td>1, 175</td>
</tr>
<tr>
<td>Step 2: Maze</td>
<td>2, 174</td>
</tr>
<tr>
<td>Step 3: ORF</td>
<td>3, 173</td>
</tr>
<tr>
<td>Second Hierarchical Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>Step 1: Computation math</td>
<td>1, 175</td>
</tr>
<tr>
<td>Step 2: ORF</td>
<td>2, 174</td>
</tr>
<tr>
<td>Step 3: Maze</td>
<td>3, 173</td>
</tr>
<tr>
<td>Third Hierarchical Regression Analysis</td>
<td></td>
</tr>
<tr>
<td>Step 1: ORF and Maze</td>
<td>2, 174</td>
</tr>
<tr>
<td>Step 2: Computation math</td>
<td>3, 173</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01
The second hierarchical regression analysis looked at the ability of Maze to uniquely contribute to the model after holding constant the effects of CM and ORF. Results revealed that when holding CM constant, ORF was able to significantly predict AM. Unlike the prior analysis, however, when controlling for the effects of CM and ORF, Maze was still able to explain a significant amount of variance in AM. In this, CM, ORF, and Maze significantly accounted for 13%, 7%, and 4% of the AM variance respectively. Thus, it would appear that Maze adds additional prediction of one’s applied math performance than ORF because Maze significantly contributed to the prediction of AM after holding ORF and CM constant. This did not hold true when ORF was entered last into the model.

Prediction of applied math performance by reading measures and math computation. The final hierarchical regression analysis assessed the unique predictive power of CM subsequent to holding the combined effects of the reading measures, ORF and Maze, constant. ORF and Maze significantly accounted for 17% of the variance in AM, with CM individually accounting for another 6% of the AM variance. The results suggested that when controlling for the reading measures, ORF and Maze, CM was able to significantly predict AM. In light of these results, it appears that basic math skills computation is the strongest overall predictor of applied math performance. Thus, the results indicate that measures of one’s basic math skills computation and reading comprehension are more useful indicators of how one is likely to perform on an applied math assessment, relative to one’s reading fluency.

DISCUSSION

The main purpose of the study was to investigate the extent to which reading performance, as measured by CBM oral reading fluency and Maze reading comprehension, is related to math performance, as measured by CBM math computation and applied math. Two hypotheses were tested: 1) Does reading, as measured by ORF and Maze, significantly predict performance on applied math performance, as measured by CBM applied math? 2) Given that ORF currently has stronger empirical support as a comprehension measure, does ORF predict performance on applied math better than the Maze?

Predictive Ability of Reading, ORF and Maze, and math Computation on Applied math Outcomes

The ability of reading comprehension, as measured by Maze, to predict applied math performance was consistent with previous research. Thus, the results of this study provide further evidence of the importance of reading comprehension on applied mathematics assessment (Jordan et al., 2003; Jordan et al., 2002; Thurber et al., 2002). This is important for several reasons. First, this indicates that applied math tests are not solely measuring math skill. As such, it is possible for a child to be proficient in math, but perform poorly on an applied math assessment if they have poor reading comprehension. Thus, it would an incomplete assessment to give a student an applied math test as the only measure of math skill. This finding is also important because it can help with math intervention development. It is possible that a reading comprehension intervention can increase performance on applied mathematics tests. Thus, if a student who needs intervention is demonstrating weaknesses in both reading and math, one approach would be to focus on reading interventions first, as reading demonstrates significant effects in both areas.

The finding that math computation was the best predictor of applied math performance was also consistent with previous research (Fuchs et al., 2004). As such, the results of this study verify that basic math skills predict performance on applied math tests. This is important for several reasons. First, it provides a degree of criterion validity support for applied math tests as math assessments, since math computational skill best predicts, and is highly correlated, to the applied math tests. This can be extended as further evidence for math CBM measure criterion validity.

That basic math skills are better predictors of applied math performance than reading comprehension skills is also important for intervention planning. As such, if a child demonstrates greater weakness in basic math skill performance than in reading performance, an intervention would produce greater gains by addressing the poor computation skill performance. Additionally, math computation CBM is an appropriate progress monitoring tool for a math intervention. As such, math computation CBM gains would also indicate gains in applied math CBM.
Predictive Ability of ORF versus Maze on Applied math outcomes

Unlike previous research, the results of this study indicated that Maze was a better predictor of applied math performance than ORF. This seems to be more intuitive, however is counter to most research (Ardoin et al., 2004; Jenkins & Jewell, 1993). Further analysis of the discrepancy between previous research and the findings of this study, however, highlight several interesting findings. First, in the study by Ardoin et al. (2004), sample size was an issue. The authors discussed the possibility that the sample size was insufficient to allow strong conclusions from tests of individual predictors. As such, they suggested the results of the multiple regression analyses that were conducted should be examined and interpreted with caution. Additionally, participants in the Ardoin et al. study were all third graders. As will be addressed more completely later, it is possible that age or grade play a large role. A third major difference is that approximately 44% of the sample were of an ethnic minority, while the current study had approximately 88% of the sample representing an ethnic minority. Although most math CBM research indicates the measure is unbiased, it is possible that ethnicity plays a role in the test’s relationship with other variables. A fourth, and perhaps more important, difference between this and previous research is that few previous research studies used the Maze task to measure reading comprehension. As such, it is possible that Maze is a better indicator of reading comprehension than previous research has postulated.

As previously stated, one of the differences between the study by Ardoin et al. (2004) and the current study was the grade of the students participating. In their study, third graders were the participants, while the current study looked at fourth and fifth graders. This brings up an interesting finding from the research by Jenkins and Jewell (1993). While Jenkins and Jewell (1993) also found ORF to correlate more highly to comprehension measures than the Maze, they also noted that this correlation declined in older grades. Thus, while ORF correlated more highly to reading comprehension achievement test scores than the Maze for the second graders in the study, this correlation declined linearly by sixth grade, whereas the correlation between the Maze and tests of reading comprehension achievement did not demonstrate this decline. Jenkins and Jewell (1993) proposed that this is possibly due to the fact that as students progress through school, reading becomes less focused on decoding and fluency and more focused on comprehension. Thus, “reading comprehension” standard achievement measures for second graders are more focused on fluency and decoding, which is what ORF is designed to measure, while the reading comprehension measures of fourth, fifth, and sixth graders are more focused on actually understanding and learning from text. The results of this study provide further support for this possibility. However, further research is necessary in this area.

General Conclusions

Overall, math computation skills and reading comprehension skills predict a significant amount of the variance in applied mathematic performance. As discussed, this has important implications for the reliability and validity of CBM measures in these areas. Additionally, this knowledge is extremely helpful in designing academic interventions. It is thus important to keep in mind when intervening with students with math difficulties that reading influences applied math skills. As such, it is important to make the distinction between students that have difficulty only with math versus students that have difficulty with both math and reading. It is possible for a reading intervention to have collateral effects and also increase math performance. Thus, when intervening with children that demonstrate deficits in both reading and math, reading intervention may warrant consideration as the first step.

The results of this study also have important implications for math and reading curriculum in general. Since reading comprehension skills affect applied math performance, it is perhaps prudent to spend more classroom instructional time working on developing strong reading skills, especially in the early grades when reading difficulties can be more easily remediated.

Limitations and Future Research

As with any research study, there were limitations with the current study. First, despite the significance of the predictors, math computation and Maze still only accounted for approximately 22% of the
variance on applied math tests. This leaves an approximate 78% of the variance unaccounted for. It is possible that there is another factor that predicts applied math performance better than math computation or math computation and Maze together. Further information in this area could be beneficial to improving math interventions.

As discussed previously to some degree, this study only looked at fourth and fifth graders. Based on previous research in the area of the relationship between reading and math, it would be prudent to look at a wider range of grades, with a sufficient n, to see if the difference between ORF and Maze as predictors does indeed change as a function of grade.

Lastly, the sample of the current study was composed of mostly minority students. As such, the results may not be generalizable to populations that are less diverse, although there is little evidence to suggest CBM measures predict differentially by race or ethnicity.

In sum, the present study both extended and challenged the findings of previous research focusing on the relationship between math and reading performance, and the predictive ability of ORF versus the Maze task. The bottom line is that while math computation scores are the best predictors of applied math performance, reading comprehension also independently contributes significantly to the prediction. Reading comprehension as measured by Maze plays an important role in applied mathematics performance. In this study, ORF did not contribute any unique information to prediction of applied math performance beyond that accounted for by Maze. It may be that Maze is a better method of assessing reading comprehension for grades four and up, especially in relation to math performance.

REFERENCES


Developing Norms for the California Resilience Youth Development Module: Internal Assets and School Resources Subscales

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Resilience and other positive psychological constructs are gaining attention among school psychologists. Theoretically, external assets (e.g., support from caring adults, participation in meaningful activities) help to meet youths’ basic developmental needs, which, in turn, promote the growth of internal assets (e.g., ability to problem solve, empathize with others). Despite this knowledge, existing measures of resilience-building assets are underutilized. With the aim of facilitating broader access to and use of one strengths-based assessment tool, the current article attempts to further examine and increase the applicability of the Resilience Youth Development Module (RYDM) of the California Healthy Kids Survey (CHKS) for practicing school psychologists. The authors provide normative data on the internal assets and school-focused external resources subscales of the RYDM, while examining grade, ethnicity, and gender patterns.

KEYWORDS: resilience, assessment, strength-based, California Healthy Kids Survey

There is continuing emphasis in California on accountability and outcomes within school systems. Federal mandates, such as the No Child Left Behind and Race to the Top, also raise expectations for school officials to collect and use data to assess student needs and evaluate program implementation and outcomes. Concurrently, there is a substantial initiative among public health and youth development professionals to encourage schools to create campus conditions that foster caring relationships and the connectedness of students with adults in their schools (e.g., Centers for Disease Control and Prevention, 2009). In response to these state and federal policies, the California Department of Education (CDE) in conjunction with WestEd’s Health and Human Development Program developed the California Healthy Kids Survey (CHKS; California Healthy Kids Survey, 2009; WestEd, 2009a). The CHKS is a school-focused questionnaire that measures risk and resilience factors through student self-reports. It has been used in research examining factors influencing smoking and drinking behaviors (Kim & McCarthy, 2006), teenage pregnancy (McDonell, Limber, & Connor-Goodbey, 2007), asthma among Hispanic and Asian students (Davis, Kreutzer, Lipsett, King, & Shaikh, 2006), and risk factors associated with school violence (Furlong, Morrison, Austin, Huh-Kim, & Skager, 2001).

One component of the CHKS is the Resilience Youth Development Module (RYDM; Constantine & Benard, 2001; Constantine, Benard, & Diaz, 1999; WestEd, 2009b), which is designed to measure protective factors among youth in terms of their internal assets and external resources (see www.wested.org/chks/pdf/rydm_presentation.pdf for an overview of the RYDM). Prior research provided evidence supportive of the RYDM’s psychometric properties (Hanson & Kim, 2007) and shown that at the school level its subscales are positively associated with higher Academic Performance Index (API) rankings (Hanson & Austin, 2002). However, given that the RYDM was developed as a population-based survey, there is limited evidence supporting its use and interpretation at the student level considering individual

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differences. Therefore, the aim of this article is to further examine the RYDM’s psychometric properties and provide normative information in support of its use as a social-emotional assessment within the practice of school psychology. Such information would allow school psychologists to integrate the RYDM into common assessment contexts. Furthermore, because the RYDM is based in sound research and theory (Benard, 2004), it offers school psychologists a viable, cost-effective measure with which to assess factors associated with youth resilience, a critical component of strength-based assessment (Jimerson, Sharkey, Nyborg, & Furlong, 2004).

**Resilience Youth Development Module as a Strength-Based Measure**

Given the resource constraints of California’s current economic climate, expanding psychological assessment to include positive experiences and characteristics may not be considered a top priority. Fortunately, California already collects such information as part of the biennial CHKS survey, with the RYDM element including items that assess internal assets (personal strengths) and external resources (developmental supports and opportunities). In the RYDM, resilience is theorized to be “an inborn developmental wisdom that naturally motivates individuals to meet their human needs for love, belonging, respect, identity, power, mastery, challenge, and meaning” (WestEd, 2002, p. 2; see also Benard, 2004). Theoretically, external resources (e.g., support from teacher, involvement in school-based activities) help to meet youths’ basic developmental needs, which, in turn, promote the enhancement of internal assets (e.g., ability to problem solve and empathize with others). Ideally, these internal assets contribute to healthy social and academic outcomes among youth (Benard, 2004; Benard & Slade, 2009). Prior research suggests that the combintorial effects of youth possessing innate resilience characteristics with protective environmental resources is associated with reductions in health-risk behaviors such as alcohol use, tobacco use, drug abuse, aggressive behavior, juvenile delinquency, and academic disengagement (Garmezy, 1993; Gilman, Huebner, & Furlong, 2009; Hanson & Austin, 2002; Jimerson et al., 2004; Kirby & Fraser, 1997; Tran & Furlong, 2004).

The CHKS is administered to students in grades 7, 9, and 11 at least every two years (there is a different elementary version administered to fifth graders that is not examined in this article). After each survey administration, WestEd provides standard reports that provide useful overviews of district trends related to substance use, school safety, and student resilience (see www.wested.org/es/chks/print/docs/chks_bsearch.html, or www.wested.org/hks for district reports). However, these reports have some limitations because information about individual students cannot be gleaned due to the anonymous nature of the survey. However, CHKS raw data files with no unique identifiers are available to individual counties, districts, and even schools. By drawing on these data, it is possible for local education agencies to compare their students’ response patterns to students throughout California (WestEd, 2006). However, this is rarely done since it is unlikely that most school psychologists have access to the resources needed to develop local normative information. Consequently, a useful extension of the RYDM would be to develop information about response patterns that would allow school psychologists to use it to assess individual students.

**Purpose of this Study**

Although prior research has examined the general psychometric properties of the RYDM (Hanson & Kim, 2007), the applicability of this scale for practitioner use with individual students is unavailable. With the ultimate goal of facilitating broader access to and use of this strength-based instrument, the focus of this article is to examine the applicability of the RYDM for practicing school psychologists in California. Given the widespread use of the CHKS, it is our aim to provide normative data on the internal assets and the school-focused external resources subscales of the RYDM, including grade, ethnicity, and gender patterns.
METHOD

Participants

The sample for this study comes from CHKS data collected during the 2006-2007 and 2007-2008 school years from across schools in California. Students included in this study were from districts that administered the CHKS Core Module A, as required of all districts biennially, and the RYDM Module B, which is discretionary. When the CHKS data are processed, the responses of participants are subjected to seven response consistency and reliability checks (WestEd, Jerry Bailey, personal communication, May 11, 2008). This case rejection identifier is included with the raw database obtained and students whose responses did not meet the case validity criteria were not included in this study. Additional selection criteria included valid responses to all items of the RYDM internal assets and external resources items and another measure of school connectedness described later in this article.

The final sample included 141,004 students (55% female, 45% male) in grades 7 (34%), 9 (34%), and 11 (32%). These students were from 50 of the 58 California counties with representation from the following geographic regions: Inland Southern (25%), Northern (17%), San Diego (16%), Los Angeles (15%), San Francisco (14%), and Central (13%).

The CHKS asks students to indicate if they identify with racial-ethnic group categories commonly used in research (Alaskan Native/Native American, Asian/Pacific Islander, African American/Black, White/Not Hispanic, Hispanic, and Other). Students who selected only one ethnic group where placed into the corresponding category and students who selected two or three groups were placed into a multi-ethnic category. Students who selected four or more ethnic groups were not included in the analysis because they comprised a small subgroup and most of these youths claimed membership in all six ethnic groups, a plausible but unlikely status. The ethnic distribution of the sample was follows: 37% Hispanic, 30% White, 13% multi-racial, 12% African American, 4% Asian, 2% Native Hawaiian Pacific Islander, and 1% Alaskan Native or American Indian.

Measures

California Healthy Kids Survey (CHKS). The CHKS includes a mandatory core module administered to all students that focuses on health behaviors and experiences (WestEd, 2006). Core Module A includes sections about diet and exercise, violence, perceptions of safety, harassment and bullying, and the use of alcohol and other drugs. Five additional modules make up the total CHKS measure, one of which is Module B, the RYDM examined in this article.

Resilience Youth Development Module (RYDM). The full RYDM contains 56 items that were designed to measure internal assets (personal strengths) and external resources (protective factors), all of which have been linked to positive developmental outcomes (Benard & Slade, 2009). There is an elementary and secondary version, however, the focus of this article is on the secondary version. This analysis uses the internal assets items and the subset of external resources items that focus on student perceptions of the school context.

The original 18 internal assets items were developed to measure six core constructs based on Benard’s resilience model (Benard & Slade, 2009). As the RYDM has been used in California and additional analyses completed, clarifications to its underlying structure and content have been reported. In a detailed analysis, Hanson and Kim (2007) found that the number of items could be reduced due to differential item functioning (across racial-ethnic groups or by gender), inconsistent factor loading patterns, or items cross-loading across factors. Therefore, this study uses the 12 internal asset items identified by Hanson and Kim (2007) that measure four areas of personal strength: self-efficacy, empathy, problem solving, and self-awareness. These four subscales are also reported as a combined Internal Assets score. These are items 1-12 in Appendix A.

RYDM external assets items measure students’ perceptions of caring relationships, high expectations, and opportunities for meaningful participation across school, peer, home, and community domains. Given this article’s focus on students’ functioning in school, we examined the 9 external resource
items about the school environment. Hanson and Kim (2007) conducted several factor analyses and found that the 6 items from the Caring Relationship and High Expectation subscales combined to form one factor that they called “School Support” with the 3 Meaningful Participation items holding together in a separate factor. This study focuses on the School Support and School Meaningful Participation subscales (Items 13-21 in Appendix A).

School connectedness. Within the core CHKS module, 5 items assess School Connectedness, a measure originally developed for the National Longitudinal Study of Adolescent Health (Resnick et al., 1997). Numerous studies have shown that this measure of students’ beliefs about how much adults at school care about them is associated with lower levels of substance use and higher levels of positive health and academic outcomes (Whitlock, 2006). We included the School Connectedness scale (Items 22-26 in Appendix A) in the present study to examine correlations among the RYDM subscales, as well as provide concurrent validity information for the School Support portion of the RYDM.

Procedure

The RYDM was administered as part of the biennial CHKS survey. This full CHKS anonymous survey takes approximately 50 minutes to complete and is administered by school personnel during a regular class session. Either passive or active consent was used, at the discretion of each school district. District and school coordinators oversaw survey planning and implementation. School personnel administered the survey using a script provided by WestEd (see www.wested.org/chks/pdf/chks_mou_new_0809.pdf for the memorandum of understanding that each district completed prior to administering the CHKS). Students’ responses were made on scanable response sheets. For this analysis, the raw SPSS data were obtained from WestEd that contained all responses gathered during the 2006-2007 and 2007-2008 school years.

RESULTS

Analyses

The overall goal of the analysis was to examine the distribution of student responses to the 26 items assessing Internal Assets (4 subscales: self-efficacy, empathy, problem solving, and self-awareness) and School Resources (3 subscales: School Support, Meaningful Participation, and School Connectedness). Student responses were examined for possible differences by gender, racial-ethnic group, and grade level. Due to the large sample sizes, it was anticipated that even small differences would be significant, even when reducing the experiment-wide \( p \)-level; hence, the results focus on the overall effect size of the differences. In addition, to aid interpretation we examined the reliability of each subscale and correlations among subscales provided. Finally, a norm table was produced.

Multivariate analysis. We conducted a 2 (gender) x 6 (racial-ethnic group) x 3 (grade level) Multivariate Analysis of Variance with the 7 Internal Assets and School Resources subscales (the Total Internal Asset score was not included in this analysis). As expected with the substantial sample size, all three main effects were significant: grade, Wilks’ Lamda = .993, \( F = 70.45 \) (14, 281912), \( p < .001 \); gender, Wilks’ Lamda = .997, \( F = 472.37 \) (7, 140956), \( p < .001 \); and ethnicity, Wilks’ Lamda = .951, \( F = 169.23 \) (42, 661146), \( p < .001 \). In addition, all four interaction terms were significant: grade x gender, Wilks’ Lamda = .999, \( F = 7.84 \) (14, 281912), \( p < .001 \); grade x ethnicity, Wilks’ Lamda = .997, \( F = 4.84 \) (84, 863306), \( p < .001 \); gender x ethnicity, Wilks’ Lamda = .996, \( F = 13.53 \) (42, 661146), \( p < .001 \); and grade x gender x ethnicity, Wilks’ Lamda = .999, \( F = 1.44 \) (84, 863306), \( p < .001 \). Although these tests were statistically significant, each of the four interaction effects accounted for less than 0.1% of the variance across the RYDM subscales. Among the three main effects, the amount of variance explained for grade, gender, and ethnicity was 0.3%, 2.3%, and 0.8%, respectively. Given the low amount of variance attributable to grade level, the following analyses separately examined the univariate relations of RYDM response patterns across ethnicities for males and females.

RYDM patterns. Tables 1 and 2 show the pattern of means and standard deviations for the 4 Internal Asset subscales (including the combined Total Assets score) and the 3 School Resources subscales by ethnicity for males and females, respectively. A one-way ANOVA compared mean scores across ethnic

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<th>Ethnicity (Males)</th>
<th>ANOVA Results</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A.A/ N.A.</td>
</tr>
<tr>
<td><strong>RYDM Internal Assets</strong></td>
<td></td>
</tr>
<tr>
<td>Self-Efficacy (range = 4-16)</td>
<td>13.0</td>
</tr>
<tr>
<td>Empathy (range = 3-12)</td>
<td>9.0</td>
</tr>
<tr>
<td>Problem Solving (range = 2-8)</td>
<td>5.5</td>
</tr>
<tr>
<td>Self-Awareness (range = 3-12)</td>
<td>9.7</td>
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<tr>
<td>Total Internal Assets (range 12-48)</td>
<td>37.2</td>
</tr>
<tr>
<td><strong>RYDM School Resources</strong></td>
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<tr>
<td>School Support (range = 6-24)</td>
<td>18.0</td>
</tr>
<tr>
<td>Meaningful Participation (range = 3-12)</td>
<td>7.1</td>
</tr>
<tr>
<td>ADD-Health School Connectedness (range = 5-25)</td>
<td>17.0</td>
</tr>
</tbody>
</table>

Note. A.A. = Alaskan Native/American Indian; N.A. = Native American; M.E. = Multi-Ethnic; Standard deviations are in parentheses. % var. is the percentage of variance on the analysis attributable to ethnicity. Degrees of freedom for each analysis was 6, 63982.
<table>
<thead>
<tr>
<th>Ethnicity (Females)</th>
<th>ANOVA Results</th>
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<td><strong>RYDM Internal Assets</strong></td>
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<tr>
<td>Self-Efficacy</td>
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<tr>
<td>(range = 4-16)</td>
<td>13.1</td>
</tr>
<tr>
<td></td>
<td>(3.0)</td>
</tr>
<tr>
<td>Empathy</td>
<td></td>
</tr>
<tr>
<td>(range = 3-12)</td>
<td>10.1</td>
</tr>
<tr>
<td></td>
<td>(2.3)</td>
</tr>
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<td>Problem Solving</td>
<td></td>
</tr>
<tr>
<td>(range = 2-8)</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>(1.8)</td>
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<tr>
<td>Self-Awareness</td>
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<tr>
<td>(range = 3-12)</td>
<td>9.8</td>
</tr>
<tr>
<td></td>
<td>(2.5)</td>
</tr>
<tr>
<td>Total Internal Assets</td>
<td></td>
</tr>
<tr>
<td>(range 12-48)</td>
<td>39.3</td>
</tr>
<tr>
<td></td>
<td>(8.3)</td>
</tr>
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<td><strong>RYDM School Resources</strong></td>
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</tr>
<tr>
<td>School Support</td>
<td></td>
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<tr>
<td>(range = 6-24)</td>
<td>18.5</td>
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<td></td>
<td>(4.4)</td>
</tr>
<tr>
<td>Meaningful Participation</td>
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<tr>
<td>(range = 3-12)</td>
<td>7.0</td>
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<td></td>
<td>(2.5)</td>
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<tr>
<td>ADD-Health School</td>
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<tr>
<td>Connectedness</td>
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<tr>
<td>(range = 5-25)</td>
<td>17.5</td>
</tr>
<tr>
<td></td>
<td>(4.6)</td>
</tr>
<tr>
<td><strong>Sample Size</strong></td>
<td>855</td>
</tr>
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</table>

Note. A.A. = Alaskan Native/American Indian; N.A. = Native American; M.E. = Multi-Ethnic; Standard deviations are in parentheses. % var. is the percentage of variance on the analysis attributable to ethnicity. Degrees of freedom for each analysis was 6, 77008.
**TABLE 3:** Intercorrelations Among the California Healthy Kids Survey (CHKS) Resilience Youth Development Module (RYDM) Internal Asset, School Resources, and School Connectedness Subscales.

<table>
<thead>
<tr>
<th>CHKS RYDM Subscales</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Self-Efficacy</td>
<td>—</td>
<td>.64</td>
<td>.60</td>
<td>.73</td>
<td>.89</td>
<td>.37</td>
<td>.34</td>
<td>.32</td>
</tr>
<tr>
<td>2. Empathy</td>
<td>.59</td>
<td>—</td>
<td>.66</td>
<td>.58</td>
<td>.85</td>
<td>.34</td>
<td>.33</td>
<td>.29</td>
</tr>
<tr>
<td>3. Problem Solving</td>
<td>.62</td>
<td>.58</td>
<td>—</td>
<td>.54</td>
<td>.81</td>
<td>.34</td>
<td>.37</td>
<td>.27</td>
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<tr>
<td>4. Self-Awareness</td>
<td>.65</td>
<td>.50</td>
<td>.54</td>
<td>—</td>
<td>.84</td>
<td>.35</td>
<td>.30</td>
<td>.31</td>
</tr>
<tr>
<td>5. Total Internal Assets</td>
<td>.88</td>
<td>.85</td>
<td>.81</td>
<td>.83</td>
<td>—</td>
<td>.41</td>
<td>.39</td>
<td>.35</td>
</tr>
<tr>
<td>6. School Support</td>
<td>.47</td>
<td>.31</td>
<td>.34</td>
<td>.33</td>
<td>.41</td>
<td>—</td>
<td>.47</td>
<td>.50</td>
</tr>
<tr>
<td>7. Meaningful Participation</td>
<td>.38</td>
<td>.29</td>
<td>.33</td>
<td>.31</td>
<td>.39</td>
<td>.47</td>
<td>—</td>
<td>.39</td>
</tr>
<tr>
<td>8. School Connectedness</td>
<td>.31</td>
<td>.26</td>
<td>.27</td>
<td>.30</td>
<td>.35</td>
<td>.48</td>
<td>.41</td>
<td>—</td>
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</table>

Note. All correlations \( p < .01 \). Correlations for females below the diagonal and for males above the diagonal.

**TABLE 4:** Raw Score and Percentile Equivalents for the California Healthy Kids Survey (CHKS) School-Focused Resilience Youth Development (RYDM) Scales and the School Connectedness Scale by Gender for Students Attending Traditional Schools in Grades 7, 9, or 11.

<table>
<thead>
<tr>
<th>RYDM Internal Assets</th>
<th>RYDM School Resources</th>
<th>ADD Health</th>
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<tbody>
<tr>
<td>Self-Efficacy</td>
<td>Empathy</td>
<td>Problem Solving</td>
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<tr>
<td>90 16 16 12 12 8 8 12 12 48 48 24 24 10 10 23 22 90</td>
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<td>80 15 16 12 12 8 8 12 12 47 47 22 22 9 9 21 21 80</td>
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<td>70 15 15 12 11 7 6 11 12 43 41 19 20 7 7 19 19 70</td>
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<td></td>
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<tr>
<td>20 10 10 7 6 4 2 7 6 30 27 11 12 3 3 12 12 20</td>
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<tr>
<td>10 10 10 6 4 2 7 6 30 27 11 12 3 3 12 12 10</td>
<td></td>
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<tr>
<td>5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5</td>
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<td>% F M F M F M F M F M F M F M F M F M F M F</td>
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<thead>
<tr>
<th>Self-Efficacy</th>
<th>Empathy</th>
<th>Problem Solving</th>
<th>Self-Awareness</th>
<th>Assets Total</th>
<th>School Supports</th>
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<tbody>
<tr>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
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<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

The Resilience Youth Development Module
groups and, as shown, the F-ratios for all 8 tests were significant for both males and females. However, the amount of variance attributed to differences in ethnic groups was small, ranging from 0.4% (problem-solving) to 1.7% (self-efficacy) for males and from 0.2% (self awareness) to 2.2% (school connectedness) for females. Although detailed post-hoc comparison information cannot be reported due to space constraints, the general pattern that emerged for both males and females was that the Hispanic students tended to have the lowest subscale scores and White students tended to have the highest subscale scores.

**RYDM psychometric properties.** Tables 1 and 2 also show the internal consistency (alpha coefficients) for each of the RYDM subscales by gender. The results show moderate to high reliabilities for both males (range .75–.93) and females (range .69–.91). As would be expected, the Total Internal Assets and the School Support scores, both of which have the most items, had the highest alpha coefficients. The correlations among the RYDM scores are reported in Table 3 for males and females.

**RYDM norms.** Given the pattern of findings reported previously, distributions were developed for each of the RYDM subscales by converting raw scores into percentile ranks for males and females. However, as show in Table 4, the differences between the scores by gender are minimal.

**DISCUSSION**

A substantial body of research supports the relation between positive developmental outcomes and students’ positive character assets while attending a school with caring and supportive personnel (Appleton, Christenson, & Furlong, 2008, Centers for Disease Control, 2009). This study examined these related constructs as measured by the RYDM. The work of Hanson and Kim (2007) had previously examined the RYDM item bias, and verified that the factor structure of these scales held across racial-ethnic groups. Using their derived factor structure, the current paper further examined the pattern of Internal Assets and External School Resources among a sample of California students in grades 7, 9, and 11. We found that the variation of RYDM scores attributable to grade and ethnicity were small, less than 1%, however, there was more variance attributable to gender (2.3%). Most of the variation in scores was related to individual differences across students. This result, and the finding that the reliabilities of the scores were moderate to high for both males and females, support using the RYDM as part of social-emotional assessments with individual students. To this end, Table 4 provided normative data based on the responses of more than 141,000 California students. Although we conclude that the results lend support for school psychologists to include the 26 RYDM items examined in this study in their assessment resources, we provide some additional context to better inform this practice.

**Integrating the RYDM Positivity Measures into Social-Emotional Assessments**

In evaluating the use of RYDM as a social-emotional assessment, it is instructive for school psychologists to consider if assessing only pathology and disability is sufficient to inform effective treatment and to evaluate mental health and functioning. Historically, psychologists have viewed mental health as one broad category of functioning, but some have suggested that mental health involves not one but two broad domains. When considering assessments, is it worthwhile to assess components of well-being? Is it possible to completely shift and focus resources on measures of thriving and optimal development? These questions are potentially important given research suggesting that preventive interventions should consider risk, protective, and other environmental factors associated with mental health symptoms (Tomb & Hunter 2004). The RYDM was developed to assess aspects of a youth’s positive social-emotional condition and may provide a cost-effective resource with which to blend assessments of wellness and psychopathological functioning, thus capturing the full range of human functioning (Dowdy, Furlong, Eklund, SaeKi, & Ritchey, in press; Huebner, 2004; Joseph & Linley, 2006; Seligman & Csikszentmihalyi, 2000). When used with individual students, the RYDM appears to have a role as part of the social-emotional portion of a referral assessment plan. Other applications could include being used as a pretest-posttest evaluation of a discrete service, a school benchmarking assessment of students’ flourishing administered periodically throughout the year, or as part of a multigating assessment coordinated with other more detailed resilience scales such as ClassMaps (Doll et al., 2009; LeClair, Doll, Osborn, & Jones, 2009).
Study Limitations

Although this study was unique in that it drew upon a substantial sample of California students, it was limited in that the sample consisted only of 7th, 9th, and 11th graders. Only a small percentage of the variation of students’ responses was due to grade level, but future research should examine response patterns across grades 7-12. In addition, these data are cross-sectional, so they do not provide information about any possible developmental trends that would be useful to know about when using the RYDM with individual students. A related consideration is that the short- and long-term stability of the RYDM scores is unknown and future research needs to examine this issue. Finally, the full range of information about the RYDM’s various validities is not yet developed. We do note, however, that the School Connectedness scale has been used in hundreds of research studies (Whitlock, 2006). The correlations of .48 (females) and .50 (males) between School Connectedness and School Supports provide concurrent validity evidence for this RYDM element.

Conclusion

The 2009 list of Newsweek’s selection of America’s top 1500 high schools included Hillsdale High in San Mateo County. Of note is that when the RYDM responses at this high school were compared to other county high schools, it was found that the Hillsdale students reported higher levels of school resources (Caring Relationships, 12% higher; High Expectations, 13% higher; and Meaningful Participation, 6% higher) (WestEd, Sean Slade, personal communication June 12, 2009). It is possible that the experience of Hillsdale High School is one that can be replicated in schools throughout California. First, by systematically monitoring students’ perceptions of their school via the CHKS biennial survey to keep school personnel and community members informed about the students’ perception of their school’s climate. District and school policies and practices can be informed using the biennial RYDM survey results in conjunction with its use to evaluate districts’ youth development services. Second, school psychologists can also contribute by integrating the RYDM into the psychological assessments of individual students. By better understanding the strengths and needs of specific students related to their internal assets (self-efficacy, problem-solving, empathy, and awareness) and school resources (supports, meaningful participation, and connectedness), school psychologists can implement support services, as recommended by Benard and Slade (2009) for high-risk students that are linked directly to school-wide youth development efforts.

REFERENCES


# APPENDIX

## California Healthy Kids Survey Resilience Youth Development Module

### School-Focused Scales

*Note.* For electronic copies and other technical support, e-mail: mfurlong@education.ucsb.edu

### RYDM Student Internal Assets

*Directions: How true do you feel that these statements are about you personally?*

1. I can work with someone who has different opinions than mine.
2. I can work out my problems.
3. I can do most things if I try.
4. There are many things that I do well.

### Empathy

5. I feel bad when someone gets their feelings hurt.
6. I try to understand what other people go through.
7. I try to understand how other people feel and think.

### Problem Solving

8. When I need help, I find someone to talk with.
9. I try to work out problems by talking or writing about them.

### Self-Awareness

10. There is a purpose to my life.
11. I understand my moods and feelings.
12. I understand why I do what I do.

### RYDM School Supports (Caring Relationships and High Expectation combined)

*At my school, there is a teacher or some other adult ...*

13. who really cares about me.
14. who tells me when I do a good job.
15. who notices when I’m not there.
16. who always wants me to do my best.
17. who listens to me when I have something to say.
18. who believes that I will be a success.

### RYDM School Meaningful Participation

*At school... (1 = Not at All True, 2 = A Little True, 3 = Pretty Much True, 4 = Very Much True)*

19. I do interesting activities.
20. I help decide things like class activities or rules.
21. I do things that make a difference.

### ADD Health School Connectedness Scale (included in the CHKS)

*How strongly do you agree or disagree with the following statements about your school?*

1. I feel close to people at this school.
2. I am happy to be at this school.
3. I feel like I am part of this school.
4. The teachers at this school treat students fairly.
5. I feel safe in my school.
Internal Asset items dropped based on analysis by Hanson and Kim (2007) (rationale for dropping item in parentheses)

I have goals and plans for the future. (item functioned differently for Mexican American and Chinese Americans)
I plan to graduate from high school. (only item left from original scale)
I plan to go to college or some other school after high school. (item functioned differently for Chinese Americans)
I know where to go for help with a problem. (item functioned differently for males and females)
I enjoy working together with other students my age. (cross loadings in factor analysis)
I stand up for myself without putting others down. (cross loadings in factor analysis)
Prevailing Interventions to Address Peer Victimization at School: A Study of California School Psychologists

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University of California, Santa Barbara

In an effort to understand how schools are coping with incidents of peer victimization, this study explored the types of related interventions currently being offered by public schools in Northern California. School psychologists’ perceptions of the importance of the available interventions were also examined (N = 96). The interventions reported to be the most widely available were a) whole-school no tolerance policies and b) school to home communication. Generally, the endorsed availability of interventions decreased as the intensity level of intervention increased. Interventions endorsed as most important were a) the whole-school no tolerance policy; b) general school climate interventions; c) school to home communication; and d) education of school personnel about bullying. Analyses examining the relative use of primary, secondary, and tertiary interventions revealed that school psychologists report primary intervention as most important for reducing levels of bullying at their schools. Analyses also revealed that the differences between psychologists’ ratings on each of the levels of the intervention hierarchy were significant. Implications for further scholarship and practice are discussed.

Contemporary evidence reveals that approximately 30% of American children experience bullying in their peer group, either as a victim, bully, or both, and most of this bullying occurs in schools (Kasen, Berensen, Cohen, & Johnson, 2004; Nansel et al., 2001). Moreover, chronic victimization (occurring two or more times per month), is estimated to occur at a rate of 15% to 20% (Sawyer, Bradshaw, & O’Brennan, 2008; Whitney & Smith, 1993). Students who experience bullying may avoid school, experience extreme psychological distress and even drop-out (Boivin, Hymel, & Bukowski, 1995; Fried & Fried, 1996). In the long-term, these same students may experience adult depression, suicidality, and criminality (Carney, 2000; Olweus, 1993; Olweus, Limber, & Mihalic, 1999; Rigby, 2000; Slee, 1994). Brock, Nickerson, O’Malley, & Chang (2006) offer a recent review of the peer victimization literature. Additionally, The Handbook of Bullying in Schools: An International Perspective (Jimerson, Swearer, & Espelage, 2009) provides a comprehensive overview of bullying and victimization at school.

Teachers who promote a positive caring environment, treat children fairly, and provide meaningful opportunities for learning significantly reduce bullying behavior in their classrooms (Barboza et al., 2009; Natvig, Albreksten, & Qvarnstom, 2001). Unfortunately, evidence indicates that most teachers and other school staff are ill prepared to cope with bullying. In fact, nearly 25% of teachers see nothing wrong with bullying and intervene in less than 10% of bullying incidents (Cohn & Canter, 2002). The National Regional Education Laboratory (Brewster & Railsback, 2001) emphasizes that school psychologists are in an appropriate position to encourage and inform school staff about the adoption of anti-bullying policies and curricula. Despite this fact, research has not focused on school psychologists’ knowledge and perceptions of bullying interventions. In the related discipline of school crisis management, however, Peters (2005) found that school psychologists do not feel adequately prepared to deal with incidents of school violence. Reasons for not being prepared included: training, time, workload, and the fact that it was not viewed as their responsibility.

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Note: The author would like to thank Stephen E. Brock, Ph.D., Catherine Christo, Ph.D., and Shane R. Jimerson, Ph.D., for their guidance and support related to this manuscript.
Comprehensive Support Plans

Given the prevalence and risk involved in peer victimization, it is essential that the education community be prepared to prevent and intervene with groups of affected students. Card and Hodges (2008) recommend comprehensive, system-wide interventions for peer victimization. Characteristics of such comprehensive interventions include: school-wide assessment and policy; education of school personnel, parents, and peer groups; systematic social skills training; individualized intervention; and consistent enforcement of rules (Smith, Schneider, Smith, & Ananiadou, 2004). One such comprehensive approach, School-wide Positive Behavior Support, focuses on prevention, multi-level support, and data-based decision making (Skiba & Sprague, 2008). School-wide Positive Behavior Support has been shown to be effective in improving students’ ratings of school climate, and reducing aggression and risk-taking behaviors among youth (Metzler, Biglan, Rusby, & Sprague, 2001).

Intervention Hierarchy

The interventions for peer victimization that are outlined in a systematic school-wide plan may be represented by a structure categorized by primary, secondary, and tertiary interventions. The use of this hierarchical approach, wherein the least intrusive intervention in the natural environment is tried first is advocated in the literature (Brown, Odom, & Conroy, 2001). The continuum of care should provide a match between the presenting problem of the student or group of students and the intensity of intervention chosen (Walker, Horner, & Sugai, 1996). Primary, or universal, supports are provided to the entire school or to classrooms and are broad in scope. In the case of peer victimization, primary supports may include: parent training on fundamental child management skills, general social skills and/or affective training, general teacher and staff education, general school climate interventions, and whole-school no tolerance policies (Nickerson, Brock, Chang, & O’Malley, 2006).

Secondary supports are provided to small groups based on the need for intervention in order to prevent further damage after a student has been affected by peer victimization. Nickerson and colleagues (2006) suggest that secondary interventions may include: parent training specific to peer victimization awareness, problem-solving skills training specific to bullying prevention, social integration activities (i.e. pairing an at-risk child with socially competent children), incidental teaching of social behavior, counseling, and school to home communication regarding specific incidents. Finally, tertiary supports are reserved for affected individuals who require one-on-one, intensive intervention. Such tertiary interventions are typically provided through psychotherapeutic intervention with a trained professional, although peer support systems and friendship interventions are also possibilities (Nickerson et al., 2006).

Though school psychologists have been identified as appropriate school-based professionals to advocate for and provide intervention, and while types of interventions have been clearly delineated and hierarchically categorized in the literature, availability of these interventions and school psychologists’ perceptions of the importance of these interventions have gone largely unexplored. The present study fills a gap in the literature by examining: (a) the types of interventions currently being offered by public schools in Northern California for peer victimization, and (b) school psychologists’ perceptions of the importance of a variety of interventions for peer victimization.

METHOD

Participants

Three hundred school psychologists from the Northern California Region X of the California Association of School Psychologists were randomly surveyed through a mailer sent via the United States Postal Service. Of the 300 mailers sent, 96 responses were received, yielding a 32% return rate.

Survey development and description

The investigation followed a descriptive design employing a close-ended inventory entitled “Responding to Peer Victimization” which was designed by the investigator for the study. Based on ex-
perience working in the schools and a review of contemporary literature, the first half of the inventory identified 16 possible interventions and their descriptions in a checklist format. Respondents indicated whether the intervention was available at his or her school site. The second half of the inventory was designed to obtain information regarding school psychologists’ perception of the importance of each of the 16 interventions, using a Likert-type scale from 1 to 5 (i.e., 1 = “Very Important” and 5 = “Very Unimportant”).

Data Analysis Procedures

The data for all interventions described in the questionnaire were coded on three dimensions: (a) availability of specific interventions to the informant in his school, school district, or agency of work, (b) of those interventions marked as available, category of intervention(s) (primary, secondary, or tertiary), and (c) perceived level of importance.

Availability. The total number of respondents marking “yes” to the question of availability was summed for each intervention. The ratio of “yes” responses to “no” responses was calculated to provide the percent available for each of the 16 interventions described in the questionnaire.

Categorization according to level of prevention. Each intervention was coded as either primary, secondary, or tertiary. The total number of “yes” responses for each level of intervention were summed and divided by the total number of “yes” responses for all interventions providing a percentage available by level of intervention.

Perceived Importance. Respondent data were entered on a scale of 1 through 5, with 1 representing “very important” and 5 representing “very unimportant”. Total numbers for each value were calculated. For each intervention, the percentage of each value was calculated providing a rating for perceived importance of each intervention. Using the PASW Statistics program (SPSS Inc., 2008) composite scores were also calculated for perceived importance of primary, secondary, and tertiary interventions. The items that constitute each of these categories are described in the previous sections. Finally, a one-way analysis of variance (ANOVA) was conducted to determine if the differences between the means of these composite scores were statistically significant.

Consistency of Availability and Endorsed Level of Importance. Data were filtered to show which interventions were rated as both available (rating: Yes) and very important (rating: 1). The number of respondents who rated an intervention as both very important and available was compared to the number of respondents who rated the intervention as very important, but not available in their school. This calculation provided percentages demonstrating the consistency between endorsed level of importance and availability of each intervention.

RESULTS

Availability

The three most available interventions endorsed in the overall sample were: (1) whole-school no tolerance policy (79%), (2) communication (70%), and (3) school climate interventions and small group social skills training designed to teach positive peer interaction skills (59% each). Table 1 depicts the reported availability of each intervention.

Availability of interventions was also classified according to levels of intervention. Generally, the endorsed availability of interventions decreased as the level of intervention increased, suggesting that primary interventions are more available in schools than secondary or tertiary interventions. Interestingly, although the trend suggests a decreasing availability as need for intervention becomes more extreme, the availability of one-on-one psychotherapeutic interventions was endorsed by 55% of the sample. The most frequently available interventions at each level – primary, secondary and tertiary – are analyzed below.

Primary interventions. Of the primary interventions sampled, whole-school, no-tolerance policies were the most available intervention, followed by general school-climate interventions and educating teachers, playground supervisors, and other school staff about bullying.
TABLE 1: Availability of Primary, Secondary and Tertiary Interventions

<table>
<thead>
<tr>
<th>Intervention Type</th>
<th>% Available</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Interventions</strong></td>
<td></td>
</tr>
<tr>
<td>Parent training on fundamental child management skills</td>
<td>41</td>
</tr>
<tr>
<td>Whole-school no tolerance policy</td>
<td>79</td>
</tr>
<tr>
<td>Classroom social skills training designed to teach positive interaction skills</td>
<td>53</td>
</tr>
<tr>
<td>Educating teachers, playground supervisors, and other staff about bullying</td>
<td>55</td>
</tr>
<tr>
<td>Generalized affective interventions</td>
<td>49</td>
</tr>
<tr>
<td>Anti-bullying educational curriculum at the class-group level</td>
<td>26</td>
</tr>
<tr>
<td>School climate interventions</td>
<td>59</td>
</tr>
<tr>
<td><strong>Secondary Interventions</strong></td>
<td></td>
</tr>
<tr>
<td>Parent training specific to peer victimization awareness</td>
<td>14</td>
</tr>
<tr>
<td>Small group social skills training designed to teach positive peer interaction</td>
<td>59</td>
</tr>
<tr>
<td>Problem solving skills training</td>
<td>43</td>
</tr>
<tr>
<td>Social integration activities</td>
<td>16</td>
</tr>
<tr>
<td>Incidental teaching of social behavior</td>
<td>46</td>
</tr>
<tr>
<td>School to home communication</td>
<td>70</td>
</tr>
<tr>
<td><strong>Tertiary Interventions</strong></td>
<td></td>
</tr>
<tr>
<td>Peer support systems</td>
<td>44</td>
</tr>
<tr>
<td>Friendship Interventions</td>
<td>18</td>
</tr>
<tr>
<td>One-on-one psychotherapeutic intervention with a mental health professional</td>
<td>55</td>
</tr>
</tbody>
</table>

Secondary interventions. Of the secondary interventions sampled, school-to-home communication was the most available intervention followed by small group social skills training designed to teach positive peer interaction skills.

Tertiary interventions. Of the tertiary interventions, one-on-one therapeutic interventions were most available followed distantly by peer interventions.

Perceived Importance of Interventions

Respondents, on the whole, endorsed most items as “neutral,” “important” or “very important.” The rate of endorsements of “not important” or “very unimportant” was 3% of the overall number of responses. Therefore, although most respondents believed all interventions were of some importance, ratings of “very important” were used to determine which interventions, on the whole, were endorsed as most important.

Of the interventions surveyed, those endorsed as most important were: (1) whole-school no tolerance policy (79% marked “very important”), (2) general school climate interventions (63% marked “very important”), and (3) communication & educating teachers, playground supervisors, and other school staff about bullying (on each scale, 62% marked “very important”). Conversely, of the interventions surveyed, those endorsed as least important were: (1) social integration activities (18% marked “very important”), (2) friendship interventions (20% marked “very important”), and (3) peer support systems (26% marked “very important”). Like intervention availability, overall endorsed importance of intervention declined as the level of intervention rose from primary through tertiary.

Composite scores were calculated for primary, secondary, and tertiary interventions. Primary interventions were rated as most important ($M = 1.59, SD = .50$), followed by secondary ($M = 1.87, SD = .53$), and, finally, tertiary ($M = 2.09, SD = .69$) interventions. A one-way analysis of variance (ANOVA) revealed that the differences between groups was statistically significant ($F (2, 268) = 18.24, p < .05$). The
Tukey HSD post-hoc analysis revealed the following: Primary Composite $M >$ Secondary Composite $M$ ($p = .004$); Primary Composite $M >$ Tertiary Composite $M$ ($p = .000$); Secondary Composite $M >$ Tertiary Composite $M$ ($p = .012$). Data on perceived importance of each intervention can be found in Table 2.

**TABLE 2: Perceived Level of Importance**

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Type&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Frequencies&lt;sup&gt;b&lt;/sup&gt;</th>
<th>$M$</th>
<th>$SD$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole-school No Tolerance Policies</td>
<td>P</td>
<td>79  13  5  1  1</td>
<td>1.31</td>
<td>.72</td>
</tr>
<tr>
<td>Educating teachers, playground supervisors, and other school staff</td>
<td>P</td>
<td>62  32  3  1  0</td>
<td>1.42</td>
<td>.61</td>
</tr>
<tr>
<td>about bullying School Climate Interventions</td>
<td>P</td>
<td>63  26  8  0  1</td>
<td>1.47</td>
<td>.74</td>
</tr>
<tr>
<td>School to Home Communication Parent training on fundamental child management</td>
<td>S</td>
<td>62  25  9  1  1</td>
<td>1.52</td>
<td>.80</td>
</tr>
<tr>
<td>skills Classroom social skills training designed to teach positive peer</td>
<td>P</td>
<td>44  46  9  0  1</td>
<td>1.68</td>
<td>.73</td>
</tr>
<tr>
<td>interaction skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem solving skills training</td>
<td>S</td>
<td>44  27  12  2  0</td>
<td>1.72</td>
<td>.77</td>
</tr>
<tr>
<td>Anti-bullying educational curriculum at the class-group level</td>
<td>P</td>
<td>41  42  15  2  0</td>
<td>1.78</td>
<td>.77</td>
</tr>
<tr>
<td>Small group social skills training designed to teach positive peer</td>
<td>S</td>
<td>38  42  16  2  1</td>
<td>1.84</td>
<td>.84</td>
</tr>
<tr>
<td>interaction skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalized affective interventions</td>
<td>P</td>
<td>35  44  15  3  1</td>
<td>1.89</td>
<td>.86</td>
</tr>
<tr>
<td>Parent training specific to peer victimization</td>
<td>S</td>
<td>32  42  22  2  0</td>
<td>1.94</td>
<td>.80</td>
</tr>
<tr>
<td>Incidental teaching of social behavior</td>
<td>S</td>
<td>30  45  19  3  0</td>
<td>1.95</td>
<td>.80</td>
</tr>
<tr>
<td>Peer support systems</td>
<td>T</td>
<td>26  55  15  2  1</td>
<td>1.96</td>
<td>.77</td>
</tr>
<tr>
<td>One-on-one psychotherapeutic intervention with a mental health professional</td>
<td>T</td>
<td>29  38  22  6  3</td>
<td>2.15</td>
<td>1.02</td>
</tr>
<tr>
<td>Friendship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interventions</td>
<td>T</td>
<td>20  46  28  5  0</td>
<td>2.19</td>
<td>.82</td>
</tr>
<tr>
<td>Social Integration Activities</td>
<td>S</td>
<td>18  47  29  2  2</td>
<td>2.22</td>
<td>.84</td>
</tr>
</tbody>
</table>

<sup>a</sup> Key: P=Primary; S=Secondary; T=Tertiary

<sup>b</sup> Key: 1=Very Important; 2= Important; 3= Neutral; 4= Unimportant; 5= Very Unimportant
Consistency Between Reported Availability and Perception of Importance

With the exception of whole-school no tolerance policies, communication, and one-on-one psychotherapeutic interventions, several of the interventions psychologists believed to be very important were not consistently available in their school sites. For instance, those interventions that were perceived as very important, but were least available in the schools were: (1) social integration activities (23%); (2) parent training specific to peer victimization awareness (26%); and (3) friendship interventions (26%). Overall, interventions that were endorsed as “very important” were available in 50-70% of corresponding school sites. Table 3 displays the consistency between raters’ endorsement of an item as “very important” and ratings of intervention availability.

TABLE 3: Consistency of Availability and Endorsed level of Importance

<table>
<thead>
<tr>
<th>Primary Intervention</th>
<th>Percentage of those reporting that an intervention is available who also report it to be “very important”</th>
<th>Percentage of those reporting that an intervention is “very important” who also report it to be available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parent training on fundamental child management skills</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>Whole-School no tolerance policy</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Classroom social skills training designed to teach positive interaction skills</td>
<td>57</td>
<td>69</td>
</tr>
<tr>
<td>Educating teachers, playground supervisors, and other school staff about bullying</td>
<td>72</td>
<td>63</td>
</tr>
<tr>
<td>Generalized affective interventions</td>
<td>40</td>
<td>56</td>
</tr>
<tr>
<td>Anti-bullying educational curriculum at the class-group level</td>
<td>64</td>
<td>41</td>
</tr>
<tr>
<td>School Climate interventions</td>
<td>72</td>
<td>67</td>
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<tr>
<td>Secondary Interventions</td>
<td></td>
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<tr>
<td>Parent training specific to peer victimization awareness</td>
<td>62</td>
<td>26</td>
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<tr>
<td>Social Integration activities</td>
<td>27</td>
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<tr>
<td>Incidental teaching of social behavior</td>
<td>48</td>
<td>72</td>
</tr>
<tr>
<td>School to home communication</td>
<td>75</td>
<td>83</td>
</tr>
<tr>
<td>Tertiary Interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer support systems</td>
<td>36</td>
<td>60</td>
</tr>
<tr>
<td>Friendship interventions</td>
<td>29</td>
<td>26</td>
</tr>
<tr>
<td>One-on-one psychotherapeutic intervention with a mental health professional</td>
<td>42</td>
<td>79</td>
</tr>
</tbody>
</table>

DISCUSSION

Availability

The finding that whole-school no-tolerance policies are the most available interventions in the respondent sample has some significant implications. First, this finding suggests that most schools in Northern California are compliant with at least one aspect of the Bullying Prevention for School Safety and Crime Reduction Act (2003), which specifies that all schools shall develop a school safety plan aimed at the prevention of potential incidents involving crime and violence on the school campus. Sec-
ond, this finding reveals that schools have largely responded to the need for primary prevention measures for peer victimization. It is important to note, however, that emerging empirical evidence does not consistently support the whole-school no tolerance policy. Recent research reports that no tolerance policies tend to result in increased suspension rates and, unfortunately, schools with high school suspension rates tend to have weaker school climate and academic quality ratings (Skiba et al., 2006). Keeping these data in mind, the no-tolerance policy for bullying must be implemented in concert with a thorough continuum of services that should include more intensive interventions as need increases (Mayer & Sulzer-Azaroff, 2002).

School to home communication (70%) and school climate interventions and small group social skills training designed to teach positive peer interaction skills (59% each) were the next most available types of interventions. When considering the relatively high availability of small group social skills training, it is important to consider what curricula are being used, the fidelity of their implementation, and whether they are empirically validated for the specific target groups (McNamara, 2002). Measuring the quality and appropriateness of these interventions is outside the scope of the current study, but is nevertheless of keystone importance to understanding intervention efficacy.

The low reported availability of parent training at the primary (41%) and secondary (14%) intervention level is noteworthy. This finding is particularly disconcerting because parent training is consistently empirically supported as one of the most influential interventions for change in aggressive behavior patterns of young children (Baldry & Farrington, 2000; Barboza, et al., 2009; Dishion & Patterson, 1992). The evidence suggests that these behavior patterns begin and are maintained by parent management practices. One possible explanation for this finding is that schools do not consider parent training to be within their scope of responsibility. Particularly in this time of declining resources and increased need, the idea of intervening with parents may be overwhelming to school staff. In reality, however, intervening with parents may be one of the most productive uses of schools’ limited resources (Gimpel & Collett, 2002).

The general finding that available interventions decline as the level of intensity increases is concerning. This trend suggests that as students’ need for intervention increases, availability of intervention declines. One explanation for this phenomenon would suggest that because primary interventions are the least resource-intensive, they are also the easiest to implement in a school environment characterized by severe budget cuts. As intervention level increases, a smaller pupil to personnel ratio is necessary, thus making it more difficult to implement without appropriate resources. However, this hypothesis is confounded by the finding that one-on-one psychotherapy, a tertiary intensive intervention with mixed empirical support, is also among the most available interventions endorsed in the sample (55%). One hypothesis for the higher availability of one-on-one psychotherapeutic interventions than other, less resource-intensive, primary and secondary interventions is that schools are managing their resources poorly. Perhaps having a school psychologist perform tertiary intervention requires less pre-intervention planning than adopting a comprehensive school-wide positive behavior support structure requires. Further research is warranted to better understand these phenomena.

**Endorsed Level of Importance**

Information from respondents’ ratings of intervention importance was particularly illuminating. Composites of primary, secondary, and tertiary interventions were significantly different from one another, with the primary intervention composite being most important, followed by secondary, and then tertiary. Interestingly, 79% of the sample responded that whole-school no tolerance policies, a primary intervention, are very important, the highest among all interventions included. While this evidence suggests that school psychologists recognize the value of school policies for dealing with incidents of victimization, it also suggests that the preponderance of evidence against these policies may go unrecognized. Also important to respondents were generalized school climate interventions (63%) and communication (62%). These data suggest that psychologists recognize the value of (a) establishing a school climate characterized by positive interpersonal and organizational supports for all students and (b) involving families in the school community to the greatest degree possible.
Three of the four interventions rated as most important were primary level interventions (whole-school no tolerance policies, school climate interventions, and educating school staff about bullying). Communication was the only intervention rated in the most important range that was not a primary intervention. In the case of this sample, because communication to home would follow an incident of victimization, it is considered a secondary intervention. Nevertheless, in the scope of intervention intensity, communication is low. These findings suggest that psychologists are aware of the high value of prevention. Generalized interventions that support a warm and accepting environment for all students, where adults are aware of the peer victimization issue, and where incidents of peer victimization are not tolerated, is the ideal foundation for the prevention of escalating intervention need (Larson, Smith, & Furlong, 2002).

The interventions marked as least important (fewest “very important” responses) are also notable. Two of the three least important interventions rated were tertiary interventions: friendship interventions (20% marked “very important”), and peer support systems (26% marked “very important”). All of the interventions rated in the least important range were those involving an intensive intervention using the peer group as the mechanism for rehabilitation. This information suggests that respondents have little optimism about the usefulness of peers in the response to peer victimization, specifically when the intervention is intensive in nature. It is possible that respondent ratings may have been biased by the logistics of these types of interventions, as they require the voluntary participation of a peer or group of peers as well as the use of a high number of personnel hours to train and guide these volunteers. Because the empirical evidence is mixed, the cost-benefit of such resource-intensive interventions remains unclear (Cunningham et al., 1998; Naylor & Cowie, 1999).

The data from the endorsement of importance section of the questionnaire suggest that school psychologists’ conceptualization of the efficacy of interventions are generally consistent with empirical support. On the whole, they endorse primary interventions as most important and those interventions that are resource-intensive and of questionable benefit as least important.

Consistency

The consistency data addresses two important questions. The first analysis demonstrates the endorsed ratings of importance for those respondents who have had experience with an intervention, thus answering the question, “Of the people who have the intervention, what percentage think it’s very important?” Higher percentages suggest greater levels of satisfaction with an intervention. The interventions with the highest ratings of consistency under these conditions were: (a) whole-school no tolerance policies (80% consistency); (b) communication (75% consistency); and (c) educating teachers, playground supervisors, and other school staff about bullying and parent training on fundamental child management skills (72% consistency each). These data indicate that respondents are particularly satisfied with the use of whole-school no tolerance policies, staff education and parent training as primary methods for intervention. They are also satisfied with the use of communication between school and home and parent training at the secondary level. Again, these data are skewed toward primary interventions, suggesting that, as far as school psychologists are concerned, primary intervention works.

Also important are the lowest consistency scores, which indicate lower levels of satisfaction with particular interventions. Those interventions with the lowest consistency scores in this analysis were: social integration activities (27%), friendship interventions (29%), and peer support systems (36%). These data suggest that respondents who have experience with peer-based interventions are not particularly satisfied with them. Again, they are skewed toward the tertiary intervention level indicating declining satisfaction with interventions as level of intervention increases. Further research is necessary to understand the strengths and weaknesses of each of these interventions and to understand what improvements are necessary to increase perceived and real efficacy.

The second consistency analysis demonstrates the consistency between respondents’ reports that an intervention is important and its availability, answering the question, “Of the people who report that an intervention is very important, what percentage also say it’s available?” Lower scores suggest a mis-
match between endorsed importance and availability. Those interventions with the lowest scores were:
(a) social integration activities (24%), and (b) parent training specific to peer victimization and friend-
ship interventions (26% consistency each). It is particularly interesting that those interventions with
low levels of overall endorsed importance are also those interventions that have low consistency in this
analysis. This evidence suggests that, although most respondents do not believe these interventions to
be of the greatest consequence overall, of the minority of respondents who do believe it to be important,
very few have it available to them.

RESPONDENT COMMENTS

Many respondents offered insights regarding the problem of peer victimization in the comments
sections of their surveys. They shared conjectures about the dynamics of peer victimization, explana-
tions for why interventions are not being implemented, and what changes to the system must occur
before interventions can be implemented with greater frequency and fidelity.

A number of respondents shared the following sentiment: “Bullying is an incredible problem – very
apparent and overt in elementary and middle schools, much more covert in high school.” In concert with
the data on perception of importance, this sentiment speaks to the fact that school psychologists largely
understand the complex dynamics of bullying. Beyond identifying the problem, respondents reflected on
the barriers to psychologists’ provision of intervention in the school setting. One such barrier suggested
was that the focus on academic achievement, specifically state standardized test scores, makes it difficult
to sell “nonacademic” interventions to administrators. Reflecting this sentiment, one respondent wrote,
“The district in which I work is focused on improving academics – increasing test scores. Social-emotio-
nal learning and bullying prevention are viewed as taking away critical academic instructional time
with activities that do not increase test scores.”

Respondents also argued against the existing model of separate special education versus general
education systems. For instance, one respondent said, “If we weren’t slaves to special education is-
sues, we could involve ourselves more in facilitating these interventions. We have to continually expand
our influence into regular education in order to build a structure for these services.” Finally, many
respondents remarked that the involvement of parents and community members is the keystone in the
prevention and intervention of peer victimization. These comments are particularly encouraging because
they reflect not only school psychologists’ dissatisfaction with the status quo, but also their insight into
system-level reform needs.

LIMITATIONS AND FUTURE DIRECTION

This study yielded a 32% response rate from school psychologists in Northern California schools
thus, future research with a greater number of school psychologists from more diverse geographic loca-
tions would further advance understanding of the interventions currently being offered by public schools
to prevent victimization. While this initial effort provided exploratory data, further evaluation of the
psychometrics (e.g., reliability and validity) of the perception of importance portion of the Responding
to Peer Victimization survey would be valuable as modifications may enhance future data collection.
Finally, it should be noted that an exhaustive review of all possible interventions for peer victimization
was beyond the scope of this study (for further information see for instance The Handbook of School
Violence and School Safety, Jimerson & Furlong, 2006). Therefore, further research is warranted to
better understand the continuum of school-based interventions meant to address the problem of peer
victimization.

CONCLUSION

The current investigation has shed light on the availability and endorsement of importance of inter-
ventions for peer victims by school psychologists in Northern California schools. The respondents in this
sample demonstrated a high level of awareness of the problem of peer victimization, the importance of
primary intervention, and of the barriers that stand in the way of appropriate allocation of resources in
the school setting. It is anticipated that, as we advance toward a response to intervention model, wherein
the lines between general and special education are blurred, the school psychologist’s time may be freed from the assessment of children for special education services, and reallocated to provide direct psychosocial services to classrooms, small groups, and individuals. These data contribute to a growing body of evidence suggesting that the expertise of the school psychologists, as mental health experts in the school setting, should be embraced in an effort to address the psychosocial barriers to learning which are consistently demonstrated to impact children’s short- and long-term life outcomes.

REFERENCES


Examining the Impact of Acculturation and Perceived Social Support on Mathematics Achievement Among Latino/a High School Students

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The current migration of Latino/as into the United States has many schools struggling to meet the unique academic needs of this particular group of students. Previous research suggests level of acculturation and perceived social support impact mathematics achievement amongst Latino/a students. The current study employed hierarchical and simultaneous multiple regression analyses to evaluate the effect perceived social support and level of acculturation reported by a sample of Latino/a students (ages 14-18) had on their mathematics achievement. The results revealed that one’s level of acculturation did not impact her or his mathematics achievement, while positive correlations between teacher and peer support and mathematics achievement were noted, with teacher support being the dominant factor. Limitations and implications of the findings for the field of school psychology are discussed.

Latin America has been the leading source of immigration into the United States, accounting for over 20% of the legal immigration into the country during 2001 (U. S. Census Bureau, 2003). It is projected at least 20 to 25 million persons of some type of Latino/a background (i.e., Mexican, Cuban, Puerto Rican, Central American, or South American), whether native born or immigrant, will live in the United States by the year 2050 (U.S. Census Bureau, 2003). Furthermore, by 2030, Latino/a students are expected to comprise 23% of the total American school population, with the majority residing in the border states of Arizona, California, Texas, and New Mexico (White House Initiative on Educational Excellence for Hispanic Americans, 2003).

Students of Latino/a origin continue to lag behind their counterparts of other ethnic backgrounds in terms of overall academic achievement. Indeed, they often demonstrate a lower rate of graduation than students from any other ethnic group, being two to three times more likely to drop out (pushed out) of school than their African American or Anglo peers (Adam, 2003; Gándara, Larson, Rumberger, & Mehan, 1998; Office of Educational Research and Improvement, 1997). Given the large numbers of Latino/a students already in many schools, and the even larger number who are expected to enroll within the next few years, school personnel have begun to wonder about the difference between a Latino/a student who is able to succeed academically and one who is not able to do so.

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ACCULTURATION, SOCIAL SUPPORT, AND ACHIEVEMENT

The primary focus of the present study was to examine social support and acculturation in relation to the level of academic achievement demonstrated by various Latino/a students, particularly in the area of mathematics. The following provides a brief synthesis of relevant scholarship. First, a standardized definition is provided for the term mathematics achievement. Then the various types of social support are discussed, along with the ways they affect mathematics achievement. Next, acculturation is discussed as well as the various ways a student’s cultural background can affect her or his academic success.

Defining Mathematics Achievement

The text, *Ideology and Curriculum* (Apple, 2004), indicates mathematics achievement can be measured in two ways: classroom-based measures (i.e., performance on quizzes, tests, and homework related to the topics studied in the class) and school-based measures (i.e., standardized tests, graduation from the high school, and enrollment in an institution of higher learning). Most scholars agree mathematics achievement is made up of these two major factors; however, classroom-based measures are a better predictor of mathematics achievement since they are measured on a daily basis (Apple, 2004).

Social Support

Social support is typically defined as the multifaceted methods and structures evident in people’s lives that allow them to feel accepted and a part of the larger community (Gillock & Reyes, 1999; Hale, 2005). Students with higher perceptions of social support also appear to have greater levels of academic success (Delgado-Gaitan, 2004; ERIC Development Team, 1997; Gillock & Reyes, 1999; Gregory, 2003; Hale, 2005; Jones & Velez, 1997; Sikkinik & Hernandez, 2003). In short, it would appear the more social support a student perceives, the higher the levels of academic success she or he manifests. It seems social support within the literature is really divided into three different types: support in the schools, community, and family (Delgado-Gaitan, 2004; ERIC Development Team, 1997; Gillock & Reyes, 1999; Gregory, 2003; Hale, 2005; Jones & Velez, 1997; Sikkinik & Hernandez, 2003). In the following section, the three types of social support will be discussed in reference to Latino/a students, in particular.

Social support within the schools relates to the level of cultural awareness demonstrated by teachers, faculty, and curricula within the schooling process, and the degree to which these sources of social support are able to aid students. Social support of Latino/a students in the schools is one type of support that becomes important to mathematics achievement (ERIC Development Team, 1997). Numerous studies (e.g., Black, 1998; Gandara et al., 1998; Gillock & Reyes, 1999; Ibañez, Kupermine, Jurkovic, & Perilla, 2004; Office of Educational Research and Improvement, 1997) have shown when Latino/a students are being supported directly in the school environment through the implementation of programs and curricula that are more culturally relevant, they begin to achieve more academic success. One of the most effective ways to demonstrate this type of social support may be to place the needs and the strengths of the students at the top priority. In a study of six high schools in California and Arizona that received recognition for promoting effectively high levels of mathematics achievement amongst Latino/a students, it was discovered the schools worked continuously from a strengths-based model and they sought to fulfill adequately the needs of their students (Rólon, 2003). For instance, they attempted to build the English and Spanish skills of both Latino/a students who were English-language learners and those who were of Latino/a descent but who did not speak Spanish by actively building bilingualism into the curricula of both general education classrooms and higher-level classes like advanced placement and honors classes (Rólon, 2003). One also finds higher levels of mathematics achievement when the pedagogy of the teachers reflects and respects the cultural aspects of Latino/a students. Research has shown a teacher who attempts to use culturally-relevant pedagogy is better able to use a student’s background knowledge to connect new learning with her or his own personal experiences (Black, 1998; Brooks & Brooks, 1999; Cooper, Denner, & López, 1999; Rólon, 2003). One way this connection is accomplished is through the educational practice of cultural constructivism. In this teaching method, the classroom is student-centered and all learning takes place with the student in mind. Research has shown teachers who
have switched to this type of teaching technique raise their students’ grades an entire letter, on average (Brooks & Brooks, 1999). Students in these classrooms also report they learn more because they are able to connect unfamiliar concepts they are learning to their own culture (Brooks & Brooks, 1999).

Social support within the community concerns the messages of self-worth and belonging students gain from organizations within the Latino/a community, which also seems to play a role in the mathematics achievement of Latino/a students. This type of social support differs from school social support because it concerns the messages sent to children from the larger community that exists around them (Sikkinik & Hernández, 2003). These messages come in the form of cultural values, customs, and attitudes that are taught to young people who identify as Latino/a, and their feelings of belonging and self-worth that result. One of the most dominant of these types of social support comes in the form of religion. Latino/as, as a cultural group, are characterized as being deeply religious (Sikkinik & Hernández, 2003). Therefore, religious institutions create many support opportunities for those persons who do identify as being deeply religious. Congregations often provide field trips for young members. Youth groups may organize trips to athletic events or museums (Sikkinik & Hernández, 2003). Furthermore, religious institutions allow Latino/a youths to have access to other adults, who often have their interests at heart, and who may provide advice to them. These types of factors often mean Latino/a youths who are involved in some kind of religious organization are more likely to demonstrate overall academic success in the form of higher grades and fewer absences (Sikkinik & Hernández, 2003).

Another type of communal social support mentioned in the research, and found within the Latino/a community, concerns organizations interested specifically in the roles and rights of Latino/as (Gregory, 2003; Schwartz, 2001). These include organizations like LULAC (League of United Latin American Citizens), National Chicano Health Organization, and La Raza Unida Party. These organizations create programs that seek to help Latino/a students become more successful both in their personal or professional lives, such as through after-school programs in communities with a high Latino/a presence (Gregory, 2003). Students who have such communal social support are less likely to become involved in gangs, to use drugs, and to become teenage parents, all factors that have been shown to effect negatively overall academic achievement (Gregory, 2003; Romo, 1998; Schwartz, 2001). Examples such as those above illustrate how strong communal support may help Latino/a students’ academic success. One way to measure the degree to which students feel they have such communal social support, may come in the extent by which they feel they can identify with the larger Latino/a community and can accept, or at least understand, their cultural values and customs (Gillock & Reyes, 1999; Office of Educational Research and Improvement, 1997).

Familial social support has to do with the messages of approval and the degree of support Latino/a students feel they gain from members of their own families (Delgado-Gaitan, 2004; Gillock & Reyes, 1999). The literature reveals support within many traditional Latino/a families is a highly reciprocal relationship in which the welfare of the family often towers over and supersedes personal aspirations for all members of the family, including the children (Delgado-Gaitan, 2004; Schmitz, 2006). This idea can be found in Latino/a youths’ perceptions of familial support. Research indicates Latino/a children are more apt to place the values of their parents in high regard, often over their own personal aspirations (Cooper, Denner, & Lopez, 1999; Delgado-Gaitan, 2004; Jones & Velez, 1997). In studies, Latino/a adolescents have been shown to respect and follow the opinions of their parents to a higher degree than either their Anglo or African American peers (Delgado-Gaitan, 2004; Jones & Velez, 1997). This general finding suggests if family members think formal school-based education is important, children are more likely to think it is important, as well. Additionally, they are more likely to reflect their parent’s attitudes concerning things like occupational goals and spiritual beliefs (Delgado-Gaitan, 2004). For instance, a recent survey of high school sophomore students who expressed interest in college found nearly three-quarters indicated their parents were the most important or a very important factor in their decision to attend college (Gillock & Reyes, 1999).
There are various definitions of acculturation; however, there do seem to be overarching themes upon which most scholars agree. Thus, the best way to explain acculturation is as a process of change persons of one culture must undergo in order to modify their way of life as a result of contact with another culture (Ibañez, Kupermine, Jurkovic, & Perilla, 2004; López, Ehly, & García-Vázquez, 2002; Martinez, DeGarmo, & Eddy, 2004). This process is understood to be bidimensional, in which individuals adjust at varying levels and varying degrees to the cultures through which they are exposed (Beery, 2003). The process of acculturation may occur over an extended period of time and it can take longer than one generation to occur. For instance, even if a child of Mexican identity is born and raised in the United States, she or he may still manifest a large number of cultural characteristics typically viewed as Mexican if her or his parents experience a low level of acculturation (Ponterotto, Casas, Suzuki, & Alexander, 2000).

One of the most obvious ways primary differences in culture make themselves felt is through the linguistic background of the student. As research reveals, a positive relationship exists between the student’s familiarity with language and her or his academic performance in mathematics (Martínez et al., 2004; Ponterotto et al., 2000). Namely, the more familiarity the student has with the English language, the more likely she or he is to experience higher levels of academic success (Martínez et al., 2004; Ponterotto et al., 2000). The issue of language can affect the educational lives of Latino/as in startling ways. Students may find they are being placed into classes that ignore their language needs for educational ones or vice-versa. In truth, said students may appear to be segregated from the rest of the student population as a result of their English language abilities (Sadker, Sadker, & Zittleman, 2007). They may feel ostracized and that they are not a viable part of the schooling process. Latino/a students who are unable to gain a mastery over the English language often may also become frustrated with their educational experiences and simply give up (Lichter & Landale, 1995; Schwartz, 2001). The views of the dominant society have a role in what is occurring, as well. Many areas within the United States have begun passing “English-only laws.” If these types of laws are fully implemented in the schools, it could mean students who are already having a difficult time gaining access to education could be further denied their cultural rights (Ochoa, 2004; Ponterotto et al., 2000).

At another level, the cultural differences seem to relate to the outcomes that occur as a result of the primary differences. As Ibañez et al. (2004) point out, this phenomenon could make itself manifest in the opposition by some students of color, in general, to the dominant, majority, middle-class schools that exist in society. Latino/a students also seem to demonstrate this opposition at times (Ibañez et al., 2004). Students may feel they do not have a stake in the educational process if it does not seem to reflect any of their dominant cultural characteristics (Ponterotto et al., 2000). These secondary cultural differences can also make themselves evident in other ways. For example, students who have English language difficulties, and are summarily ostracized, may feel they are not fully integrated, or supported within the school. López et al. (2002) found students who were highly integrated into the school, who felt as if they were a part of it, viewed education positively, and who were able to take advantage of resources afforded to them “were found to have higher academic success” (p. 254). Indeed, students who feel as if they are an active part of the school are more likely to become involved in activities and have more of a vested interest in their own education. Likewise, those students who do not feel like they are actively involved in the schooling process are more likely to report feeling they are castoffs and that others will not care or notice if they are unsuccessful in their schooling (Ochoa, 2004; Rumberger & Larson, 1998). These types of facts may explain why students who are English Language Learners often have the lowest rate of school participation and also have one of the highest dropout rates (Ochoa, 2004).
THE PRESENT STUDY

The present study aims to advance our understanding of the relationship between various levels of acculturation, social support, and mathematics achievement among Latino/a freshmen and sophomore high school students. The specific question addressed was: to what degree do acculturation status and perceived levels of social support among Latino/a students affect their mathematics achievement? It was hypothesized that: (1) Latino/a students with higher rates of perceived social support would demonstrate higher rates of mathematics achievement; (2) Latino/a students who endorse higher levels of acculturation would demonstrate higher rates of mathematics achievement.

METHODS

Participants

Participants in this study consisted of 77 Latino/a 9th and 10th grade students, ages 14-18, enrolled in algebra and geometry classes in a Title I high school located in the Southwestern United States. The students came from four different mathematics classes taught by four different teachers. The students were chosen a variety of backgrounds in order to get a representative sample that reflects the larger population found within the school itself. The participant sample was comprised of 53% female (n = 41) and 47% male (n = 36) students. All of the participants self-identified themselves as “Hispanic American.” Of the student participants, 32% were born in Mexico (n = 24) and 68% were born in the United States (n = 52). With regards to the students who were born in the United States, 61% were identified as 2nd generation, with either parent being born in Mexico (n = 47), 3% were classified as 3rd generation, with the participant being born in the United States, both parents being born in the United States and all grandparents born in Mexico (n = 2), and 39% being labeled as 4th generation with both the participant and their parents being born in the United States and at least one grandparent being born in Mexico (n = 3). Of the students participating, 25% (n = 19) had a mathematics course grade of “A,” 43% (n = 33) had a course grade of “B,” 21% (n = 16) had a course grade of “C,” 9% (n = 7) had a course grade of “D,” and 2% (n = 2) had a course grade of “F.” Table 1 summarizes the mathematics achievement of the students involved in the study.

TABLE 1. Mathematics Achievement of Study Participants

<table>
<thead>
<tr>
<th>Course Grade</th>
<th>n</th>
<th>% of Students</th>
<th># of Female</th>
<th># of Male</th>
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<th>Spanish</th>
<th>Bilingual</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19</td>
<td>25</td>
<td>12</td>
<td>7</td>
<td>7</td>
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<td>8</td>
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<tr>
<td>B</td>
<td>33</td>
<td>43</td>
<td>24</td>
<td>9</td>
<td>9</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>C</td>
<td>16</td>
<td>21</td>
<td>5</td>
<td>11</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>D</td>
<td>7</td>
<td>9</td>
<td>0</td>
<td>7</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>F</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

Mean Course Grade 82.73

Note: A = 90-100%; B = 80-89%; C = 75-79%; D = 74-70%; F = less than 69%

Measures

Mathematics achievement. Mathematics achievement was measured using classroom-based measures, such as homework and exams. The student’s classroom teacher provided this information to the examiner. Students who received grades of “C” or better (75% or greater) were considered academically successful in the area of mathematics and those who demonstrated grades below a “C” were considered academically unsuccessful in the area of mathematics, reflecting the level of proficiency the school requires to demonstrate mastery, and therefore, academic success.
Perceived Social Support: The Child and Adolescent Social Support Scale (CASSS) (Malecki, Demaray, & Elliot, 2004) was administered to assess perceived social support on the part of the participants from parents, teachers, classmates, close friends, and other people in the school. The CASSS consists of 60 items that are each rated twice. Items are first rated on how often the type of social support (i.e., support from parents, teachers, close friends, or other people in the school) occurs (frequency) using a Likert-type scale ranging from 1 (never) to 6 (always). The items are then rated on the importance of each type of social support using a scale ranging from 1 (not important) to 3 (very important). The CASSS has demonstrated strong reliability and validity (Demaray, 2003; Demaray & Malecki, 2003).

Acculturation: Student acculturation was measured using the Acculturation Rating Scale for Mexican Americans Version 2 (ARSMA-II) (Cuéllar, Arnold, & Maldonado, 1995). This instrument contains 48-items and it is purported to measure information on a Likert-type scale with 1 being (not at all) and 5 being (extremely/almost always). There are two scales associated with the measure. The first scale, which is comprised of 30 items, looks at the student’s identity orientation. The second scale, composed of 18 items, looks at the marginality experienced by the student. The psychometric properties demonstrate acceptable reliability and validity (Cuéllar et al., 1995).

Procedures

All of the students who had provided a completed assent form and a signed parental informed consent form were then given the CASSS and the ARSMA-II as a whole group during their regularly scheduled math classes. The CASSS and ARSMA-II were both given on the same day. This procedure was followed to prevent the issue of students completing one test but being absent for the other. To aid accurate answering, participants were given cover sheets while they responded to the various questions on the scale. This strategy was meant to stop participants from, for instance, copying their answers from a neighbor so they could finish quickly and without much effort. This effort was also meant to prevent participants from feeling pressure to respond in the same manner as their neighbors and friends instead of responding honestly. Additionally, participants were not allowed to talk during the administration of study protocols.

In order to make sure all participants were able to engage fully in the study, all materials were provided in both English and Spanish.

Statistical Analyses

A hierarchical regression was used to examine the extent to which a participant’s level of acculturation affects her or his mathematics performance. Along with this process, when examining the social support subscales of frequency, a simultaneous multiple regression analysis was used in which the subscales of parent, teacher, classmate, school, and close school friend social support were studied simultaneously to see if these types of social support predict mathematics achievement.

RESULTS

Primary Analysis

A hierarchical regression analysis was conducted to examine the extent to which a student’s level of acculturation affected their mathematical achievement. The results of the ARMSA-II showed that 47% of the total sample of students scored at level I (“very Mexican-oriented”; n = 36), 29% fell into level 2 (“Mexican-oriented” to “approximately balanced bicultural”; n = 22), 19% reflected level 3 (“slightly Anglo-oriented bicultural”; n = 15), 4% were classified as level 4 (“strongly Anglo-oriented”; n = 3), and 1% were identified as level 5 (“very assimilated, Anglicized”; n = 1). The acculturation types of the students in the sample were as follows: 43% were classified as traditional (n = 33), 12% were identified as integrated bicultural low (n = 9), 36% were integrated bicultural high (n = 28), and 3% were classified as assimilated (n = 2). Of the sample, 6% did not fall into any category (n = 5). Table 2 illustrates the participants’ levels of acculturation in reference to their mathematics achievement.

A simultaneous multiple regression analysis was conducted to examine the association between so-
cial support predict and mathematics achievement. The results of the CASSS show the average parental support recorded by the participants was a score of 4 *(most of the time)*, the average teacher support reported was 4 *(most of the time)*, the average classmate support demonstrated by the participants stood at 4 *(most of the time)*, the average support of close friends was reported as 5 *(almost always)*, and the average support of generalized people within the school was reflected in the protocol as 3 *(some of the time)*.

It should be noted the level of importance was not observed in the study since the focus of the research was whether student participants felt they had social support within their lives and how this support affected their mathematics achievement. Both the average perceived support of students in relation to mathematics achievement and the average perceived support of all students are summarized in Table 3.

The set of predictors studied was Anglo Orientation, Mexican Orientation, and social support. These were correlated to the students’ mathematics achievement (semester course grade); however, the only predictor that demonstrated any significance was social support.

**TABLE 2. Level of Acculturation and Mathematics Achievement**

<table>
<thead>
<tr>
<th>Level</th>
<th>A course grade</th>
<th>B course grade</th>
<th>C course grade</th>
<th>D course grade</th>
<th>F course grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>36 (47)</td>
<td>11 (31)</td>
<td>13 (36)</td>
<td>3 (8)</td>
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<td>2</td>
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<td>4 (18)</td>
<td>11 (50)</td>
<td>2 (9)</td>
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<tr>
<td>3</td>
<td>15 (19)</td>
<td>3 (20)</td>
<td>7 (46)</td>
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<td>1 (7)</td>
</tr>
<tr>
<td>4</td>
<td>3 (4)</td>
<td>1 (33)</td>
<td>1 (33)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>1 (1)</td>
<td>0</td>
<td>1 (100)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Post-hoc Analysis**

The post-hoc analysis examined the individual support scales within the CASSS scales (i.e., parent, teacher, classmate, close friend, and systemic school support). In the ARSMA, the Anglo Orientation and Mexican Orientation were looked at separately. When looking at the Anglo Orientation, the respondent profiles produced a correlation of -.006 while a correlation of .128 emerged from the participant response profiles related to the Mexican Orientation; the significance in each case stood at .962 and .266 respectively. The participant response profiles also produced significant acculturation levels of .855 for the Anglo Orientation and -.713 for the Mexican Orientation.

When looking at the responses on the CASSS correlations with social support were as follows: parent support (.214), teacher support (.433), support of classmates (.126), close friends support (.225), school support (.204) and the overall social support (.324).

**DISCUSSION**

The high Anglo Orientation and Mexican Orientation scores on the ARSMA indicate the student participants were often heavily acculturated in either the Mexican or Anglo system. Very few participants appeared to be bicultural (i.e., reflecting aspects of both cultures). For instance, participants would say they enjoyed reading in Spanish or in English, with very few saying they liked reading in both languages. Many of the participants reflected a high level of acculturation toward the Mexican system (only two students identifying themselves as assimilated into the American system). As indicated above, nearly 1/3 of the students involved in the study were born in Mexico. Also, of those students who were born in the United States, more than 1/2 identified as having at least one parent who had been born in Mexico. As a result, many of the study participants may have been acculturated toward the Mexican system.

In reference to mathematics achievement, it appears the participants’ levels of acculturation were not associated with their semester course grades. This finding may due to the observation that many of the cooperating teachers seem to be readily able to understand and reflect the dominant aspects of both
cultures within the classroom. As the literature suggests, when students who are not of the dominant culture have teachers who can both speak their home language and reference their home culture, students experience more academic success (Adam, 2003; Black, 1998; Cooper et al., 1999; Gándara et al., 1998; Ibañez, 2004; López et al., 2002; Martinez & DeGarmo, 2004; Ochoa, 2004; Office of Educational Research and Improvement, 1997; Rolón 2003; Rumberger & Larson, 1998; Schwartz, 2001). The vast majority of the teachers within the mathematics department (i.e., 9 out of 10) were Latino/a whom had grown up in the local area. Thus, in this study, language and culture do not seem to have a large effect on a student’s ability to succeed academically, with high Mexican-oriented students having the same chance of academic success as other class members.

Teacher and friend support was significantly correlated in a positive direction with the student’s semester course grade; however, of the two, teacher support seems to be the most dominant predictor, accounting for 20% of the variance within the study. Indeed, teacher social support seems to be such a strong predictor that it influences the others predictors on the CASSS. Thus, those students who feel a great deal of teacher support demonstrated more positive feelings toward the schooling process. As suggested in the literature, these positive feelings may result in higher mathematics achievement since the school feels like a welcoming place where the student experiences success (Apple, 2004; Gándara et al., 1998; Martinez, 2004; Sadker et al., 2007; Schmitz, 2006).

The literature also suggests those students who experience little academic success within the school setting are less likely to feel supported (Delgado-Gaitan, 2004). Students may not feel ownership in the schooling process, viewing it as a foreign place where they have neither garnered happy memories and where they may often feel they do not belong, causing them to be less vested and feel less supported (Adam, 2003; Apple, 2004; Gándara et al., 1998; Gillock, 1999; Martinez, 2004; Sadker et al., 2007 Schmitz, 2006). This phenomenon appears to be reflected in the results of the current study, as participants who experienced academic success (grades of “A” or “B”) reported support scales of 5 (almost always) in more than half of the areas measured, however, participants who were the least successful (grades of “F”) endorsed average support scales of 3 (some of the time) in three out of five scales. When describing support from the entire school organization, these participants reported an average score of 2 (almost never), suggesting they viewed school as a place that provided little support. Indeed, the only scale where they reported a 4 (most of the time) was when looking at support provided by close friends.

**TABLE 3.** *Perceived Social Support and Mathematics Achievement*

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
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<tr>
<td>B</td>
<td>5</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
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<tr>
<td>D</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>F</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>All Students</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

5 = almost always, 4 = most of the time, 3 = some of the time
**Potential Implications Considering Relevant Scholarship**

Considering the findings of this study and related scholarship, strategies to promote student social support may help to facilitate academic achievement. Previous research reports that those who are placed into programs in which an attempt is made to enlist the three major areas of support (i.e., home, school, and community) show greater academic success, including the field of mathematics (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). This increased opportunity for success is evident in programs like AVID (Advancement via Individual Determination) and the Los Angeles-area based ALAS (Achievement for Latino/as through Academic Success), which have shown notable results in terms of raising the levels of mathematics achievement for Latino/a students (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). In the ALAS program, the school, student, and family are counseled and educated on ways to best help the student gain ownership over her or his education and to manifest behaviors that will facilitate academic success in areas such as reading, science, and mathematics (Gándara et al., 1998 & Office of Educational Research and Improvement, 1997). In one study, at the end of their ninth grade year, 75% of ALAS students were on their way to graduating within a four-year period compared to 44% of non-ALAS students. By the end of their ninth grade year, ALAS students were also half as likely to have failed a class than their non-ALAS peers, who were, in turn, four times as likely to be off-track in their graduation credits (Gándara et al., 1998).

Similar results can also be found with the AVID program (Gándara et al., 1998; Office of Educational Research and Improvement, 1997). In AVID, students who are from low-income backgrounds and who come from a minority ethnic group are transitioned to high-track classes in such subjects as English, social studies, science, and mathematics. Through the program, students are put in contact with colleges and universities (by way of guest speakers and field trips) and educated in academic success techniques. Students are assigned mentors who work as liaisons between the school and the home and also work to create connections for the student in the post-secondary setting (Gándara et al., 1998). As with ALAS, Latino/a students participating in the AVID program also showed high levels of mathematics achievement in the face of such support. AVID students were more than twice as likely as those who were not involved in the program to attend a two- or four-year university and they show college graduation patterns closer to students from higher-income families. In the end, it would appear programs such as ALAS and AVID, which work to bring aspects of home, community, and school support together in a meaningful way, create more academic success in the lives of Latino/a students, including success in the field of mathematics (Gándara et al., 1998; Office of Educational Research and Improvement, 1997).

**Limitations of the Study**

The sample is unique for several reasons. Rather than representing various Latin American countries, 100% of the participants in the study reported as identifying as Mexican or Mexican American. Along with this observation, given the fact the school from which the sample was drawn is from a large metropolitan area situated along the border between the U.S. and Mexico, the particular participants included in the study may be more exposed to their Mexican heritage on an ongoing basis than students from other Latino/a backgrounds. In addition, the vast majority of the cooperating teachers (i.e., 9 out of 10) identified as being of Mexican origins themselves. The uniqueness of this sample creates a limitation in that it is hard to generalize the results to a broader population.

Another limitation concerning the current research concerns the focus on mathematics achievement exclusively. In order to measure truly mathematics achievement, a broader study involving student achievement across a variety of disciplines may be more appropriate. There may have been participants in the study who did not experience academic success in mathematics but experienced success in other subject areas and vice-versa.

**Future Research**

Future studies may focus on students who live away from the border as well as those who live directly on the border. One could explore parts of the country where large percentages of students of Latino/a backgrounds can be found, such as in the Chicago-area, southern California, and major cities.
along the east coast of the United States. Also, future research could focus on Latino/a students from a variety of backgrounds as well as students of other ethnic backgrounds (e.g., African American, Asian, White) and the extent to which they differ across race/ethnicity.

Implications for School Psychologists and School Psychology Practice

One major implication relates to the importance of social support within the lives of students. As the results suggest, those participants who did not feel supported in their lives were also those who did not perform well within the classroom. School psychologists may advocate strategies to help students feel they are supported within the academic setting. In daily practice, this support may come in the form of consultation with teachers and administrators to show them strategies to help students better perceive school personnel are looking out for their best interests. It may also be important to consult with parents to help them develop strategies that provide the same type of support within the home setting. This support may also come in the form of in-service presentations, which can help school personnel to see the importance of perceived social support within the lives of students.

The study may also portend the importance of cultural competence within the academic setting. The results of the study demonstrated that participants who had a strongly Mexican orientation were just as likely to be successful as those who did not. The extant literature supports the notion that cultural competence within the classroom has positive affects on student’s academic success while ignoring a student’s cultural heritage has a negative impact upon the student (Adam, 2003; Black, 1998; Cooper et al., 1999; Gándara et al., 1998; Ibañez, 2004; López et al., 2002; Martinez & DeGarmo, 2004; Ochoa, 2004; Office of Educational Research and Improvement, 1997; Rolón 2003; Rumberger & Larson, 1998; Schwartz, 2001). School psychologists may serve as agents of change by bringing the results of research into the schools and actively incorporating them into practice. By helping to promote knowledge, awareness, and of cultural competence among teachers, administrators, and other educational service providers school psychologists may be playing an important role in helping Latino/a students experience academic success.

REFERENCES

Acculturation, Social Support, and Mathematics


Preliminary Development of the Kindergarten Student Entrance Profile

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The transition into kindergarten is important because it sets the foundation for future academic achievement. Identifying a child’s readiness at school entry and intervening appropriately facilitates positive academic outcomes. The Kindergarten Student Entrance Profile (KSEP) is a school district developed universal screening measure used to assess children’s readiness for school. This action research study reports on the psychometric proprieties of the KSEP, including its prediction of academic achievement through grade 2. Results suggest promising psychometric characteristics. Discussion focuses on uses of the KSEP for school readiness evaluations and future research.

With growing recognition of the importance of early education, interest in the topic of school readiness has increased among researchers, policy makers, and educators. School readiness is no longer thought of as merely a chronological benchmark, but rather a composite of cognitive, social-emotional, behavioral, and physical elements that are associated with successful transition to elementary school (Pianta, 2007; Snow, 2006), paired with how the school receives the children (Carlton & Winsler, 1999; Pianta, 2007). Literature on early education and school readiness illustrates that successful transition from preschool to kindergarten predicts later academic success (Gormley, 2005; Graziano, Reavis, Keane, & Calkins, 2007; Lonigan 2006). Identifying a student’s readiness for school is one way to identify at-risk students and provide interventions to promote future academic achievement (Kagan & Kauerz, 2007).

This interest to identify children’s preparation for kindergarten has provoked the development of school readiness assessments (Meisels, 2007). Using commercially developed standardized assessments, however, can be costly in time of administration and on limited district financial resources. To compensate for these expenses, some districts have created in-house measures to evaluate the developmental readiness of incoming students. When this approach is taken, it is important to assess the psychometric properties of such district-implemented procedures (Bagnato, 2007). This article describes and examines a district-designed school readiness universal screening measure, the Kindergarten Student Entrance Profile (KSEP). Following a review of the importance of school readiness, this study examines the KSEP’s psychometric properties and discusses its viability as an assessment measure.

Why is School Readiness Important?

One of the primary goals of the National Education Goals Panel is that all children should start school ready to learn (NEGP, 1990). The concept of school readiness is one of great importance because...
the transition into kindergarten lays the foundation for future academic outcomes. Early school experiences influence achievement trajectories because academic success is known to stabilize even as early as grade 1 (Entwisle & Hayduk, 1988; Torgesen, & Burgess, 1998). Students with low academic achievement early in school are at a greater risk for school difficulties and have higher dropout rates (Simner & Barnes, 1991). Preparing students in all areas of school readiness can contribute to positive academic outcomes.

Cognitive readiness is significantly related to later academic performance. Torgensen and Burgess (1998) found that poor readers at the end of grade 1 face difficulties catching up to their more fluent reading peers. Early literacy skills predict later reading and writing fluency, and more extensive language development (Bowman, Donovan, & Burns, 2000; Lonigan, 2006). Children who struggle with early reading tasks develop negative attitudes toward reading and tend to avoid it as an unpleasant task, which contributes to a negative cycle of less time spent in reading activities and further decreasing reading skills (Lonigan, 2006).

In addition to cognitive and academic skill development, social-emotional development plays a significant role in shaping children’s early school experiences. Ladd, Herald, and Kochel (2006) identified social-emotional characteristics at school entry to be more influential than any other school readiness element at predicting school adjustment and academic progress. Kindergarten teachers also rated social-emotional development as more important than cognitive abilities at school entry (Lewit & Baker, 1995). Children’s ability to regulate emotions improves their ability to successfully navigate the transition to kindergarten, and acquire essential academic information (Graziano et al., 2007). Graziano and colleagues (2007) found that children’s emotional regulation, as reported by parents, positively predicted academic success including teacher rated productivity in the classroom setting, and achievement on standardized assessments of early literacy and math skills.

Student behavior in preschool is another important aspect of school readiness. Children who exhibit positive behaviors in preschool are seen as more sociable in kindergarten, whereas children who exhibit aggressive behaviors are more likely to be rejected by peers and viewed as hostile and aggressive by teachers (Ladd & Price, 1987). Additionally, children with better emotional regulation tend to have positive relationships with teachers (Ladd & Price, 1987).

Children’s physical well-being also influences their school readiness (Pascoe, Shaikh, Forbis & Etzel, 2007). Physical health, nutrition, physical activity, strength, stamina, and motor skill development all form the foundation for future development and learning that is essential for subsequent academic success (Scott-Little, Kagan, & Frelow, 2006).

Helping children to acquire competence across all school readiness domains is important because these domains are interrelated. Physical dexterity influences a children’s cognitive development, just as cognition plays a role in their social understandings and motor competence. Children who have a broad base of experiences tend to acquire complex skills more rapidly (Bowman, Donovan, & Burns, 2000). In addition, preschool experience predicts children’s academic performance during the transition to kindergarten. Children who have positive preschool experiences receive higher ratings from teachers for positive academic behavior and readiness than children with negative or no preschool experiences (Ladd, 1990). Children with positive pre-kindergarten experiences also tend to develop positive attitudes toward school and the school environment.

Assessing School Readiness

Increased recognition of the importance of early intervention has led to advances in the assessment of young children’s school readiness. Early identification of school readiness strengths and weaknesses may enhance the development of all children when linked with early interventions and supports for those children in need. However, presently there is no universally accepted early screening process. As discussed previously, school readiness incorporates several elements that make it difficult to define, and consequently, equally difficult to assess (Meisels, 2007; Snow, 2006). Preschool-aged children can be slow to build rapport, quick to frustrate and fatigue, unfamiliar with test-taking etiquette, and pres-
ent several other characteristics that make formal assessment a challenge (Bracken, 2000; Thurlow & Gilman, 1999). In addition, school readiness is a fluid construct that evolves as a child develops and encounters new experiences (Pianta, 2007).

Recent approaches to assessing school readiness have shifted the focus away from cognitive assessment to include broader ecological factors that incorporate multifaceted elements of school readiness. In addition to taking an ecological perspective, these approaches use both direct observations and assessments to evaluate children’s competence to perform expected tasks at a developmentally appropriate level within a variety of settings (Bagnato, 2007).

The challenge facing school districts, of course, is how to accomplish this in a cost-effective, yet meaningful manner. Consequently, many districts develop local school readiness screening measures to accomplish these goals; however, these district-developed instruments are rarely subjected to research and consequently their psychometric properties are usually unknown. Screening is seen as a cost-effective method because it is a relatively brief and inexpensive way to assess a large numbers of children (Thurlow & Gilman, 1999). Nonetheless, it is important to hold these district-developed measures to the same psychometric standards as commercially developed measures of school readiness.

**Purpose of This Study**

The current investigation evaluates the Kindergarten Student Entrance Profile (KSEP), a district-developed school readiness assessment created to provide a universal measure of school readiness of incoming kindergarten students. This study addressed the following research questions: (a) What is the factor structure of the KSEP? (b) Does the KSEP predict students’ subsequent academic performance? and (c) Can the KSEP be used as a broad indicator of children’s readiness for school by informing educators about the level of competence and mastery needed to increase the odds of later academic success?

**METHOD**

**Participants**

Beginning in 2004, all kindergarten students entering a medium-sized school district in central California were administered the KSEP as part of general education practices. School enrollment questionnaires identified the students to be primarily Hispanic (88%) and of low socioeconomic backgrounds, with 79% of the students receiving free/reduced priced lunch services (Kidsdata.org). Students entering the district in the 2005-06 academic year with complete KSEP data were included as participants in the current study (N = 671). Of these students, 48% were males, 91% were Hispanic, 20% were migrant students, 64% were English Language Learners, and 5% were receiving Special Education services.

**Measures**

*Kindergarten Student Entrance Profile.* The Kindergarten Student Entrance Profile (KSEP) is a universal screening measure used to assess the physical, social-emotional, and cognitive elements of students’ school readiness (see Appendix A for a listing of the readiness content areas included and contact information to obtain KSEP materials). The KSEP involves teachers (a) being trained to become familiar with the 16 content areas and their associated rating rubrics, (b) observing the children in the school environment over a three-week period, and (c) providing a final assessment of the child’s behavior/performance. Early education professionals (preschool, Head Start, and kindergarten teachers) completed the KSEP.

The KSEP includes 16 items related to the social-emotional elements and school ready knowledge identified in the school readiness literature. Each item is linked with a 4-category rating rubric: 1 = “not yet,” 2 = ‘emerging,” 3 = “almost mastered,” and 4 = “mastered.” The scoring rubric accompanying the KSEP describes how to rate each item and how each rating option would be observed in a student. Under the rationale that full readiness for school equates to mastery, KSEP total scores are calculated by summing the total number of items a child has “mastered” (a rating of 4), thus producing a total score ranging between 0 and 16.
In addition to the 16 items, the KSEP includes response areas to gather information on student’s home language, health issues (e.g., glasses, medications, allergies), and special concerns the teacher may have (e.g., attendance). Teachers also report if the child has an Individualized Education Plan (IEP) and whether the IEP is active or inactive, if the child’s speech is articulate, if the child usually appears rested and nourished, and if the child is independent or needs assistance in toileting and self-help. In the context of this study, during the three-week observation period children could respond to rater prompts in either English or Spanish.

**Houghton-Mifflin Reading Lions**. The district uses the Houghton-Mifflin Reading Lions curriculum at all elementary grade levels to teach reading/language arts. Each grade level reading program includes as series of themes, and each theme includes a set of assessments that are used to evaluate students’ reading skills. In grades 1 and 2, curriculum-based assessments evaluate students’ reading skill development in the area of reading fluency, which is scored as the average number of words read correctly per minute (WPM) across two fluency probes.

**Standardized Testing and Reporting**. The Standardized Testing and Reporting (STAR) series of California Standards Tests is administered annually to California public school students beginning in the spring of grade 2. STAR assessments include English-Language Arts and Mathematics components and all items are multiple choice. The standardized tests were developed specifically to assess students’ performance on California’s Academic Content Standards and were adopted by the California State Board of Education to specify what all California children are expected to know and be able to do in each grade or course (California Department of Education, 2008).

**Procedure**

Data collected for this study included results from the KSEP school readiness screener, which was administered to all participating students upon kindergarten entry. In addition, reading skills data were collected periodically throughout each academic year in alignment with the Reading Lions curriculum. In this study, the reading fluency scores for the first (fall), mid-year (winter), and last (spring) themes in grades 1 and 2 were used. Finally, STAR reading data were collected from all participating 2005-2006 cohort students in May 2008—at the end of grade 2. All data were collected by district personnel as part of general education practices and shared with researchers as part of a collaborative effort to better understand the psychometric capabilities of the district-developed KSEP, and to better determine the readiness of the district’s students at school entry.

**RESULTS**

**Psychometric Functioning of the KSEP**

**KSEP dimensionality**. KSEP items rated as 4 (mastered) were recoded as 1 and otherwise items were coded as 0. This recoding was done for two primary reasons. First, the level 1 rating “not yet” was used only for the few children who had developmental delays. Second, although KSEP uses a 4-point rubric to provide teachers with a range of rating options, its primary purpose is to evaluate “full readiness” for school. Hence, the number of items that teachers rate at the mastered level is the primary index of interest. In addition, for scales with constricted ranges, it is appropriate to examine construct validity using full-information factor analyses (principal components procedure using SAS) with varimax rotation. This analysis method was selected because of its suitability for binary data (Bock, Gibbons, & Muraki, 1988; Embretson & Reise, 2000). Scale dimensionality was evaluated for one-, two-, and three-factor solutions. Based on the results from these analyses, the one-factor solution was determined to be the best fit for these data because all items had substantial loadings (.48–.88) on the first factor with the exception of Item 16 (.19; number shapes, see Appendix). Six items double loaded on both factors in the two-factor solution, and the first factor (eigenvalue = 9.23) accounted for six times more of the explained variance than the second factor (eigenvalue = 1.50). Item 16 was retained in the scale due to its relevance to school-readiness knowledge. This analysis supports the use of the KSEP as a unidimensional measure using the total number of items rated at the mastery level (0-16) as an index of school readiness.
Internal consistency. Cronbach’s Alpha computed with the 2005-06 kindergarten cohort KSEP data found that the internal consistency was .91 (this was computed using the full one to four range for each of the KSEP items).

Predictive Validity of the KSEP

KSEP and reading fluency. A one-way, repeated-measure ANOVA was conducted to examine mean differences in reading fluency scores across grades 1 and 2 (Green & Salkind, 2005). The within-subjects factor was identified as time, defined by reading fluency for fall, winter, and spring in grades 1 and 2. The dependent variable was identified as academic achievement measured by Words per Minute (WPM) in reading fluency. The between-subjects factor was KSEP mastery level group as identified by kindergarten KSEP scores. For this analysis, the total KSEP score was used to form the following groups: 0, 1-3, 4-6, 7-9, 10-12, 13-15, and 16 to allow enough numbers per analysis cell. KSEP scores were clustered instead of using the continuous KSEP metric score as a way to provide additional meaning to total scores, the manner in which practitioners use it. WPM at each time point by KSEP group is presented in Table 1.

TABLE 1: Average Reading Fluency (WPM) By Number of KSEP Items With the Full Mastery Level Rating at Kindergarten Entrance.

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Number of KSEP Items Mastered</th>
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<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Grade 1 Fall</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>18</td>
</tr>
<tr>
<td>(SD)</td>
<td>(11)</td>
</tr>
<tr>
<td>Grade 1 Winter</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>27</td>
</tr>
<tr>
<td>(SD)</td>
<td>(15)</td>
</tr>
<tr>
<td>Grade 1 Spring</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>48</td>
</tr>
<tr>
<td>(SD)</td>
<td>(23)</td>
</tr>
<tr>
<td>Grade 2 Fall</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>44</td>
</tr>
<tr>
<td>(SD)</td>
<td>(23)</td>
</tr>
<tr>
<td>Grade 2 Winter</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>65</td>
</tr>
<tr>
<td>Grade 2 Spring</td>
<td></td>
</tr>
<tr>
<td>M (WPM)</td>
<td>79</td>
</tr>
</tbody>
</table>

*The norm for the average word per minute represents the 50th percentile report by Hasbrouck and Tindall (2006) for each benchmark referent time. NA = None available.

The results for the analyses using the Greenhouse-Geisser correction indicated a significant difference in reading scores across time points, $F(5, 3320) = 1733.79, p < .0001$. An interaction effect between reading scores and KSEP Mastery levels was also found indicating that the reading fluency scores across grades 1 and 2 differed by the KSEP mastery levels, $F(16.4, 3320) = 1.65, p < .048$. The nature of the interaction is displayed in Figure 1, which shows that reading fluency across all benchmark assessment periods was positively associated with the total number of KSEP items rated at the full mastery level at entry to Kindergarten. Further examination showed that, as expected, the mean WPM score increased for all groups across time.
Nearly three years later at the end of grade 2, the mean WPM by KSEP mastery groups were: (0 = 79, 1-3 = 81, 4-6 = 83, 7-9 = 87, 10-12 = 88, 13-15 = 99, 16 = 109). Post-hoc comparisons using Tukey’s index revealed that the WPM scores were similar among the students with 0-12 KSEP items mastered. Students at the upper end of the mastery range, students with total mastery score between 13-16, had a significantly higher WPM scores than other students.

**KSEP and STAR.** As an additional check of predicative validity, kindergarten entry KSEP scores were compared with grade 2 STAR Language Arts results (due to some missing data, the N for this analysis was 646). A one-way analysis of variance (ANOVA) was conducted to evaluate the relation between KSEP mastery level groups and STAR Language Arts scores at the end of grade 2. The ANOVA result, $F(6, 645) = 13.08, p < .001$, revealed a significant difference for STAR scores across KSEP mastery level groups. Further examination showed that the mean STAR score increased monotonically by the number of KSEP item rated as fully mastered (0 = 316.0 [Basic], 1-3 = 322.8 [Basic], 4-6 = 333.1 [Basic], 7-9
= 337.8 [Basic], 10-12 = 340.1 [Basic], 13-15 = 363.6 [Proficient], 16 = 381.5 [Proficient]). Post-hoc comparisons using Tukey’s index revealed that the STAR scores were similar among the students with 0-9 KSEP items mastered. In addition, students with 0 KSEP items mastered had significantly lower STAR scores than students with KSEP scores between 10-16. Finally, at the upper end of the mastery range, students at the 10-12 mastery level had a significantly lower STAR score than those students with a KSEP mastery score of 16.

**DISCUSSION**

School readiness is a critical indicator of future academic success (Pianta, 2007). Cognitive, social-emotional, behavioral, and physical competence are key components that influence a child’s readiness for school, laying the foundation for subsequent academic achievement. With increased awareness of the importance of school readiness, interest in its assessment has also increased. One way to evaluate school readiness is through a universal screening process.

The results of this study indicate that the number of KSEP scores rated at Kindergarten entry as fully mastered was moderately correlated with reading fluency across grades 1 and 2 and the English-Language Arts portion of the grade 2 STAR assessment. The only students to consistently exceed the fluency WPM national norm criterion and to achieve a “Proficient” score on the STAR English-Language Arts tests were the students who had a full mastery rating on 13 or more of the KSEP items. This result has several practical implications. First, only a small proportion (17%) of the students in this district had total KSEP mastery scores of 13 or higher, which reinforces the findings of other research substantiating the great need for early intervention in child development and preschool programs to bolster the competencies of all children, particularly those from less advantaged backgrounds (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). However, the results from this study generalize only to school districts with primarily Hispanic students and with a majority of English Language Learners.

Second, not all students who had low KSEP ratings were below the threshold benchmark scores of 89 WPM at the end of grade 2. School psychologists need to be mindful that there is substantial variance in fluency measures (e.g., using the WPM norms provided by Hasbrouck and Tindall [2006], the 50th percentile for spring grade 2 is 89 WPM, however, the standard deviation is 43) and some students who had low KSEP scores later performed well. There is a need for additional research to better understand the factors associated with these students who exhibit such academic resilience.

Third, the KSEP could be used as part of a multi-gating assessment process and, in such a context, the KSEP would serve as a first level universal screener of all entering kindergarten students, as implemented by the school district participating in the present study. For example, using the distribution found in this study, the participating district considers students as falling into three broad KSEP total mastery categories: 0-6 (high-risk), 7-12 (monitor), and 13-16 (enrich). The district then seeks to provide early prevention services for the high-risk students, to carefully track the academic progress of the students in the monitor group, and to provide enriching educational opportunities for the students with the highest KSEP scores. The district participating in this study examines the distribution of KSEP scores annually to verify that these broad decision thresholds continue to be meaningful. Whether these specific ranges generalize to other districts is a matter of empirical verification; hence, we recommend that all districts using the KSEP examine the distribution of local KSEP scores when implemented. In addition, prudence suggests that additional assessment and monitoring be considered for those students who receive low KSEP scores. For example, one school district using the KSEP provides second-level targeted assessment using the Behavioral and Emotional Screen System (Kamphaus & Reynolds, 2007), the Peabody Picture Vocabulary Test (Dunn & Dunn, 2007), the DIBELS Initial Sound Fluency and Letter Naming Fluency (DIBELS, 2009), and the Number Knowledge Test (Magnuson et al., 2004; Okamaoto & Case, 1996).

Fourth, whether it is the KSEP or any other school readiness instrument, there is a need to have a discussion to develop a shared consensus about what the term “school readiness” means in practical terms. Although any assessment of the social-emotional, numeracy, and literacy competencies of entering kin-
Garten students will produce a distribution of ratings, the interpretation of these ratings requires both an empirical analysis (e.g., mean and variance of scores obtained) and an aspirational analysis (e.g., defining the competencies that a school/community wants their children to acquire by the time they enter school). Based in part on the results of the present study, for example, the broader community in which the participating district is located acknowledged that the vast majority of entering kindergarteners had acquired some readiness competencies; however, many students had competency gaps and these gaps were associated with diminished academic performance as much as three years later. In this instance, the aspirational dialogue led to the observation that it may not be fruitful to think of a child as being a little ready or almost ready. If the goal is to increase the odds of academic success for all students, then children are either ready, or not, and the goal should be to help all children be fully ready for school.

Study Limitations

Although the results from the current study are promising and provide support for the continued use of the KSEP as a universal school readiness screener, there are limitations to consider regarding the population, the data, and the outcomes that may speak to future analyses. To begin, the district in this study has a fairly homogeneous population of primarily Hispanic, English Language Learners, and a high percentage of free/reduced price lunch participants, indicating a low socioeconomic demographic. To determine generalizability of findings to other demographics, a similar study could be conducted with students of other demographics or with a less homogeneous population.

Another identified limitation involves the inability to track student attendance over time. This is of importance considering the nature of students and families in the participating school district. At the present time, it is impossible to identify if missing student data (e.g., reading fluency probe information for fall, winter, or spring) is a result of students not being tested because they were absent or because they was not enrolled at the time. Lack of instructional opportunity resulting from chronic absenteeism or family mobility may affect academic performance, which could, in turn, alter the relationship between school readiness and academic achievement. It would be of interest to track student attendance in conjunction with the KSEP scores and academic indicators as a way to better understand the confounding influence of attendance.

Conclusion

Despite the limitations of the present study, the results of the preliminary psychometric analyses identified promising results. Although there is still much that could be done to better understand the nature of the KSEP and its relation with later academic achievement, the KSEP has promise because it provides teachers information about the nature of the readiness of students entering kindergarten when used as part of a greater kindergarten articulation effort. Research continues to highlight the importance of school readiness, and the KSEP provides one method of bringing awareness about student competencies at school entry to the forefront and to prompt early intervention for students in need.
REFERENCES

DIBELS. (2009). DIBELS data system website. Available, from https://dibels.uoregon.edu/

APPENDIX

Kindergarten Student Entrance Profile (KSEP) Rubric Content Areas

Rubric Rating Categories: 1 = Not Yet, 2 = Emerging, 3 = Almost Mastered, 4 = Mastered

1. Seeks adult help when appropriate.
2. Engages in cooperative play activities with peers.
3. Exhibits impulse control and self-regulation.
4. Stays with or repeats a task.
5. Separates appropriately from caregiver most days.
6. Is enthusiastic and curious in approaching new activities.
7. Follows rules when participating in routine activities.
8. Uses tools with increasing precision.
10. Demonstrates sense of his or her own body in relation to others.
11. Recognizes own name.
12. Writes own name.
14. Understands that numbers represent quantity.
15. Recognizes colors (circle all that apply: red, yellow, green, blue, orange, purple, brown, black, pink, white, gray).
16. Recognizes primary shapes (circle all that apply): square, circle, triangle, rectangle.

Note. Contact the authors for KSEP materials (see also this website: http://web.me.com/michaelfurlong).
Each item has associate rubrics for the four rating categories. An example of the full Mastery level description for the item, “Understands that numbers represent quantity (e.g., can get three apples out of the box; asks for two more crackers; can put out one napkin for each child)” is: Selects an accurate amount of items upon request up to at least 10 items. Example: Give me ten blocks.
Examining the Relationship Between Scores on the *Behavioral and Emotional Screening System* and Student Academic, Behavioral, and Engagement Outcomes: An Investigation of Concurrent Validity in Elementary School

Tyler L. Renshaw, Katie Eklund, Erin Dowdy, Shane R. Jimerson, Shelley R. Hart, James Earhart, Jr., and Camille N. Jones

University of California, Santa Barbara

Universal screening of emotional and behavioral problems among students warrants further consideration by school professionals. School-based universal screening may provide opportunities for early identification and intervention, ultimately preventing the development of more severe problems and promoting more positive outcomes in the future. The *Behavioral and Emotional Screening System* (BESS) is a contemporary screening instrument that may be used to identify risk for emotional and behavioral problems in students from preschool to high school. The purpose of the present study was to examine the concurrent validity of the BESS in elementary school settings. Specifically, this study examined the relation between BESS ratings and report-card outcomes (i.e., academic, behavioral, and engagement marks). The results supported the hypotheses that students’ risk-level classifications were significantly related to school-based outcome criteria and that school-based outcome criteria were deemed to be effective discriminators of students’ risk-level classification. Limitations, future directions for research, and implications for practice are discussed herein.

Universal screening for students’ emotional and behavioral problems is becoming an increasingly important activity for school systems to consider. Given that students with emotional and behavioral problems have poor school-related outcomes (Rones & Hoagwood, 2000), school-based screening may provide opportunities for early identification and intervention, ultimately preventing the development of more severe problems and promoting more positive outcomes in the future (Dowdy, Furlong, Eklund, Saeki, & Ritchey, in press). However, despite its ameliorative potential, only about 2% of schools in the United States implement universal screening efforts (Romer & McIntosh, 2005). Considering that schools often function as the de facto mental health care system for students and adolescents (Rones & Hoagwood), the school context affords a unique opportunity to systematically identify and provide support services for students with emotional and behavioral problems.

**Screening and School Psychology**

As data-based advocates for students, school psychologists can help identify students with emotional and behavioral risk by advocating for and implementing universal screening within their local schools. As they embark on such efforts, school psychologists should be cognizant of several key considerations (Dowdy et al., in press). First, universal screening should never be isolated – it should always be integrated within a larger student-support framework. Second, screening efforts should always be accompanied by well-defined objectives, including progress monitoring and service provision aims. Third, the pragmatics of screening implementation – who, when, and where – must be established through careful consideration and planning. And lastly, decisions must be made regarding which types of emotional and behavioral problems to screen for and, by extension, what screening instrument to use.

To date, there are several research-based instruments for school psychologists to utilize, though...

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not all are appropriate for every school context. Thus, when selecting a screening instrument, it is recommended that school psychologists first consider three key aspects (Glover & Albers, 2007): (a) the match between the screener, the objectives underlying screening, and the support system surrounding the screening process; (b) the technical adequacy – including sensitivity, specificity, positive and negative predictive values, and the psychometric properties of the instrument; and (c) the social validity (i.e., practicality and feasibility) of using the screener and managing the screening process amidst typical school duties and circumstances (e.g., Caldarella, Young, Richardson, Young, & Young, 2008). Mindful of the aforementioned considerations, as well as the nature of school psychological services, Dowdy et al. (in press) recommend four instruments as potentially useful for school-based universal screening: the Strengths and Difficulties Questionnaire (Goodman, 1997), Pediatric Symptom Checklist (Little, Murphy, Jellinek, Bishop, & Arnett, 1994), Systematic Screening for Behavior Disorders (Walker & Severson, 1992), and the Behavior Assessment System for Children-2 Behavioral and Emotional Screening System (BASC-2 BESS; Kamphaus & Reynolds, 2007).

**BASC-2 Behavioral and Emotional Screening System**

The BESS (Kamphaus & Reynolds, 2007) is the most recent and least-researched of the four recommended screening instruments. It is used to identify emotional and behavioral strengths and weaknesses in students from preschool to high school, assessing both internalizing and externalizing problems as well as school-related difficulties and adaptive skills. It has three parallel report forms – student, parent, and teacher – each composed of 25-30 items, designed to be completed in 5 minutes or less. The majority of items comprising the BESS stem from the item pool created during the development of the BASC-2 Teacher Rating Scales, Parent Rating Scales, and Self-Report of Personality (Reynolds & Kamphaus, 2004), with a range of one-to-eight new items added to each form. Similar to the other BASC-2 assessments, there are four response options for each item (i.e., never, sometimes, often, almost always); but dissimilar from the other assessments, the BESS only produces a single score. This score is conceptualized as the student’s risk-level classification for emotional and behavioral problems and can fall within the range of one of three categories: normal, elevated, or extremely elevated. Although the BESS has yet to garner substantial empirical support, its characteristics suggest it will be a promising tool for school psychological practice. However, to ensure its effectiveness and social validity, investigations must first demonstrate its school-based, criterion-related validity – requiring concurrent and predictive evidence.

To date, only two published studies have examined the criterion-related validity of the BESS in school settings. The first, conducted by Kamphaus et al. (2007), used 2-year longitudinal data from students in K-5 grades to evaluate the predictive validity of the screener against a variety of behavioral and educational outcomes. Overall, correlations indicated that the screener was particularly good at predicting future teacher ratings of conduct problems, atypicality, and social skills; future indices of school maladjustment, special education placement, and referral for prereferral intervention; and reading and mathematics grades and standardized test scores. The second study, conducted by DiStefano and Kamphaus (2007), used longitudinal data from preschool students to evaluate the concurrent and predictive validity of the screener with various diagnostic and educational outcomes in kindergarten. Overall, correlations indicated that BESS scores were significantly related to concurrent assessments of students’ behavioral symptoms and school readiness as well as predictive assessments of students’ disciplinary infractions; grades for reading, social development, and work habits; BASC-2 teacher-reported subscales for externalizing, internalizing, adaptability, school problems, and behavioral symptoms; and standardized testing scores for reading and math. Given the limited nature of this research to date, additional studies are warranted to further examine the validity of the BESS.
Present Study

The purpose of the present study was to further evaluate the concurrent validity of the BESS in elementary school settings. Specifically, the intent was to examine the relation between teachers’ BESS ratings with students’ recent report-card outcomes. Overall, there were three hypotheses in this study:

1. Students’ risk-level classifications – derived from screening results and grouped herein as either “normal” or “at-risk” – could be significantly correlated with their academic, engagement, and behavioral outcomes, as graded by their teachers.

2. There would be significant mean differences between “normal” and “at-risk” students’ academic, behavioral, and engagement outcomes, showing the relevance of the BESS to school-based indicators.

3. Academic, engagement, and behavioral report-card criterions would effectively discriminate between students identified as “normal” and “at-risk” via screening results.

METHODS

Participants

Participants were 26 third-graders and 22 fourth-graders from two elementary schools in a suburban community, within the same school district, located on California’s central coast. During the 2008-2009 school year, the total enrollment of one school was 286 students and the total enrollment of the other was 421 students. During that time, the demographic make up of both schools was comparable, with approximately 73% of students identifying as Hispanic or Latino, 18% as White, and 9% as other or multiple ethnic groups. Approximately 68% of the students were classified as socioeconomically disadvantaged, 40% as English language learners, and 14% as students with disabilities. Using class-wide data collection procedures, the demographics of the participants in the present study (N = 48) were representative of the student population in these schools.

Measures

BESS teacher form. The BESS teacher form (child/adolescent version) is completed by teachers of students in grades K-12 (Kamphaus & Reynolds, 2007). It consists of 25 items and is designed to be completed in 5 minutes or less per student. The screener is scored by summing the items to generate a total $T$-score, with lower scores (20-60) reflecting a “normal” level of risk, higher scores (61-70) reflecting an “elevated” level of risk, and still higher scores (71 or above) reflecting an “extremely elevated” level of risk. The BESS teacher form was developed and normed with a sample of 12,350 accompanying parent and student forms, derived from participants in 233 cities across 40 states. Results from the norming process indicate that the psychometric properties of the BESS (across all forms) are generally acceptable, having good split-half reliability (.90-.96), test-retest reliability (.80-.91), inter-rater reliability (.71-.83), sensitivity (.44-.82), and specificity (.90-.97). Furthermore, the measure has also proven to have acceptable convergent validity with the Achenbach System of Empirically Based Assessment (.71-.77), Conner’s Rating Scales (.51-.78), Vineland Adaptive Behavior Scales (.32-.69), Children’s Depression Inventory (.51), and the Revised Children’s Manifest Anxiety Scale (.55).

Report cards. Students’ report cards consisted of academic, engagement, and behavioral indicators, graded by their teachers. The academic indicators comprised 6 total subject areas – listening, reading, writing, math, history, and science – and corresponded to California state educational standards. Each indicator was graded on a scale of 1 to 4 (1 = has difficulty with standard, 2 = approaches standard, 3 = meets and applies standard, 4 = exceeds standard), indicating teachers’ perceptions of students’ present levels of achievement. For the purposes of this study, each subject area was conceptualized as a subcomposite, making up a total Academic Achievement composite. A behavioral engagement indicator accompanied each subject area, wherein the teachers graded the amount of “effort” students exhibited in meeting academic standards, using the same grading scale. Because these engagement indicators were unidimensional and few in number, for the purposes of this study they were summed into a total Engagement composite. The report card also consisted of several behavioral indicators (e.g., “Follows rules and
direction;” “Completes classwork;” “Works well in a group”), graded on a 1-to-3 scale (1 = needs improvement, 2 = satisfactory, 3 = excellent). Using the same rationale as the engagement indicators, these behavioral indicators were summed into a total Behavioral Performance composite.

Procedures

During the first quarter of the school year, the BESS teacher form was completed for all the third-graders attending one school and all the fourth-graders attending the other school. For both grades combined, screening outcomes indicated that 70% of students were in the normal range (n = 77), 18% were in the elevated range (n = 20), and 12% were in the extremely elevated range (n = 13). Thus, for the purposes of this study, students in the elevated and extremely elevated ranges were grouped together, resulting in dichotomized risk-level classification: normal (T-score of 20 to 60) or at-risk (T-score of 61 and above). Using this classification method, screening results indicated that 20 third-graders and 13 fourth-graders had BESS scores in the at-risk range. In an attempt to create matched groups, the 13 at-risk fourth-graders were selected to participate in the study, matched with a random selection of 13 normal fourth-graders. A random selection of 13 at-risk third-graders was then conducted, matched with a random selection of 13 normal third-graders. During the course of the study, however, 2 at-risk fourth-graders were transferred to another school, and so the matched pairs were reduced to 11 fourth-graders and 13 third-graders in each group (N = 48).

Next, the sample participants’ first quarter report cards – graded within a few weeks of BESS completion – were examined and coded. The Listening, Reading, Writing, Math, History, and Science sub-composites were generated and weighted by summing the indicators associated with each subject area and then dividing that total by the respective number of indicators. The Academic Achievement, Engagement, and Behavioral Performance composites were derived via the same process as the sub-composites, using their respective indicators. Following data collection and preparation, the aforementioned hypotheses were examined by conducting three sets of statistical analyses: bivariate correlations, a one-way ANOVA, and discriminant function analyses. All analyses utilized the previously described sub-composites or the general composites; no isolated indicators were included in the analyses.

RESULTS

Results indicated that teacher-rated BESS risk-level classification (i.e., either normal or at-risk) was significantly related with students’ concurrent academic, engagement, and behavioral outcomes, as reported on their report cards. Specifically, risk-level classification was significantly correlated with each academic sub-composite, contributing to a significant correlation with the overall Academic Achievement composite. In addition, significant correlations were also found between risk level and the Engagement and Behavioral Performance composites. Furthermore, results from the one-way ANOVA indicated significant differences between the mean scores of the normal and at-risk students for each of the sub-composites as well as the overall Academic Achievement, Engagement, and Behavioral Performance composites. See Table 1 and Table 2 for statistical summaries of these results.

Two separate discriminant function analyses were conducted to determine if the academic, engagement, and behavioral composites, derived from the recent report cards, were effective criteria for discriminating between students’ risk-level classification. Model 1 was theoretically driven, entering the Academic Achievement, Engagement, and Behavioral Performance composites as simultaneous discriminant criterions. Results revealed that this model accounted for approximately 43% of the variance between risk levels and was an effective discriminator for risk-level classification ($\chi^2 = 25.401, p = .000$). Using this model, it was predicted that 75% of normal and 88% of at-risk students were classified correctly. Model 2 was statistically driven, using the stepwise method to determine which of the three composites were the most salient discriminators for risk-level classification. The resulting model included only the Academic Achievement and Engagement composites and accounted for approximately 43% of the variance between risk levels. Similar to the previous model, it was also deemed an effective discriminator for risk-level classification ($\chi^2 = 25.495, p = .000$). Furthermore, using this latter model, it was predicted that 67% of normal and 88% of at-risk students were classified correctly. See Table 3 and Table 4 for summaries of these results.
### TABLE 1: Correlations between BESS Risk Level and Report Card Outcomes

<table>
<thead>
<tr>
<th>Report Card Outcomes</th>
<th>Correlation with Risk Level</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic Sub-Composites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td>-.503</td>
<td>.000</td>
</tr>
<tr>
<td>Reading</td>
<td>-.461</td>
<td>.000</td>
</tr>
<tr>
<td>Writing</td>
<td>-.435</td>
<td>.001</td>
</tr>
<tr>
<td>Math</td>
<td>-.393</td>
<td>.003</td>
</tr>
<tr>
<td>History</td>
<td>-.528</td>
<td>.000</td>
</tr>
<tr>
<td>Science</td>
<td>-.674</td>
<td>.000</td>
</tr>
<tr>
<td><strong>General Composites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>-.549</td>
<td>.000</td>
</tr>
<tr>
<td>Engagement (Behavioral)</td>
<td>-.614</td>
<td>.000</td>
</tr>
<tr>
<td>Behavioral Performance</td>
<td>-.507</td>
<td>.000</td>
</tr>
</tbody>
</table>

### TABLE 2: One-Way ANOVA for BESS Risk Level and Report Card Outcomes

<table>
<thead>
<tr>
<th>Report Card Outcomes</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Groups</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Sub-Composites</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Listening</td>
<td>15.545</td>
<td>.000</td>
</tr>
<tr>
<td>Reading</td>
<td>12.440</td>
<td>.001</td>
</tr>
<tr>
<td>Writing</td>
<td>10.745</td>
<td>.002</td>
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<td>Math</td>
<td>8.424</td>
<td>.006</td>
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<tr>
<td>History</td>
<td>17.769</td>
<td>.000</td>
</tr>
<tr>
<td>Science</td>
<td>20.000</td>
<td>.000</td>
</tr>
<tr>
<td><strong>General Composites</strong></td>
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<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>19.827</td>
<td>.000</td>
</tr>
<tr>
<td>Engagement (Behavioral)</td>
<td>27.824</td>
<td>.000</td>
</tr>
<tr>
<td>Behavioral Performance</td>
<td>15.947</td>
<td>.000</td>
</tr>
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</table>
The purpose of the present study was to further examine the concurrent validity of the BESS in elementary school settings, by examining the relation between teachers’ BESS ratings and recent report-card outcomes. Consistent with the extant research, the results supported our hypotheses that students’ risk-level classifications would be significantly related to school-based outcome criterions and that such school-based outcome criterions, as reported via report cards, would be effective discriminators of students’ risk-level classification.

### TABLE 3: Discriminant Function Analyses: Model Validity

<table>
<thead>
<tr>
<th>Variables</th>
<th>Wilk’s λ</th>
<th>$\chi^2$</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1 (Theoretical)*</td>
<td>.565</td>
<td>25.401</td>
<td>.000</td>
</tr>
<tr>
<td>Academic Achievement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engagement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavioral Performance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model 2 (Statistical)**</td>
<td>.567</td>
<td>25.495</td>
<td>.000</td>
</tr>
<tr>
<td>Step 1: Engagement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 2: Academic Achievement</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*All variables were entered simultaneously.  
**Variables entered using stepwise method.

### TABLE 4: Discriminant Function Analyses: Group Membership Classifications

<table>
<thead>
<tr>
<th>Group</th>
<th>Predicted Group Membership</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Normal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 1 (Theoretical)*</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>18</td>
<td>6</td>
</tr>
<tr>
<td>(75%)</td>
<td>(25%)</td>
<td></td>
</tr>
<tr>
<td>At-Risk</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>(12%)</td>
<td>(88%)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model 2 (Statistical)**</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>(67%)</td>
<td>(33%)</td>
<td></td>
</tr>
<tr>
<td>At-Risk</td>
<td>3</td>
<td>21</td>
</tr>
<tr>
<td>(12%)</td>
<td>(88%)</td>
<td></td>
</tr>
</tbody>
</table>

* 80.1% of original grouped cases correctly classified.  
** 77.1% of original grouped cases correctly classified.

**DISCUSSION**

The purpose of the present study was to further examine the concurrent validity of the BESS in elementary school settings, by examining the relation between teachers’ BESS ratings and recent report-card outcomes. Consistent with the extant research, the results supported our hypotheses that students’ risk-level classifications would be significantly related to school-based outcome criterions and that such school-based outcome criterions, as reported via report cards, would be effective discriminators of students’ risk-level classification.
These results provide additional concurrent validity evidence for using the BESS in elementary school settings, showing that teacher ratings on the screener are highly related to their evaluations of students’ academic, engagement, and behavioral outcomes, as reported via report cards. Specifically, results revealed that BESS risk-level classification was moderately or highly correlated with all of the academic sub-composites as well as the three general composites; that there were significant mean differences between normal and at-risk students on all sub-composites and composites; and that the report-card derived composites were effective discriminators for risk-level classification. Interestingly, however, results also suggest that similar discriminant results could be obtained by excluding the Behavioral Performance composite. Thus, such findings warrant further examination of which school-based criterions will provide the best concurrent validity for the BESS. But in general, these findings add to the existing evidence supporting the BESS as an appropriate school-based screening instrument.

Limitations

Although the results of the present study supported the concurrent validity of the BESS, there are three limitations. First, the sample characteristics were limited: only third- and fourth-graders participated in this study; the students were all from the same district; and they identified as predominantly Hispanic or White. Thus, the results have low generalizability for students in other grades or locations and identifying with other ethnicities. Second, this study, similar to the previous research validating the BESS, focused only on teacher ratings. Given that the BESS also consists of parent- and self-rating components, it is unknown how these school-based criterions would relate to risk-level classifications derived from other raters. As such, these results should only be construed as supporting one facet of the overall BESS. Third, the school-based criterions used herein—report card outcomes—are idiosyncratic to the local school district. Other districts within other states have varying report-card indicators; thus, further replication is warranted.

Future Directions

Despite limitations, findings from this study suggest several directions for future research. Foremost, the significant relations observed between BESS risk-level classification and local report-card criterions warrant further examination with various other report-card indicators, across grade levels, within varying school contexts, and using other behavioral indicators. To enhance the criterion-related validity, such outcomes could be used for both concurrent and predictive evidence. Furthermore, the difference in validity coefficients between local school criterions (e.g., report card grades) and global school criterions (e.g., standardized testing results and other BASC-2 ratings) also warrants evaluation. Previous validation studies (DiStefano & Kamphaus, 2007; Kamphaus et al., 2007) have focused primarily on global school criterions, providing limited information on the criterions inherent within the local school context. And lastly, future research may also benefit from utilizing further discriminant analyses, attempting to determine which types of criterions are the most effective for discriminating between students’ risk-level classification.

Implications for Practice

Considering the results of the present study in conjunction with the existing analyses of the BESS, the results are promising. The psychometric qualities and school-based validity of the BESS appear suitable for using the instrument as a universal screener for students, seeking to identify those at-risk for potential emotional or behavioral problems. As noted in the introduction, it is essential that universal screening should always be (a) integrated within a larger student-support framework, (b) accompanied by well-defined objectives, and (c) be established through careful consideration and planning (Dowdy et al., in press). By incorporating these elements and implementing a valid screening instrument like the BESS, school psychologists may ultimately enhance early identification and intervention efforts within their local school context – preventing the development of more severe problems and promoting more positive outcomes for students in the future.
REFERENCES


Early Identification of Behavioral and Emotional Problems in Youth: Universal Screening versus Teacher-Referral Identification

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University of California, Santa Barbara

Universal screening is one strategy to enhance the early identification of behavioral and emotional problems among youth. Although it appears to be effective, it is unclear if universal screening is more or less effective than current teacher referral practices. Thus, the purpose of this study was to compare the effectiveness of a teacher-rated, universal screener and typical teacher-referral methods in identifying youth at risk for emotional and behavioral problems. Results indicated that of the 24 students identified as at-risk by the universal screening measure, only 11 were previously identified through current teacher referral practices – highlighting the potential benefit of universal screening to enhance early identification. Furthermore, results indicated that academic achievement and student engagement outcomes were significantly correlated with at-risk status by identification method. The strengths and limitations of this study, as well as implications for practice, are discussed.

A significant number of children are at-risk for or are currently experiencing emotional and behavioral problems (Ringel & Sturm, 2001; United States Public Health Service, 2000). The consequences for schools are clear such that emotional and behavioral problems have been well-documented to be significant barriers to learning (Catalano, Haggerty, Osterle, Fleming, & Hawkins, 2004). Children with an early onset of behavior problems are at elevated risk for academic failure, peer rejection, substance abuse, and delinquency (Reinke, Herman, Petras, & Ialongo, 2008). Furthermore, national longitudinal studies show that more than half of the students identified with emotional or behavioral problems drop out of school, 75% achieve below expected grade levels in reading, and 97% achieve below expected grade levels in math (Bradley, Doolittle, & Bartolotta, 2008). Such findings overwhelmingly indicate that emotional and behavioral problems are associated with deleterious outcomes in youth.

Despite a significant number of students experiencing emotional and behavioral problems, the majority of these students remain unidentified and consequently untreated (Ringel & Sturm, 2001; United States Public Health Service, 2000). This is detrimental to student outcomes, considering that the longer a child’s emotional and behavioral problems go unidentified and untreated, the more stable his or her maladaptive trajectory is likely to be (Gottlieb, 1991). Early identification via screening is particularly important as it could help trigger early intervention, resulting in a disruption of the maladaptive trajectory. Research has also documented that recognition of a mental health problem increases the likelihood that children and their parents will seek help for that problem (Cauce, et al., 2002). In this way, universal screening efforts may ultimately lead to early intervention for students’ current problems as well as prevention of future problems.

Within the school setting there is emerging evidence that early identification, combined with early and comprehensive prevention and intervention, can decrease the likelihood of academic failure and future life difficulties (Lane & Menzies, 2003; Walker & Shinn, 2002). Thus, as schools aim to serve all students regardless of risk level, through both special and general education supports, early identification via screening is a means for increasing the likelihood that more students are healthy, thriving, and progressing toward optimal development. Just as the fields of medicine and public health have repeat-
edly demonstrated the potential of early identification and intervention to prevent and alleviate disease and sickness (Fox, Halpern, & Forsyth, 2008), the fields of psychology and education are beginning to demonstrate that using a similar approach within schools can do the same for children’s emotional and behavioral problems. Indeed, there is growing evidence that school-based screening can alter deleterious developmental trajectories and enhance positive outcomes (Report of the Alliance for School Mental Health, 2005).

A key feature of early identification is a focus on assessments that are useful for identifying progressive levels of risk among all students, not only among those with profound difficulties or problems (Glover & Albers, 2007). However, current methods of early identification vary widely, with many still focused solely on identifying students at the highest level of need. Such methods include teacher referral, parent referral for assessment and services at school or through primary care settings, youth self-referral, and universal screening. This study compares a common method for early identification–teacher referral to what may be a more underused and novel method universal screening.

**Traditional Teacher Referral**

Given that children spend countless hours at school, teachers are an invaluable resource for referring students in need of behavioral, emotional, and academic intervention. General education teachers are the primary link between students exhibiting problematic behavior and receiving access to school-based services. However, contemporary research indicates that teachers do not refer students based on behavior problems at the same rate as other academic concerns (Walker, Nishioka, Zeller, Severson, & Feil, 2000). In addition, many teachers perceive children’s emotional and behavioral problems as someone else’s responsibility (Severson, Walker, Hope-Doolittle, Kratochwill, & Gresham, 2007) – possibly contributing to lower referral rates. Furthermore, previous studies have found a significant time lag between initial symptoms and referral to services by teachers (Duncan, Forness, & Hartsough, 1995). In general, such findings suggest that teacher referral may not be the most effective method of early identification. Thus, the effectiveness of alternative early identification methods, like universal screening, warrants further examination.

**Universal Screening**

School-based universal screening is conducted with all students in a given classroom, school, or district, to identify those at risk of academic failure and/or behavioral difficulties and may therefore benefit from intervention (e.g., Severson & Walker, 2002). This approach toward early identification allows for the provision of evidence-based prevention and early intervention services delivered through a multi-tiered intervention approach (Kratochwill, Albers, & Shernoff, 2004). It is recommended that this multi-tiered approach be accomplished via a multi-gated screening strategy. However, what remains to be resolved is whether the information obtained at each gate adds significantly to the prediction equation, justifying the additional time and resources required. In addition, key concerns regarding universal screening have been raised including the overidentification of students in need of school-based and community mental health services, as well as the potential need for multi-informant assessments of youth’s behavioral problems (Levitt, Saka, Romanelli, & Hoagwood, 2007). Thus, further exploration is needed regarding the utility and feasibility of universal screening within schools.

**Current Study**

The purpose of this study was to evaluate the ability of a universal screening measure to identify students who might otherwise go undetected through a traditional identification paradigm (i.e., teacher referral for special education, child study team, or other school-based service provisions). Utilizing data from a cohort of third- and fourth-grade students, the differences between students referred and not referred for evaluation or intervention based on the different referral systems was examined. Specifically, the aims of this study were twofold:
(1) Explore the differences between students identified as at-risk for behavioral and emotional difficulties by a universal screening measure compared to those identified via teacher referral.

(2) Examine the relationship of students’ academic achievement and engagement indicators to results from the early-identification method (i.e., universal screening or teacher referral outcomes).

METHOD

Participants

Participants were 26 third-graders and 22 fourth-graders from two elementary schools in a suburban community, within the same school district, located on California’s central coast. During the 2008-2009 school year, the total enrollment of one school was 286 students, and the total enrollment of the other was 421 students. During that time, the demographic make up of both schools was comparable, with approximately 73% of students identifying as Hispanic or Latino, 18% as White, and 9% as other or multiple ethnic groups. Approximately 68% of the students were classified as socioeconomically disadvantaged, 40% as English language learners, and 14% as students with disabilities. Using class-wide data collection procedures, the demographics of the participants in the present study (N = 48) were representative of the student population in these schools.

Measures

BASC-2 Behavioral and Emotional Screening System (BESS), Teacher Form. The BESS teacher form (child/adolescent version) is a screening instrument used to identify behavioral and emotional strengths and weaknesses of students in grades K-12 (Kamphaus & Reynolds, 2007). It assesses a wide range of behavioral problems and strengths, such as internalizing and externalizing problems, school problems, and adaptive skills. It is designed to be completed in 5 minutes or less. Respondents rate each item on a 4-point scale—never, sometimes, often, or almost always. The sum of the items generates a total T-score with high scores reflecting more problems. Scores of 20-60 suggests a “normal” level of risk; 61-70 suggests an “elevated” level of risk; and 71 or higher suggests an “extremely elevated” level of risk. The BESS was normed with a sample of 12,350 teacher, parents, and students, collected from 233 cities in 40 states. Results from the norming process indicated that the psychometric properties of the BESS (across all forms) are generally acceptable, having good split-half reliability (.90-.96), test-retest reliability (.80-.91), inter-rater reliability (.71-.83), sensitivity (.44-.82), and specificity (.90-.97). Furthermore, the measure has demonstrated acceptable convergent validity with the Achenbach System of Empirically Based Assessment (.71-.77), Conner’s Rating Scales (.51-.78), Vineland Adaptive Behavior Scales (.32-.69), Children’s Depression Inventory (.51), and the Revised Children’s Manifest Anxiety Scale (.55; Kamphaus & Reynolds, 2007).

Report Cards. Student report cards include academic and student engagement indicators, as graded by their teachers. The academic indicators comprised 6 total subject areas—Listening, Reading, Writing, Math, History, and Science—and corresponded to California state educational standards. Each indicator was graded on a scale of 1-4 (1 = has difficulty with standard, 2 = approaches standard, 3 = meets and applies standard, 4 = exceeds standard), indicating teachers’ perceptions of students’ present levels of achievement. For the purposes of this study, each subject area was conceptualized as a sub-composite, making up a total Academic Achievement composite. A behavioral engagement indicator accompanied each subject area, wherein the teachers graded the amount of “effort” students exhibited in meeting academic standards, using the same grading scale. Because these engagement indicators were unidimensional and few in number, they were summed into a total Engagement composite for the purposes of this study.

Traditional Teacher Referral Data. Additional data was collected on each student to determine which students had previously been identified by teachers as being at-risk and needing additional behavioral or emotional evaluation or intervention. Noted indicators included: (a) referral to the school’s child study team, (b) testing for special education eligibility, (c) receipt of current special education services, and (d) receipt of other, non-special-education interventions (e.g., general-education counseling or classroom
environment alterations). These indicators were combined as dichotomous variables and students were classified as either “at-risk” or “normal” based on teacher referral for services.

Procedures

During the first quarter of the school year, the BESS teacher form was completed for all third-grade students attending one school and for all fourth-grade students attending the other school. For each grade, screening outcomes indicated that the majority of students were in the “normal” range, several students were in the “elevated” range, and relatively few students were in the “extremely elevated” range. Thus, for the purposes of this study, students receiving the latter two classifications were grouped together, resulting in dichotomized risk-level classification outcomes: “normal” (T scores 20-60) or “at-risk” (T scores 61 and above). Screening results indicated that 20 third-graders and 13 fourth-graders had BESS outcomes in the “at-risk” range. In an attempt to create matched groups, the 13 “at-risk” third-graders were selected to participate in the study, matched with a random selection of 13 “normal” third-graders. A random selection of 13 “at-risk” fourth-graders was then conducted, matched with a random selection of 13 “normal” fourth-graders. During the course of the study, however, 2 “at-risk” fourth-graders were transferred to another school, and so the matched pairs were reduced to 13 third-graders and 11 fourth-graders in each group (N = 48).

After the sample participants were established, additional data was collected from school records and teacher interviews to establish which students were referred for additional services and previously identified by teachers as “at-risk.” Next, the students’ first quarter report cards – graded within a few weeks of BESS completion – were examined and coded. The Listening, Reading, Writing, Math, History, and Science sub-composites were generated and weighted by summing the indicators associated with each subject area and then dividing that total by the respective number of indicators. The Academic Achievement and Student Engagement composites were derived via the same process as the sub-composites, using their respective indicators.

Analyses

All analyses were conducted using SPSS version 17.0. BESS scores and teacher referral for services were the two variables used to create the four proposed groups (see Table 1). Students were classified as “at-risk” via the BESS according to published norms for this measure (Kamphaus & Reynolds, 2007), and dichotomized for the purposes of this study. Students were identified as “at-risk” through teacher referral methods if they met at least one of four criterions: they were either (a) referred to the school child study team, (b) tested for special education eligibility, (c) currently receiving special education services, and/or (d) receiving other, non-special education intervention services. All analyses were conducted using these aggregate grouping variables for BESS identification and teacher referral.

Participant scores on the BESS and teacher referral were used to place individuals into one of the four groups. As shown in Table 1, Group 1 is labeled as Both Identified and consists of students classified as “at-risk” by both the BESS and teacher referral. Group 2 is labeled as BESS Identified and consists of students classified as “at-risk” by the BESS but not by teacher referral. Group 3 is labeled as Teacher Identified and consists of students identified as “at-risk” through teacher referral but not identified by the BESS. Group 4 is labeled as Not Identified and consists of students not identified as “at-risk” by the BESS or via teacher referral.

RESULTS

Results indicated that 23% percent of individuals were classified as Both Identified (n = 11); 27% of students identified as at-risk by the BESS (n = 13; BESS Identified) were not concurrently identified by their teachers as needing additional services; 8% of students were only identified as at-risk by teachers (n = 4; Teacher Identified) but not by the BESS; and the remaining 42% of students (n = 20; Not Identified) represent a group that appears to be relatively free of behavioral and emotional concerns – not being identified via the BESS or teacher referral (see Table 1).

A between-subjects multivariate analysis of variance (MANOVA) was conducted to investigate...
the differences between groups on academic functioning and student engagement. Using the Wilks’ criterion, there was a significant effect for group membership, \( F = 3.88, p < .001 \), indicating that academic achievement and school engagement systematically differ among elementary students according to referral method. Results of follow-up analyses using Tukey’s tests are shown in Table 2, along with means and standard deviations for each group on academic achievement and student engagement variables. Students in the Both Identified group had significantly lower academic achievement than students who were not identified as at-risk and those only identified as at-risk through teacher referral. Academic achievement mean differences were not significantly different among any of the remaining three groups: BESS Identified, Teacher Identified, and Not Identified. For indicators of student engagement, all students identified as at-risk by the BESS (in Both Identified and BESS Identified groups) had significantly lower scores than the Teacher Identified or Not Identified groups.

**TABLE 1:** Student identification by referral method

<table>
<thead>
<tr>
<th>Teacher Referral</th>
<th>BESS Teacher Ratings</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>At-Risk</td>
<td>Normal</td>
</tr>
<tr>
<td>T &gt; 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T &lt; 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>At-Risk &gt;1 referral</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Both Identified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. Teacher Identified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal 0 referrals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II. BESS Identified</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IV. Not Identified</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note. BESS indicates score from the Behavior and Emotional Screening System (Kamphaus & Reynolds, 2007); Teacher referral indicates referral by general education teacher for additional assessment and/or services.*

**TABLE 2:** Mean Levels of Academic Achievement and Student Engagement by Method of Identification (N = 48)

<table>
<thead>
<tr>
<th>Method of Identification</th>
<th>Both Identified ( (n = 11) )</th>
<th>BESS Identified ( (n = 13) )</th>
<th>Teacher Identified ( (n = 4) )</th>
<th>No Identified ( (n = 20) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable</td>
<td>( M )</td>
<td>( SD )</td>
<td>( M )</td>
<td>( SD )</td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>1.81(^a)</td>
<td>.44</td>
<td>2.16(^{ab})</td>
<td>.45</td>
</tr>
<tr>
<td>Student Engagement</td>
<td>10.36(^a)</td>
<td>2.20</td>
<td>11.00(^a)</td>
<td>1.78</td>
</tr>
</tbody>
</table>

*Note. Tukey comparisons were employed to analyze group means in cases of significant \( F \) tests. Significant differences \( (p < .01) \) between group means are indicated by different letters. Means having the same subscript are not significantly different.*
DISCUSSION

These results provide initial evidence that universal screening may identify students not previously detected, or identified earlier than typically demonstrated, by current teacher referral practices. With an equal number of students identified as “at-risk” and “normal” by the BESS as part of this matched sample, it was anticipated that teacher referral practices would reflect these same rates. However, 13 of the 24 students identified as at-risk by the BESS were not identified as at-risk by teachers. Thus, the BESS seems to have enhanced early identification potential – and possibly increased sensitivity – over teacher referral methods. Given that either the BESS or teacher referral (not both) could potentially serve as a first step in a multiple-gated early identification approach, it would be important that all students with potential emotional or behavioral risk are identified. While additional gates of assessment can further delineate which children are truly in need of services, children not identified via this initial gate are unlikely to receive the intervention services they need, and may continue untreated for a critical period of time before identification occurs. Given this conceptual framework, the results suggest that universal screening, when compared to traditional teacher referral methods, may serve as a more comprehensive method for a first-gate assessment.

Significant mean differences were found between groups on measures of academic achievement and student engagement. Students identified as at-risk by the BESS and by teacher referral (the Both Identified group) had significantly lower academic achievement scores than those not identified or those only identified by teacher referral. As the Both Identified group and BESS Identified group had statistically similar lower mean scores on academic achievement outcomes, this may further highlight the link between behavioral problems and lower academic outcomes. Students identified by the BESS (regardless of teacher referral) had lower academic achievement scores, suggesting that a universal screener may identify students at-risk for emotional, behavioral, and academic problems.

On measures of student engagement, two separate groups emerged. All students identified as at-risk by the BESS (either Both Identified or BESS Identified) had significantly lower student engagement scores than all students classified as “normal” on the BESS. The remaining Teacher Identified and Not Identified groups had significantly higher student engagement scores. These results indicate that teacher reports of student engagement levels may be an important consideration when identifying students who might be at-risk for future behavioral and emotional problems. Results obtained from a systemic screening measure, aligned with pre-established school indicators (e.g., report cards), may assist teachers and school personnel in making well-informed data-based decisions.

Strengths and Limitations

Strengths of this study include the comparison of an already established method of student referral (i.e., teacher methods) to an understudied, relatively new method of student referral (universal screening via the BESS). This study demonstrated that universal screening potentially offers a more sensitive and efficient method of identifying students at-risk for behavioral, emotional, and academic problems.

Limitations are present within the current study. The generalizability of the findings may be limited due to the small sample size, and the fact that both methods for comparison used the same rater (i.e., teacher). Further replication studies are needed with larger sample sizes and utilizing different rating forms (e.g., parent or self report) and methods (e.g., observations). Also, individual teacher-referal methods may vary widely. Some teachers refer students for minor issues, while other teachers only refer students with severe emotional or behavioral problems. The BESS may be used as one element of a screening process to help make referral methods more consistent.

Implications for Practice

Results from the present study, alongside previous results investigating screening for emotional and behavioral risk, reveal that universal screening may be a viable approach to early identification of students at-risk for behavioral, emotional, and academic problems. However, given limited financial resources, competing demands on time, and already high reporting requirements, many teachers and school districts may be skeptical of additional requests for student assessment. One approach, perhaps
more acceptable to school personnel, might be to integrate universal screening for emotional and behavioral problems into schools’ preexisting Response to Intervention (RtI) paradigms. Data on emotional and behavioral problems could be collected alongside academic data to document which children are at-risk and could benefit from additional prevention or intervention. In this way, RtI and multiple-gating screening procedures could be integrated to improve the acceptability, precision, accuracy, and efficiency of early identification, intervention, and prevention. Optimally, a continuum of school-based psychological services, starting with and grounded in universal screening to identify risk levels, could support students’ academic, emotional, and behavioral needs. However, as demonstrated by this study, universal screening may identify additional students not otherwise identified and may do so earlier than traditional methods. School personnel must be prepared to conduct further assessment and/or provide services for students in need.

REFERENCES


The positive psychology movement seeks to understand student strengths that may facilitate success or promote resilience. However, a positive psychology view is not intended to completely ignore negative factors that may be affecting children, so traditional assessments of mental illness remain important. As methods of assessment improve and enhance our understanding of student development, it is crucial to understand the interrelationship among strength-based and traditional – problem-based – measures. Utilizing a sample of third- and fourth-grade students, the current study examined the interrelationships between three measures of positive functioning, examining hope, life satisfaction, and school connectedness, and their relationship with a traditional, problem-based measure. Results demonstrated that the measures assessing positive constructs were significantly positively correlated with each other and negatively correlated with a measure of problem behaviors. Future directions for research, limitations, and implications for practice are discussed.

Traditional psychological assessment has been primarily concerned with the presence or absence of mental illness and problematic development. With the overwhelming emphasis of accountability and identification (e.g., No Child Left Behind [NCLB], 2002; Individuals with Disabilities Education Improvement Act [IDEIA], 2004) when evaluating children and youth in the educational context, it appears shortsighted to focus exclusively on shortcomings, such as failing grades, suspensions, disabilities, impairments, or challenges. This focus tends to ignore an individual’s well-being, other positive aspects of development, and the enhancement of optimal functioning (Jimerson, Sharkey, Nyborg, & Furlong, 2004).

The Positive Psychology Movement

Recently, some leaders have advocated for a paradigm shift, resulting in movement toward a positive approach to psychology (Seligman & Csikszentmihalyi, 2000). Positive psychology is “…an umbrella term for the study of positive emotions, positive character traits, and enabling institutions” (Seligman, Steen, Park & Peterson, 2005, p. 410). The purpose of this shift is to provide a more balanced and complete understanding of individuals by examining aspects of mental health (or adaptive functioning) in conjunction with indicators of psychopathology (or maladaptive functioning). In this way, mental health can be viewed through a dual-factor model, wherein individuals are understood on both dimensions. In this framework, mental health and mental illness are not mutually exclusive: persons can be high or low on ratings of either dimension. For example, contemporary research (Suldo & Shaffer, 2008) suggests that students can report low ratings of subjective well-being (SWB) and high (e.g., at-risk or clinically significant) ratings on indicators of psychopathology (designated “troubled”); high ratings of both SWB and psychopathology (“symptomatic but content”); low ratings of SWB and psychopathology (“vulnerable”); and high ratings of SWB with low ratings of psychopathology (“complete mental health”). Seen through this lens, the fields of positive and negative psychology can work together to contribute to a more complete understanding of student functioning.

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School Psychology and Positive Psychology

Jimerson and colleagues (2004) highlighted that “In the new millennium, school psychologists have increasingly recognized alternatives to a deficit-based perspective regarding assessment, practice, and research that emerged from the historical disease model of human functioning pervasive in the field of psychology (p. 9).” The application of the positive psychology movement to school psychology is justified through research linking students’ well-being to various academic indicators (Gilman, Furlong, & Huebner, 2009; Suldo, Riley, & Shaffer, 2006; Suldo & Shaffer, 2008). For example, school satisfaction, perception of teacher support, and perception of academic competence have all been found to be important contributors to subjective well-being (Suldo et al., 2006). A link to academic achievement is also emerging via research, with data suggesting that both the presence of well-being and the absence of psychopathology contribute to increased academic achievement (Suldo & Shaffer, 2008).

Considering this, a best-practice approach based upon the tenets of positive psychology would not discount aspects of mental illness; rather, it would use this information in conjunction with an evaluation of a student’s strengths, subjective well-being, positive traits, and other resources to promote further understanding of the student’s current level of functioning (Cowen & Kilmer, 2002). This implies a proactive, strength-based model of assessment; that is, the absence of mental health does not necessarily equal positive functioning and the search for strengths, well-being, positive traits, and resources must be an intentional one. Ultimately, this approach may lead to a primary focus on resilience and may be an important way to reduce psychological dysfunction and enhance educational outcomes for students (Cowen & Kilmer, 2002).

Measuring Student Well-Being

Life satisfaction, hope, and school connectedness are three measurable constructs that are related to students’ well-being. First, high levels of life satisfaction have demonstrated negative correlations with symptoms of psychopathology, such as anxiety and depression, and positive correlations with adaptive functioning (Suldo & Huebner, 2005). Second, hope reflects students’ determination in achieving a goal and a belief that good things will happen. Individuals who demonstrate high levels of hope have been shown to have more positive thoughts, higher self-esteem, and higher academic achievement (Valle, Heubner, & Suldo, 2004). A third important factor for students is school connectedness. A student’s feeling of school connectedness is generally believed to incorporate the individual’s perception of having a meaningful role at school, feelings of safety, and opportunities for creative and academic engagement (Whitlock, 2006). Research has found that children with higher school connectedness have higher levels of school completion, reduced substance use, and reduced violent or aggressive behavior (Brookmeyer, Fanti, & Henrich, 2006; Miltich, Hunt, & Meyers, 2004).

The Present Study

As the positive psychology movement continues to expand within school psychology and educational settings, it is important to assess the validity of strength-based measures and their applicability to school-aged populations. Establishing strong psychometric qualities and gathering information from diverse age groups and populations will be essential. Considering this, the purpose of the present study was to investigate the interrelationships among three positive psychology constructs (i.e., hope, life satisfaction, and school connectedness) for third- and fourth-graders. Furthermore, given the salience of the dual-factor model of youth mental health, this study also investigated the discriminant validity of these positive measures with a more traditional, screener focusing on a student’s negative behaviors and emotions. It was hypothesized that the measures of hope, life satisfaction, and school connectedness would be positively correlated with one another and negatively correlated with the measure of maladaptive functioning. Given developmental and contextual considerations, it was further hypothesized that differences would be found among these interrelations between third- and fourth-graders.
METHOD

Participants

Participants were 43 third-grade students and 46 fourth-grade students (N=89) from two elementary schools in southern California. Students were participating in a larger mental health promotion partnership between the schools and a local university. During the 2008-2009 school year, the total enrollment of one school was 286 students and the total enrollment of the other was 421 students. The demographic make up of both schools was comparable, with approximately 73% of students identifying as Hispanic or Latino, 18% as White, and 9% as other or multiple ethnic groups. Approximately 68% of the students were classified as socioeconomically disadvantaged, 40% as English language learners, and 14% as students with disabilities.

Measures

Children’s Hope Scale. The Children’s Hope Scale (CHS; Snyder et al., 1997) is a self-report measure made up of six items, each rated on a six-point Likert scale (ranging from “none of the time” to “all of the time”), and is adapted from the original Hope Scale for adults (Synder et al., 1991). The CHS measures two aspects of hope: (a) pathways, the sense of being able to generate successful plans to meet goals; and (b) agency, the successful determination one has to achieve goals. The CHS has shown high levels of internal consistency with a median alpha coefficient of 0.77 (Snyder et al., 1997) to 0.82 (Valle, Huebner, & Suldo, 2004) as well as good concurrent and discriminative validity with correlations of -0.19 to -0.48 with the Children Depression Inventory (Kovacs, 1985) and -0.31 with the internalizing scale of the Youth Self-Report (Achenbach, 1991; Snyder, 2005).

School Connectedness Scale. School connectedness has been defined in multiple ways, but it can be conceptualized through elements of affective engagement, such as a sense of belonging, school climate, and enjoyment of school (Sánchez, Colón, & Esparza, 2005). The School Connectedness Scale is a 5-item measure designed to assess school connectedness, with each item rated on a 4-point scale (ranging from strongly disagree to strongly agree). Internal consistency ratings for this scale showed higher reliability for social bonding items (alpha = 0.64-0.92) than items measuring student-teacher relationships (alpha = 0.44-0.70; McNeely, 2005). Total scores range from zero to 20, with higher scores reflecting stronger school connectedness.

Brief Multidimensional Students’ Life Satisfaction Scale. A person’s life satisfaction is generally defined in the literature as perceived quality of life in specific domains (self, family, living environment, friends, and school) as well as overall life satisfaction. The Brief Multidimensional Students’ Life Satisfaction Scale (BMSLSS; Seligson, Huebner, & Valois, 2003) is based on the original 40-item scale Life Satisfaction Scale (Huebner, 1991) but contains five items each ranked on a seven-point scale (ranging from terrible, unhappy, dissatisfied, mixed, mostly satisfied, pleased, to delighted). This scale demonstrated an alpha coefficient of 0.86 (Suldo & Huebner, 2006) and a 1-year stability coefficient of 0.61 (Valle et al. 2006). (Seligson, Huebner, & Valois, 2003; Zullig, Huebner, Gilman, Patton, & Murray, 2005).

BASC-2 Behavioral and Emotional Screening System. The Behavioral and Emotional Screening System (BESS; Kamphaus & Reynolds, 2007) is a recently developed screening instrument based on the more comprehensive Behavior Assessment System for Children, Second Edition (BASC-2; Reynolds & Kamphaus, 2004). The self-report and teacher-report BESS were composed of 25-30 items rated on a four point Likert-type scale (ranging from Never to Almost Always). The BESS is designed to be a brief measure, administrable within five minutes. The BESS produces a single score and classifies students into “normal,” “elevated,” or “extremely elevated,” categories based on corresponding T-scores. Validation of this instrument is ongoing, with large-scale studies currently underway. One recent study found that the BESS was able to predict many school related behaviors such as reading and math grades, social skills, and conduct problems (Kamphaus et al., 2007).
RESULTS

Bivariate correlations were calculated between the CHS, the BMSLSS, the SCS, and both the self-report and teacher-report forms of the BESS. In general, results indicated that all three positive psychology constructs were significantly and positively correlated with one another and negatively correlated with the BESS self- and teacher-report scores. Correlations between the positive psychology constructs were strong, ranging from .56 to .66. However, the positive psychology measures demonstrated larger negative correlations with the BESS self-report measure (ranging from -.50 to -.70) than the BESS teacher-report form (ranging from -.33 to -.38). Complete results are displayed in Table 1.

TABLE 1. Overall sample correlations

<table>
<thead>
<tr>
<th></th>
<th>Children's Hope Scale</th>
<th>Life Satisfaction</th>
<th>School Connectedness</th>
<th>Student-report BESS</th>
<th>Teacher-report BESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Hope Scale</td>
<td>--</td>
<td>.557**</td>
<td>.625**</td>
<td>-.504**</td>
<td>-.359**</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>--</td>
<td></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>School Connectedness</td>
<td>--</td>
<td>-</td>
<td>-656**</td>
<td>-331**</td>
<td></td>
</tr>
<tr>
<td>Student-report BESS</td>
<td>--</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher-report BESS</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.01, **p < 0.01

Next, the means of the positive psychology constructs for at-risk students, as identified by the BESS teacher report, were compared to the means of students identified to be within the normal range by teachers, using independent samples t-tests. As the groups differed in size (i.e., 24 at-risk children compared to 65 children not considered at-risk), Levene’s test for equality of variances was examined. The variances of the two groups were found to be significantly different, therefore, the appropriate two sample t-test was utilized. Results from these t-tests indicated that children rated to be in the normal range by the BESS teacher report showed significantly higher scores on the CHS (t(30.1) = 2.09, p < .05), the BMSLSS (t(29.3) = 2.89, p < .05), and the SCS (t(32.5) = 2.12, p < .05) than did children identified as at-risk. Complete results are available in Table 2.

TABLE 2. Correlations for teacher identified “at-risk” students.

<table>
<thead>
<tr>
<th></th>
<th>Children's Hope Scale</th>
<th>Life Satisfaction</th>
<th>School Connectedness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Hope Scale</td>
<td>--</td>
<td>.482*</td>
<td>.704**</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>--</td>
<td></td>
<td>.763**</td>
</tr>
</tbody>
</table>

*p < 0.01, **p < 0.05
Lastly, the overall population divided by grade and correlations was again examined. For third-grade students, there was a positive correlation between the CHS and SCS ($r = .32$) and between the SCS and BMSLSS ($r = .33$). However, the correlation between the CHS and the BMSLSS was not significant ($r = .21$). All three positive psychology constructs were significantly negatively correlated with the self-report BESS scores, though at weaker levels (ranging from $r = -.35$ to $r = -.51$). Only the BMSLSS was significantly correlated with the teacher-report BESS scores ($r = -.42$). Furthermore, for third-grade students, the self-report and teacher-report BESS scores were significantly correlated with each other ($r = .49$).

For fourth grade students, the correlations between the measures were generally stronger overall than for the third grade students. Significant positive correlations between the CHS, BMSLSS, and SCS were generally large, ranging from $r = .67$ to .75. All three positive psychology constructs were significantly and negatively correlated with the self-report BESS scores (correlations ranging from $r = -.53$ to -.77) and negatively correlated with the BESS teacher-report scores (correlations ranging from $r = -.48$ to -.57). Similar correlations between the BESS self-report and teacher-report scores were found for fourth-grade students ($r = .49$). Complete results for third- and fourth-grade students can be found in Tables 4 and 5, respectively.

**TABLE 3. Mean score comparisons for each of the adaptive behavior variables.**

<table>
<thead>
<tr>
<th></th>
<th>General Population (n=65)</th>
<th>At Risk (n=24)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Children's Hope Scale*</td>
<td>25.28</td>
<td>5.59</td>
</tr>
<tr>
<td>Life Satisfaction*</td>
<td>29.06</td>
<td>4.77</td>
</tr>
<tr>
<td>School Connectedness*</td>
<td>20.52</td>
<td>5.05</td>
</tr>
</tbody>
</table>

* Indicates a significant difference on the scale between the two group means at $p < .05$

**TABLE 4. Third grade sample correlations (n=43)**

<table>
<thead>
<tr>
<th></th>
<th>Children's Hope Scale</th>
<th>Life Satisfaction</th>
<th>School Connectedness</th>
<th>Student-report BESS</th>
<th>Teacher-report BESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children's Hope Scale</td>
<td>--</td>
<td>.209</td>
<td>.323**</td>
<td>-.349*</td>
<td>-.256</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>--</td>
<td></td>
<td>.331*</td>
<td>-.505**</td>
<td>-418**</td>
</tr>
<tr>
<td>School Connectedness</td>
<td>--</td>
<td></td>
<td></td>
<td>-.366**</td>
<td>-.254</td>
</tr>
<tr>
<td>Student-report BESS</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td>.489**</td>
</tr>
<tr>
<td>Teacher-report BESS</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** ** $p < 0.01$, * $p < 0.05$
**DISCUSSION**

Considering both adaptive and maladaptive functioning of students facilitates a more comprehensive understanding of their development. In particular, school psychologists may be concerned with obtaining a more comprehensive understanding of students’ functioning to promote optimal well-being and positive outcomes within the school and other life contexts. Given that positive constructs such as life satisfaction, hope, and school connectedness have been found to be associated with academic achievement, enhanced self-esteem, and protection against substance abuse (Brookmeyer et al., 2006; Suldo & Huebner, 2005; Valle, Huebner, & Suldo, 2004), these key variables may be especially useful for understanding students’ current functioning.

**Interpretation of Findings**

This study examined the interrelatedness of scores derived from the CHS, BMSLSS, SCS, and both the Self-Report and Teacher-Report forms of the BESS for third- and fourth-grade students. Results demonstrated that the measures assessing positive constructs were significantly and positively correlated with each other, and negatively correlated with a measure of problem behaviors. When examined by grade level, however, the correlations among these measures were generally weaker for third grade students relative to fourth grade students. It may have been that some of the measures were too cognitively advanced for some third grade students, thus further research is warranted. Between the teacher-report and student-report forms of the BESS, medium-sized correlations were found suggesting that the use of both forms may provide more complete screening results, especially when identifying both externalizing and internalizing symptoms.

**Limitations**

Limitations for the current study include its relatively small population of only third and fourth grade students, therefore larger sample sizes to replicate findings would be valuable and further research is necessary to understand similarities and differences across the elementary school grade levels. It is possible that the measures of hope, life satisfaction, and school connectedness may be too cognitively advanced for some third grade students and future efforts may focus on further exploring whether there is a strong age effect. If so, simplifying the items or response requirements for younger populations may be necessary measurement modifications. Each measure used a different Likert scale, with ranges of five, six, and seven points, each with different descriptor ranges (none of the time to all of the time on the CHS vs. terrible to delighted on the BMSLSS). This may have been confusing for younger children.

**TABLE 5. Fourth grade sample correlations (n=46)**

<table>
<thead>
<tr>
<th></th>
<th>Children’s Hope Scale</th>
<th>Life Satisfaction</th>
<th>School Connectedness</th>
<th>Student-report BESS</th>
<th>Teacher-report BESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Hope Scale</td>
<td>--</td>
<td>.673**</td>
<td>.741**</td>
<td>-.529*</td>
<td>-.571**</td>
</tr>
<tr>
<td>Life Satisfaction</td>
<td>--</td>
<td>.748*</td>
<td>-.751**</td>
<td>-.483**</td>
<td></td>
</tr>
<tr>
<td>School Connectedness</td>
<td>--</td>
<td></td>
<td>-.766**</td>
<td>-.527**</td>
<td></td>
</tr>
<tr>
<td>Student-report BESS</td>
<td>--</td>
<td></td>
<td></td>
<td>.489**</td>
<td></td>
</tr>
<tr>
<td>Teacher-report BESS</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p < 0.01, * p < 0.05**
Future Directions for Research

With regard to the positive measures, students who were identified as “at-risk” by the teacher report were compared to “normal” students as rated by the BESS. Children who were not identified as being “at-risk” reported significantly higher scores on measures of hope, life satisfaction, and school connectedness than children who were identified as “at-risk.” Future research warrants further examination of the dual-factor analysis for students who may not be considered “at-risk,” but may be low on these positive attributes.

Implications for Practice

The current study examined the interrelationships between three measures of positive functioning and one measure of maladaptive behaviors and emotions. These measures are relatively new to assessment in the school setting, and may help professionals understand and target critical areas of students’ functioning. The use of positive measures may then encourage more strength-based assessment and intervention practices in schools.

REFERENCES


A Controlled Study Assessing the Effects of the Impulse Control and Problem Solving Unit of the Second Step Curriculum

University of California, Santa Barbara

The development of social and emotional competence is crucial for students. Second Step is a curriculum designed to promote prosocial development and prevent violence. The purpose of this study was to evaluate the effectiveness of implementing one unit of the Second Step curriculum (Impulse Control and Problem Solving). A controlled, repeated measures design was utilized to assess the level of change in knowledge of social-emotional skills. Results indicated that change was evident from pre- to post-test for third and fourth grade students (N=149). Third grade students receiving the intervention demonstrated significantly more knowledge growth than third grade control students. Notably, fourth grade students receiving the intervention demonstrated a similar level of knowledge growth as the fourth-grade control students. Discussion, limitations, and implications related to these findings are addressed.

Development of social competence and maintenance of friendships are critical developmental challenges for children. Adequately navigating these areas promotes and enhances success in other pivotal areas of children’s lives, including academic, occupational, family, and life satisfaction outcomes (e.g., Zins, Bloodworth, Weissberg, & Walberg, 2004). However, pervasive challenges with social competence and friendships are also associated with higher rates of mental illness, incarceration, family conflict, unemployment or underemployment, and other deleterious outcomes (e.g., Greenberg et al., 2003). Given that schools have partial responsibility for the socialization and healthy development of children, they can promote the prosocial and prevent the antisocial development of students through the use of social-emotional learning (SEL) curricula at both the schoolwide (i.e., universal) and group or classwide (i.e., secondary) levels (Merrell, Gueldner, & Tran, 2008).

Payton and colleagues (2008) recently published a review of three large-scale meta-analyses evaluating over 300 studies of SEL curricula including over 324,000 students. They concluded that SEL programs were associated with improvements of students’ achievement test scores, improvements of students’ social and emotional skills and attitudes about self and others, increased connection to school and positive social behaviors, and decreases in conduct problems and emotional distress. In addition, results indicated that school staff implemented these interventions with fidelity and that such programming was used with a variety of students and in a variety of settings.

Second Step: A Violence Prevention Program is an SEL program that has been identified as exemplary by the U. S. Department of Education’s Office of Educational Research and Improvement (OERI) panel for safe and drug-free schools. Second Step is a universal, school-based, prevention curriculum for children in K-5 grades designed to promote social competence, reduce social-emotional problems (Committee for Children, 2002), and prevent aggression over time, by initially focusing on increasing prosocial behaviors (Cooke et al., 2007). The complete curriculum consists of three units of interrelated content – Unit 1: Empathy Training, Unit 2: Impulse Control and Problem Solving, Unit 3: Anger Management – that are each composed of 5-9 lessons (depending on the grade level). Most lessons are administered via in-vivo instruction; however, one or two lessons per unit are prerecorded and presented via videotape (Committee for Children, 2002).

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Several studies have been conducted to evaluate the effectiveness of Second Step. Rigorous research designs, which obtain pre- and post-test data and use multiple assessment methods (e.g., rating scales from multiple informants, behavioral observations, and referral records) have been utilized and provide initial support for this SEL curriculum. The most recent study investigated the curriculum’s effects on 741 third- through fifth-grade students in five different schools and included trainings and support for staff, parents, and community members involved with children both in and out of school (Cooke et al., 2007). Results indicated nearly two-thirds of students showed significant positive changes on at least one of the variables of interest (e.g., positive approach coping, caring-cooperative behavior, suppression of aggression).

Current Study

While Second Step has demonstrated effectiveness when used in its entirety, often schools and teachers do not have the time or resources to implement the entire curriculum (i.e., 15-25 sessions). Thus, the purpose of this study was to examine the effectiveness of one unit of the Second Step curriculum (i.e., 5-8 lessons) on students’ social-emotional outcomes. Specifically, this study was guided by two research questions and associated hypotheses: 1) Will students who were provided the Impulse Control and Problem Solving Unit (Unit II) of the Second Step curriculum demonstrate an increase in knowledge of social-emotional skills? It was anticipated that students in the intervention groups would have significant knowledge increases from pretest to posttest. 2) Will students who were provided the Impulse Control and Problem Solving Unit (Unit II) of the Second Step curriculum demonstrate an increase in knowledge of social-emotional skills when compared to students not provided the intervention? It was anticipated that students in the intervention groups would have significantly higher levels of knowledge compared with control students.

METHOD

Participants

Data was collected from two elementary schools in southern California. During the 2008-2009 school year, the total enrollment of one school was 286 students, and the total enrollment of the other was 421 students. The demographic composition of both schools was comparable, with approximately 73% of students identifying as Hispanic or Latino, 18% as White, and 9% as other or multiple ethnic groups. Furthermore, approximately 68% of the students were classified as socioeconomically disadvantaged (i.e., receiving free or reduced priced lunch at school), 40% as English language learners, and 14% as students with disabilities. The demographics of the current participants (N = 149) were comparable to the schools’ general demographics. Participants in the intervention group, for which both pre- and post-test data were available, included 32 third-grade and 43 fourth-grade students (n = 75). Participants in the control group included 42 third-grade and 32 fourth-grade students (n = 74).

Measures

Knowledge Assessment for Second Step (KASS; Committee for Children, 2004). The KASS is a self-report measure developed by the authors of the Second Step curriculum to assess knowledge in social-emotional skills. The KASS consists of several problem situations and related social-emotional skills knowledge questions presented to students that they respond to in writing. It is designed to be utilized in a pre- and post-test format. Administration, scoring, and interpretation are standardized with directions provided in the KASS manual. Instructions, problem situations, and questions are provided both orally and in writing for students, who are allowed as much time as needed to complete the assessment. The authors indicate that a pilot test and a field test were conducted in 2002-2003, followed by revisions and further field testing in 2003-2004; however, no data is available (Committee for Children, 2004).
Procedures

The participating schools were part of a comprehensive collaboration with a local university-based school psychology program. School administration at the two participating elementary schools identified a target grade to receive the intervention unit from the Second Step curriculum. The appropriate grade level version of Second Step: Unit II: Impulse Control and Problem Solving (Committee for Children, 2002) was implemented at each site. The goals of Unit II include decreasing children’s impulsive and aggressive behavior through three strategies: (a) calming down, (b) problem solving, and (c) behavioral-skills training. The number of sessions varied from five (for third grade) to eight (for fourth grade), and sessions typically lasted from 30-45 minutes. The goals of this unit are similar across grades; however, the content is more developmentally advanced for fourth grade students (e.g., taking responsibility for actions by acknowledging mistakes, apologizing, and/or offering to make amends, versus resisting the impulse to steal). Intervention sessions were conducted once per week, at the same times and on the same days. Typically, two co-facilitators were present to ensure fidelity and provide support. In addition, the teacher was usually present and occasionally participated in the sessions. Second Step materials were utilized in each session, with adherence to the standardized procedures of the curriculum.

Prior to implementation of the intervention, the KASS pre-test data was gathered from each class. Doctoral students co-facilitating the intervention conducted the assessment. The KASS was read aloud to the students while they read along and ample time was given for written responses. For several students, one-on-one assistance was provided, and additional time for any student was allowed if necessary. As each school identified different grades, intervention data was obtained from fourth grade at one site, while control data was obtained for third grade and vice versa.

The week following the final session, the post-test KASS data was collected in the same manner as pre-test data, with the exception of the fourth-grade control data, which was collected approximately one month after the intervention post-test data was collected. After completion of the intervention, a feedback session occurred with the teachers of the intervention groups. To avoid confounds, the same rater scored both pre- and post-test assessments.

Analyses

As the intervention units and resulting pre- and post-test assessment were slightly different for each grade in order to reflect appropriate developmental considerations, all analyses were conducted separately by grade. To evaluate knowledge change among the intervention groups (research question 1), two paired-samples t-tests were conducted. To examine the effect of the intervention unit on post-test knowledge scores within each grade (research question 2), two analyses of covariance (ANCOVA), with pre-test scores as the covariate, were conducted (Stevens, 2002). The assumptions for using ANCOVA and t-tests were both evaluated and met.

RESULTS

Third Grade

Descriptive statistics are presented in Table 1. Table 2 displays the results from the paired-samples t-test. This analysis indicated significant differences between pre- and post-test KASS scores for the third-grade intervention group, \( t(31) = 16.12, p < 0.00 \), thus supporting the hypothesis. The test for parallelism conducted on the third-grade data was nonsignificant \( (F = 0.55; df = 1, 70; p = 0.46) \), which indicates this assumption has not been violated, and thus ANCOVA was determined to be an appropriate analysis. The resulting test for equality of adjusted means (Table 3) demonstrated significance \( (F = 81.43; df = 1, 71; p < 0.01) \), indicating a significant difference on social skills knowledge between the control and intervention groups while controlling for the initial scores on the pretest measure, thus supporting the second hypothesis.
TABLE 1.  *Descriptive Statistics.*

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean (pre)</th>
<th>Std. Dev. (pre)</th>
<th>Mean (post)</th>
<th>Std. Dev. (post)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd grade control</td>
<td>42</td>
<td>10.38</td>
<td>4.03</td>
<td>10.79</td>
<td>4.08</td>
</tr>
<tr>
<td>3rd grade intervention</td>
<td>32</td>
<td>6.44</td>
<td>2.80</td>
<td>13.72</td>
<td>3.03</td>
</tr>
<tr>
<td>4th grade control</td>
<td>32</td>
<td>8.56</td>
<td>2.33</td>
<td>9.75</td>
<td>2.77</td>
</tr>
<tr>
<td>4th grade intervention</td>
<td>43</td>
<td>7.26</td>
<td>3.61</td>
<td>9.47</td>
<td>3.26</td>
</tr>
</tbody>
</table>

*Note.* Std. Dev. = standard deviation. Mean (post) = unadjusted posttest score.

TABLE 2.  *Paired-samples t-tests (pre and post for the intervention group).*

<table>
<thead>
<tr>
<th>Group</th>
<th>t</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd grade intervention</td>
<td>16.12**</td>
<td>31</td>
</tr>
<tr>
<td>4th grade intervention</td>
<td>5.681**</td>
<td>42</td>
</tr>
</tbody>
</table>

*Note.* t = t statistic. df = degrees of freedom. ** p < .000

TABLE 3.  *ANCOVA results for third grade examining differences between students in the intervention and control group.*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>degrees of freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td>493.05</td>
<td>1</td>
<td>493.05</td>
<td>81.43**</td>
</tr>
<tr>
<td>Error</td>
<td>429.92</td>
<td>71</td>
<td>6.06</td>
<td></td>
</tr>
</tbody>
</table>

** p < .001. Dependent variable = KASS post-test. Covariate = KASS pre-test.

TABLE 4.  *ANCOVA results for fourth grade examining differences between students in the intervention and control group.*

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>degrees of freedom</th>
<th>Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contrast</td>
<td>4.97</td>
<td>1</td>
<td>4.97</td>
<td>.883</td>
</tr>
<tr>
<td>Error</td>
<td>405.65</td>
<td>72</td>
<td>5.63</td>
<td></td>
</tr>
</tbody>
</table>

** p < .001. Dependent variable = KASS post-test. Covariate = KASS pre-test.
Fourth Grade

Descriptive statistics are presented in Table 1. Results from the paired-samples *t*-test indicated significant differences between pre- and post-test KASS scores for the fourth-grade intervention group, *t*(42) = 5.68, *p* < 0.00 (Table 2), thus supporting the hypothesis. The test for parallelism conducted on the fourth-grade data was not significant (*F* = 0.47; *df* = 1,71; *p* = 0.50). The resulting test for equality of adjusted means (Table 4) did not demonstrate significance (*F* = 0.88; *df* = 1,72; *p* = 0.35), indicating there was not a significant difference between the intervention and control groups after controlling for the pre-test KASS scores; thus, the hypothesis of the second research question was not supported.

**DISCUSSION**

Prosocial and emotional learning has been indicated as an important aspect of healthy child development. *Second Step: A Violence Prevention Program* is a school-based curriculum designed to enhance social competence and reduce social-emotional problems (Committee for Children, 2002). The current study evaluated the effectiveness of implementing one unit (Impulse Control and Problem Solving; unit II) of this curriculum on students’ knowledge of social-emotional skills.

Consistent with expectations, results indicated significant increases in knowledge for students in the intervention groups. Moreover, when compared to the third-grade control students, the third-grade students exposed to the intervention unit of *Second Step*, demonstrated significantly more increases in social-emotional skills knowledge. However, this was not the case for the fourth-grade students. While these students also showed significant growth in knowledge scores from pre- to post-test, the cohort of same-grade, control students showed a similar level of growth.

Potential explanations for this difference may be partially attributed to the measurement used. For example, perhaps for fourth-grade students the KASS may also measure their writing skills; or perhaps the measurement tool is not particularly sensitive to change when only one unit of the curriculum is used. The KASS was intended to be administered after the entire *Second Step* curriculum has been provided, and it is possible there may be elements that are reinforced or covered more explicitly in the additional units. Explanations may also be related to the nature of the study. For example, *Second Step* may not be as effective at measuring change when implemented with only one unit or may be more effective when implemented by an individual naturally present in the classroom or school (e.g., teacher) so that elements may be reinforced throughout the day. Finally, it is unclear whether the assessment being administered to the control fourth grade students one month after it was administered to the intervention students impacted the results (i.e., whether natural growth in social-emotional skills knowledge occurred during this time).

**Strengths and Limitations**

Strengths of the current study include the controlled design, allowing for comparisons between students provided the intervention and control students. Typically, the control pre- and post-tests were administered at approximately the same time and within the same timeline (e.g., fourth grade pre- and post-tests administered approximately eight weeks apart). Co-facilitators were used in order to ensure integrity of implementation. Finally, to avoid confounds, the same rater scored the assessment measures.

However, several limitations were also present in the current study. Most importantly, the current study relied exclusively on the KASS for pre- and post-test data, lacking additional measures to evaluate the effectiveness of the curriculum. While this study was specifically evaluating the increase in social-emotional skills knowledge, results of the study may have been more robust if several different types of measurement (e.g., knowledge assessment, behavioral observations) had been obtained from different raters (e.g., students, teachers). Additionally, data related to the psychometric properties of the KASS are not available. A further limitation is the implementation of the *Second Step* unit by co-facilitators not naturally present in the classroom. In order to generalize and reinforce the skills, it may be optimal for the classroom teacher to implement the intervention, or for the facilitator to be present throughout the day.
Implications

In spite of these limitations, the intervention groups did demonstrate knowledge growth related to social-emotional skills. This study was conducted as part of a collaborative effort and was designed to be a feasible intervention for school psychologists. It is important for future research to continue to pursue data collection and evaluation in such feasible ways. The importance of including control group data is also highlighted, because without such data it would have been impossible to fully evaluate the differential effects of the intervention. Finally, the importance of the development of measures sensitive to behavioral change is emphasized. It appears there is a lack of optimal tools designed for this purpose. Thus, as a Response to Intervention (RtI) framework emerges for both academic and behavioral assessment and interventions, it will be crucial to develop tools that are sensitive enough to measure student change.

REFERENCES

Solution-Focused Brief Counseling: Guidelines, Considerations, and Implications for School Psychologists

Camille N. Jones, Shelley R. Hart, Shane R. Jimerson, Erin Dowdy, James Earhart, Jr., Tyler L. Renshaw, Katie Eklund, University of California, Santa Barbara

and

Doug Anderson
Solutions and Strengths, LLC and Stillwater Area Public Schools, MN

The increasing emphasis on school-based mental health services is likely to increase the demand for school psychologists to provide counseling with students. Providing counseling in the school context can be challenging, especially given time constraints and limited number of sessions. Solution-focused brief counseling (SFBC) is an approach that warrants consideration for use with children at school. This synthesis provides a brief overview of the extant scholarship regarding SFBC, describes the guidelines for implementing this approach, explores considerations and implications for school psychologists who use this approach to provide counseling services, and recommends future directions for scholarship. Lessons learned through a university and school collaboration to provide student support services are also included.

Everyday, students are identified with a myriad of social, emotional, and behavioral problems. Typically, when a student is troubled, or being troublesome to others, he is referred to the counselor, school psychologist, or team of psychoeducational personnel, with the dictum “fix-him” (Williams, 2000, p. 76). For this reason, school psychologists may spend significant amounts of time conducting counseling to help students with mental health concerns. Recent data from school psychologists in the United States and other countries around the world revealed that the third greatest percentage of work time was occupied with counseling students, preceded only by psychoeducational evaluations and consultation (Jimerson, Graydon, Curtis & Staskal, 2007). Moreover, schools psychologists indicated that working directly with students was one of the most enjoyable aspects of the job, and many school psychologists expressed an interest in increasing the role of counseling in their work (Jimerson et al., 2007; Hosp & Reschly, 2002). Given the growing emphasis on school-based mental health services, the demand for school psychologists to provide counseling services is likely to increase in the future (Fagan & Wise, 2007).

Although counseling is regarded as one of the most desirable job tasks among school psychologists, counseling in the school context brings about unique challenges that are not typically experienced in traditional clinical settings. For instance, school-based mental health services tend to be conducted under time constraints and within limited sessions. Thus, there is a need for school psychologists to employ counseling approaches that are amenable to the school context. Solution-Focused Brief Counseling (SFBC) is a recently developed approach that may be conducive to such challenges and is applicable to various populations of students with a variety of school problems (Murphy, 2008).

Given the potential goodness-of-fit within the school setting, SFBC was used to provide mental-health counseling services to several students participating in a local behavioral collaboration project between the University of California, Santa Barbara (UCSB) and two elementary schools in a southern

Correspondence may be sent to Shane Jimerson, UCSB, GGSE, CCSP, Santa Barbara, CA 93106-9490 or e-mail: Jimerson@education.ucsb.edu
California school district. Advanced school psychology students implemented SFBC with several first-through-sixth graders identified with a variety of mental health challenges, such as feelings of depression and anxiety, disruptive behavior, along with social skills deficits. The following sections describe the core components of SFBC, developmental considerations for using this approach with various student populations, applications of SFBC, and future directions and implications for school psychologists providing SFBC.

**CORE COMPONENTS**

SFBC is a strength-based, student-driven approach that attempts to facilitate change by identifying and implementing solutions, rather than exploring the origin and nature of problems. It has been suggested that SFBC “…offers great promise as a time-effective, cooperative approach for school [psychologists] that shifts the focus from ‘what’s wrong’ to ‘what’s working’ with students” (Murphy, 1997, p. 5). SFBC generally occurs in 4-6 sessions and is guided by seven core principles that are imperative to elicit positive behavioral changes (Sklare, 2005). Table 1 provides a complete listing of these principles. Most importantly, SFBC requires creating clear, student-driven goals that identify ideal behaviors. Such goals should be concrete, specific, and focused on positive, rather than negative, behaviors. To accomplish these goals, students are encouraged to do more of what has been successful in the past or to do something entirely different – if their current solutions are not providing favorable outcomes (de Shazer, Dolan, Korman, McCollum, Trepper, & Berg, 2007; DeJong & Berg, 2008). In addition to these guiding principles, several key elements are used to elicit change and are integral for the SFBC process. Table 2 provides a description of these key elements, along with examples of their practical application in the school context. It is noteworthy that these key elements do not have to be provided in sequential order and some may be used repeatedly throughout a single counseling session (de Shazer et al., 2007; DeJong & Berg, 2008).

**TABLE 1. General guiding principles of Solution Focused Brief Counseling**

| 1. People are capable of remarkable change and are resourceful, bringing strengths and successes to the counseling situation. |
| 2. Cooperation and a strong student-practitioner alliance enhances change. |
| 3. Focus on future solutions, rather than past problems. |
| 4. No problem is constant; there are always exceptions to problems. |
| 5. Small changes can “ripple” into bigger changes. |
| 6. Ongoing and systematic student feedback improves outcomes. |
| 7. If it works, do more of it; if it does not, do something different. |

*Note.* Adapted from “Best practices in conducting brief counseling with students” (p. 1440) by J. Murphy, 2008.

**DEVELOPMENTAL CONSIDERATIONS**

SFBC is appropriate when working with children whose cognitive abilities are adequate to comprehend and appreciate the concepts central to the solution-focused process (Nims, 2007). This approach requires students to use their cognitive abilities to describe problems and emphasizes the use of language as an important solution-building tool. Language is used throughout therapy to delineate treatment goals and to find out what steps students have taken to achieve their goals. Therefore, SFBC is not appropriate with children who do not have the necessary language skills or the ability to use abstract concepts to translate complex ideas into words so that their needs and desires are understood (Berg & Steiner,
<table>
<thead>
<tr>
<th>Intervention</th>
<th>Description</th>
<th>Example(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Socializing/Joining</strong></td>
<td>Explore student’s interests, strengths and resources.</td>
<td>--How can I help you today?</td>
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<td></td>
<td>--Tell me about something you are good at.</td>
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<tr>
<td><strong>Problem Description</strong></td>
<td>Have student describe what the current problem is.</td>
<td>--How is this situation a problem for you?</td>
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<td></td>
<td></td>
<td>--What is it about this that makes it a problem?</td>
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<td></td>
<td></td>
<td>--How have you dealt with it? Was that helpful?</td>
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<tr>
<td></td>
<td>For <em>visitors</em> the problem may need to be reframed in terms of what the</td>
<td>--Why does your teacher think this is a problem?</td>
</tr>
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<td></td>
<td>teacher or parent thinks the problem is.</td>
<td>--If we were to ask the principal, what do you think he would say?</td>
</tr>
<tr>
<td><strong>Goal Development</strong></td>
<td>Have student describe what they want to be different. Student is encouraged</td>
<td>--What do you want to be different for you in (pick one: school, home, life)?</td>
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<td></td>
<td>to frame their goals as a solution rather than the absence of a problem.</td>
<td>--When you are not getting (discipline slips in class, sent to the principal, etc.), what will you be doing instead?</td>
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<tr>
<td></td>
<td>Details are clarified about what will be better for them when these changes</td>
<td>--When that happens, what things will be better or different for you?</td>
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<tr>
<td></td>
<td>occur.</td>
<td></td>
</tr>
<tr>
<td><strong>Pretreatment Change</strong></td>
<td>If the student is aware of the first counseling session in advance, they</td>
<td>--Since this appointment was scheduled, have you noticed any positive changes? Please tell me about these changes.</td>
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<tr>
<td></td>
<td>frequently start to notice positive changes prior to their first session.</td>
<td></td>
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<tr>
<td></td>
<td>In the first session, the practitioner asks about positive changes that are</td>
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<td></td>
<td>already starting to happen in order to build hope and identify effective</td>
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<tr>
<td></td>
<td>solution attempts.</td>
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<tr>
<td><strong>Exception Questions</strong></td>
<td>Ask student about times in her life when the problem was not happening or</td>
<td>--Tell me about the last time that (solution) happened.</td>
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<tr>
<td></td>
<td>or less severe.</td>
<td>--Tell me about a time recently when the problem was better, even if it was only a little bit better.</td>
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</tbody>
</table>
very helpful in identifying effective solutions and student strengths and resources.

<table>
<thead>
<tr>
<th>Relationship Questions</th>
<th>Students construct descriptions of interactional events and significance.</th>
<th>--What will your parents/teachers notice that would tell them that the problem is gone?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miracle Questions</td>
<td>The student is asked to describe the things he would notice if a miracle occurred and the problem was gone. The miracle question magnifies even minute glimpses of exceptions and is pursued and explored in depth.</td>
<td>--I’m going to ask you a strange question. Suppose while you were sleeping tonight a miracle happens. The miracle is that the problem is solved. But because you were sleeping, you don’t know the miracle has happened. When you wake up tomorrow, what will be different that will tell you that the miracle has happened and the problem has been solved? --What else?... What else?</td>
</tr>
<tr>
<td>Scaling Questions</td>
<td>Have student describe on a scale of 1-10 how confident she is in finding a solution to the problem. Scaling helps the student to start to take small steps toward resolving their problem.</td>
<td>--On a scale of 1-10 how confident are you that you can find a solution? --What would it take to get from a ‘5’ to a ‘6’?</td>
</tr>
<tr>
<td>Constructing Solutions</td>
<td>Interview student to clarify previous solutions, exceptions and to co-create new solutions. Emphasis is placed on utilizing and refining current, effective skills and resources versus teaching new skills.</td>
<td>--I notice you said in the past you have found a solution by doing your homework at homework club. What will need to happen for that solution to work for you now?</td>
</tr>
<tr>
<td>Coping Questions</td>
<td>Coping questions are particularly helpful if the problem is not getting better to clarify strengths and resources, build hope and identify potential solutions.</td>
<td>--I imagine that [this problem] has been difficult for you. How have you been dealing with that so far?</td>
</tr>
<tr>
<td>Checking In</td>
<td>Practitioner asks the student for clarification in regards to whether or not any other information needs to be given.</td>
<td>--Is there anything else you I should know about the situation? --Is there anything I forgot to ask?</td>
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<tr>
<td>Taking a Break and Reconvening</td>
<td>Practitioner takes a break to collect thoughts and comes up with compliments and suggestions for the student.</td>
<td>--Thank you so much for talking with me; I really admire your strength, talking about these things can be really tough.</td>
</tr>
<tr>
<td>“Formula First Session Task” (de Shazer, 1985)</td>
<td>Practitioner asks the student to notice what is occurring in their life that they want to continue. This question assists the student in goal development, builds hope, and develops solution ideas for future sessions.</td>
<td>--Between now and the next time we meet, I would like you to observe so you can describe to me next time, what happens in your (pick one: classroom, school, home, life) that you want to continue.</td>
</tr>
<tr>
<td>Experiments/Homework Assignments</td>
<td>Practitioner suggests the student implement an experiment between sessions at her discretion. These experiments are based on something the student is already doing that is moving them toward her goal.</td>
<td>--I have noticed you said that your goal is to finish a full week of your reading response journal. One of the great things you have done was to finish one part of the assignment during the week. I’m wondering what you will need to do to complete two parts of that assignment in the next week?</td>
</tr>
<tr>
<td>Collaboration to Support Behavior Change</td>
<td>Practitioner communicates with teachers, parents, etc. about the student’s goals and to prompt them to notice any positive changes in the student’s behavior</td>
<td>--E-mail teacher or parent to say, “I have permission to share that my student has some ideas about changing her behavior. Please notice and acknowledge any positive changes that she makes in the next week.”</td>
</tr>
<tr>
<td>Follow-Up</td>
<td>Practitioner asks about the progress since the last session and about what has been better since the last session.</td>
<td>--What has been better since the last time we met?</td>
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</table>
2003). For example, SFBC would typically be inappropriate for children that are pre-kindergarten age, given the reliance on cognitive abilities and language acquisition (Nims, 2007). However, there is some evidence that developmentally appropriate language adjustments can be made to interventions, allowing SFBC to be used with children as young as five years old (DeJong and Berg, 2002). In addition, play- or art-based strategies such as using puppets, drawings, or stories may be effectively incorporated into work with younger students (Berg & Steiner, 2003). In the present project, doctoral students experienced difficulty using this approach with younger students in K through third grades, who seemed to lack the cognitive skills and sustained attention to actively engage in SFBC.

Thus, it is important for school psychologists to determine whether SFBC is an approach that can yield potential benefits given the idiosyncratic abilities and characteristics of the individual student. As another example, using SFBC in secondary education settings may be particularly effective because it is responsive to the adolescent quest for identity and autonomy (Murphy, 1997). In addition, the focus on student-driven goals and utilizing the student’s strengths, key student words, belief systems, and theories of change supports the therapeutic relationship and the success of SFBC (Selekman, 2005). School psychologists working in secondary education settings and considering using SFBC should also be familiar with developmental features of adolescence such as the need for independence and self-direction to enhance working with this population (Murphy, 1997). Research has reported that preadolescents and adolescents made significant progress toward achieving their goals using SFBC (DeJong & Berg, 2008).

IMPLICATONS FOR PRACTICE

Student Needs and Referral Routes

School psychologists provide support services, including counseling, to diverse students with diverse needs. Students frequently enter counseling via recommendations from parents, teachers, and/or administrators. The SFBC approach recognizes that students have different motivations for counseling and therefore it may be valuable to consider the referral route and potential implications for counseling services. Students will typically fall into one of three distinct categories: (a) visitors, (b) complainants, and (c) customers (de Shazer et al., 2007).

Visitors. Visitors typically enter counseling because they are forced by another person. They may be uncommitted to changing, not want to acknowledge that a problem exists, and may be resistant to implementing counselor suggestions or interventions. Since students receiving counseling are often referred by others, they are frequently entering as visitors. The emphasis of student-driven goals in SFBC can be especially powerful with visitors in developing the therapeutic relationship and starting the change process.

Complainants. Complainants are students that understand the existence of a problem and yet are unwilling to take action to resolve it. They perceive themselves as innocent bystanders who do not have the power to facilitate change, as change is thought to be someone else’s responsibility.

Customers. Customers acknowledge the presence of a problem and want to actively change it. They are most inconvenienced by the problem and express a sense of urgency to find a solution. In the education system, parents, teachers and administrators may also be considered customers.

Using the previously described categories for students, school psychologists should tailor interventions based on students’ referral route and responsiveness to counseling, to help them resolve problems and generate optimal solutions (Murphy, 1997). Considering the importance of the relationship between the professional and the client as related to outcomes of counseling (Lambert, 1992), it is important for school psychologists to be aware of students’ disposition regarding the counseling support services provided.

Factors that Enhance the Therapeutic Process

Practitioners providing school-based mental health services should have a general understanding of the importance of various dimensions of counseling. Lambert (1992) summarized three decades of research regarding “what works” in helping people change during the therapeutic process. Four inter-

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related factors have been found to lead to successful outcomes: (a) **client factors** – personal strengths, beliefs, resources (40%); (b) **relationship factors** – empathy, acceptance, and warmth (30%); (c) **expectancy factors** – hope and expectancy for change (15%); and (d) **model/technique factors** – theoretical orientation and intervention techniques (15%). This indicates that the aspects most predictive of change are client and relationship factors. Consequently, while practitioners using the SFBC approach should place an emphasis on the core components and specific techniques, it is most critical to build the therapeutic alliance and focus on “what the client brings” to counseling. In addition, recognizing and building upon students’ strengths and resources directly aligns with the principles of SFBC.

**Empirical Support**

SFBC is a therapeutic approach that is widely used in the United States and increasingly in other countries (Gingerich & Eisengart, 2000). It has been used in social service agencies, educational settings, family therapy, couples therapy, and for the treatment of sexual and substance abuse (de Shazer, 2007). Practitioners typically report successful outcomes associated with the implementation of SFBC. However, little research has been conducted on its effectiveness in helping children (Corcoran & Pillai, 2009).

Gingerich and Eisengart (2000) conducted a review of the outcome research related to SFBC, including all controlled studies of SFBC student outcomes in the English literature up to the year 1999. Recently, Corcoran and Pillai (2009) conducted an updated review of the research on SFBC. Few studies were identified that examined the effectiveness of SFBC with children and adolescents. Practitioners typically report successful outcomes associated with the implementation of SFBC. For a comprehensive description of the outcome research related to SFBC, please refer to Gingerich and Eisengart (2000) and Corcoran and Pillai (2009).

The following provides a brief review of the extant literature on SFBC with children and adolescents. Table 3 includes a summary of research that has used components of SFBC with youth in clinics or school-based settings. Several studies may have been excluded from the aforementioned reviews of the outcome literature based on methodology and implementation issues (Corcoran & Pillai, 2009; Gingerich & Eisengart, 2000). Collectively, this research offers insights regarding outcomes associated with the use of SFBC with youth.

SFBC has been associated with a number of positive outcomes in children and adolescents. For instance, Franklin, Biever, Moore, Clemons, and Scarmado (2001) examined the effectiveness of solution-focused counseling with fifth- and sixth-grade students who received special education services and were identified as needing help solving school-related behavior problems. Results indicated that children receiving SFBC made positive changes with a range of behavioral problems. In addition, a comparison study examined the effectiveness of SFBC versus Cognitive Behavioral Therapy (CBT) in a sample of children with behavior problems (Corcoran, 2006). Both SFBC and CBT interventions were equally effective and made significant improvements over time, as measured by behavioral data gathered from parent rating scales (e.g., Conners’ Rating Scales; Conners, 1990). Accordingly, SFBC appears to be a promising counseling approach that may yield results comparable to the well-established CBT approach (Corcoran, 2006). In addition, a meta-analysis of Solution-Focused Brief Therapy outcome studies (Kim, 2008) found that the effect sizes of Solution-Focused Brief Therapy were comparable to those in other psychotherapy and social-work meta-analysis conducted in real-world settings (Kelly, Kim & Franklin, 2008). Importantly, SFBC has demonstrated similar success to other counseling approaches, generally with fewer sessions (Kelly, Kim & Franklin, 2008). Overall, the literature on SFBC with children has (a) primarily targeted specific behavior problems, (b) often involved very small sample sizes, (c) rarely examined implementation fidelity, and (d) seldom used rigorous experimental methodology. In order to determine the effectiveness of the approach it is important to evaluate treatment outcomes.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Use</th>
<th>N</th>
<th>M/F</th>
<th>Ethnicity</th>
<th>Grade</th>
<th>Age</th>
<th>Intervention</th>
<th>Measures</th>
<th>Findings</th>
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<tbody>
<tr>
<td>Froeschle, Smith, &amp; Richards</td>
<td>2007</td>
<td>Effectiveness of drug prevention program that incorporated SFBC interventions</td>
<td>40 = SFBC group</td>
<td>F = 80</td>
<td>SFBC group: Mexican-American = 22, Caucasian = 16, African-American = 2</td>
<td>8th</td>
<td>Not Reported</td>
<td>Solution-Action-Mentorship (SAM) program integrated with SFBC</td>
<td>--American Drug and Alcohol Survey (ADAS) --Substance Abuse Screening Inventory Adolescent Version 2 (SASSI-A2) --Piers-Harris Children’s Self Concept Scale-2 --Home and Community Social Behavior Scales --School Social Behavior Scales-2</td>
<td>SFBC was associated with decreased drug use, increased knowledge of drug-use consequences and socially competent behaviors.</td>
</tr>
<tr>
<td>Corcoran</td>
<td>2006</td>
<td>Comparison Study of SFT v. Treatment as Usual (Cognitive Behavioral Therapy-CBT) for Behavior Problems in Children</td>
<td>139 SFT- 58 completed Treatment; 100 CBT- 27 completed Treatment</td>
<td>Not Reported</td>
<td>Not Reported</td>
<td>Elementary, Middle, and High School</td>
<td>5-17 years; Mean = 10</td>
<td>SFT provided by Master-level social work students; 4-6 sessions Treatment as Usual = CBT</td>
<td>--Feelings, Attitudes, and Behaviors Scales for Children (FAB-C) --Conners’ Parent Rating Scale</td>
<td>Both groups made significant improvements over time; SFT appears to show results comparable to CBT</td>
</tr>
<tr>
<td>Perkins</td>
<td>2006</td>
<td>Single Session SFT</td>
<td>216</td>
<td>145 boys; 71 girls</td>
<td>Not Reported</td>
<td>5-12 years (n = 159); 13-15 (n = 57)</td>
<td>Single Session Therapy (2hrs)</td>
<td>Devereux Scales of Mental Disorders (DSMD); Frequency of MPP; Severity of MPP; Health of the Nation Outcome Scales for Children and Adolescents</td>
<td>Treatment group showed significant improvement. Students were satisfied with therapy</td>
<td></td>
</tr>
<tr>
<td>Conoley et al. (2003)</td>
<td>2003</td>
<td>SFBC with families who had aggressive and oppositional children</td>
<td>3</td>
<td>M = 3</td>
<td>European American</td>
<td>Elementary</td>
<td>8-9 years</td>
<td>Solution-Focused Family Therapy</td>
<td>Parent Daily Report (PDR); BASC</td>
<td>Reduction in externalizing behaviors (e.g., ODD; conduct problems)</td>
</tr>
<tr>
<td>Yarbrough &amp; Thompson</td>
<td>2002</td>
<td>Counseling Approaches on Off-Task Behavior</td>
<td>3</td>
<td>M = 3</td>
<td>African-American = 1 Caucasian = 1</td>
<td>3rd &amp; 4th</td>
<td>8 &amp; 9</td>
<td>SFT and Reality Therapy</td>
<td>Homework Assignments</td>
<td>Child receiving SFT improved in completion of homework</td>
</tr>
<tr>
<td>Authors</td>
<td>Year</td>
<td>Use</td>
<td>N</td>
<td>M/F</td>
<td>Ethnicity</td>
<td>Grade</td>
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<td>Franklin, Biever, Moore, Clemons, &amp; Scamardo</td>
<td>2001</td>
<td>Effectiveness of SFT with Children in a School Setting</td>
<td>7</td>
<td>M = 3, F = 4</td>
<td>Mixed Race (Latino-Caucasian) = 2; Caucasian = 3; Latino = 2;</td>
<td>5&lt;sup&gt;th&lt;/sup&gt; &amp; 6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>10-12 years</td>
<td>SFT provided by Advanced Doctoral Students trained by developers at Brief Family Therapy Center in Milwaukee; 5-7 sessions</td>
<td>AB Single Case Design</td>
<td>Children made positive changes on a range of behavioral problems</td>
</tr>
<tr>
<td>Corcoran &amp; Stephenson</td>
<td>2000</td>
<td>Effectiveness of SFT with Child Behavior Problems</td>
<td>136; 58.8% attrition rate</td>
<td>M = 86, F = 50</td>
<td>White (non-Hispanic) = 106; African-American = 12; Mexican-American = 3; Asian = 3; Other = 4</td>
<td>Elementary, Middle, and High School</td>
<td>Not Reported</td>
<td>SFT provided by Master-level social work students; 4-6 sessions</td>
<td>--Feelings, Attitudes, and Behaviors Scales for Children (FAB-C) --Conners’ Parent Rating Scale</td>
<td>Significant positive difference in Conner’s ratings, except for Anxiety scale; FAB-C conduct problems and self-image revealed significant differences</td>
</tr>
<tr>
<td>Springer, Lynch, &amp; Rubin</td>
<td>2000</td>
<td>Effectiveness of SFBC with Children of Incarcerated Parents</td>
<td>10</td>
<td>M = 4, F = 6</td>
<td>Hispanic</td>
<td>4&lt;sup&gt;th&lt;/sup&gt; &amp; 5&lt;sup&gt;th&lt;/sup&gt; grade</td>
<td>Not Reported</td>
<td>Group SFBC provided by Marriage and Family Therapy graduate students; 6 sessions</td>
<td>Hare Self-Esteem Scale</td>
<td>Increase in self-esteem among members of the SFBC group.</td>
</tr>
</tbody>
</table>
Progress Monitoring

When providing counseling services, it is vital for school psychologists to monitor progress to assess for desired behavioral changes. Previous research has used behavior rating scales, such as the Conner’s Rating Scales (Conners, 1990); the Feelings, Attitudes, and Behaviors Checklist (FABC; Beitchman, 1996); and the Behavioral Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) to measure progress toward specific social, emotional, and behavioral goals. Instruments that briefly measure mental health concerns are ideal when evaluating treatment outcomes in school-based brief counseling. However, change may not be apparent after only a few sessions as measured by such omnibus standardized measures (Corcoran & Pillai, 2009). More sensitive behavioral and emotional progress monitoring tools appropriate to examine SFBC outcomes are needed in the field.

Murphy (2008) notes that SFBC is an outcome-informed approach, in which two progress-monitoring tools can be used for each session: (a) the Child Outcome Rating Scale (CORS; Duncan, Miller, & Sparks, 2003) and (b) the Child Session Rating Scale (CSRS; Duncan, Miller, Sparks, & Johnson, 2003). Each measure assesses elements of treatment outcomes (e.g., personal distress, well-being) and the therapeutic alliance (e.g., respect and understanding). These scales are practical and time-efficient ways for school psychologists to systematically evaluate counseling progress. Moreover, they provide quick feedback that allows practitioners to immediately correct relationship problems when they occur (Murphy, 2008).

When counseling young children (e.g., K-4th grade) the UCSB team experienced some difficulty obtaining accurate information from these scales. Children appeared to be inclined to respond in an overly positive nature (e.g., everything in life was going well, and the psychologist-student relationship was perfect). Although studies have found these measures to have adequate reliability and validity evidence for adults, further research is necessary to examine the psychometric properties of these instruments with young children (Murphy, 2008). Preliminary experiences of the UCSB collaboration team suggest that these outcome and alliance measures may include concepts that are difficult for young children to comprehend.

FUTURE DIRECTIONS FOR RESEARCH

While SFBC has much to offer the arena of school-based mental health, further research is warranted to validate its use in the educational context and/or with children and adolescents. Research has revealed mixed results related to certain outcomes (e.g., GPA, self-esteem, attendance; Froschle et al., 2007; Franklin, 2007), thus additional research is necessary to better understand “for whom and with what” SFBC is most effective. Furthermore, school psychologists are increasingly being asked to establish their role as evidence-based practitioners (Huber, 2007). While school psychologists may be critical consumers, their role in conducting research and evaluation unfortunately tends to be limited (Fagan & Wise, 2007). In order to have research applicable to the field, school psychologists must become more involved in the production of relevant research. In addition, as school psychologists are on the “frontlines,” offering support to students in short-term, long-term, and crisis situations, they are the most informed regarding what is needed and capable of demonstrating and evaluating what works.

Further challenges to the study of SFBC include the lack of measurement tools sensitive to behavioral and emotional change. The importance of developing a Response to Intervention (RtI) framework with academic, social, emotional, and behavioral challenges is imperative in the field. In order to do so, omnibus measures (e.g., Conners’, BASC), not developed for the purpose of progress monitoring, cannot be the only standardized option for evaluating change. There is an exigent need in the field for the development of standardized measures of social, emotional, and/or behavioral change.

Finally, the application of SFBC principles and techniques to other aspects of a school psychologist’s job duties holds promise. Solution-Focused interventions have shown promise in a variety of school psychologists’ roles such as classroom management (Berg & Shilts, 2005), counseling and social skills groups (Metcalf, 2008), discipline (Metcalf, 2005), special education referrals (Metcalf, 2008), alternative schools such as Gonzolo Garz Independence High School in Austin, Texas (Kelly, Kim &
Franklin, 2008) and consultation. Solution-focused consultation models have received most attention as promising methods of consultation (e.g., Dougherty, 2005). As direct interactions with students may have limits, it will be vital to take advantage of alternative methods, influencing those surrounding children (e.g., teachers, parents) in order to effect change in students’ lives. As a consultant, an individual may engage in a variety of roles such as advocate, expert, trainer/educator, collaborator, fact finder, and process specialist.

CONCLUSIONS

Solution-Focused Brief Counseling (SFBC) is a strengths-based, student-driven approach that focuses on developing solutions to problems rather than on their origins. Students are considered to be competent and capable of constructing solutions that will eliminate problems and promote optimal well-being. This approach may prove useful for practitioners providing school-based mental health services because of its emphasis being time-effective and goal-oriented. Given the many challenges students face, it is important for the therapeutic environment to be a place that students can feel empowered and their strengths highlighted. Presently, there is a paucity of empirical evidence supporting the use of SFBC with children and adolescents; however, the extant literature reveals that it may be associated with favorable outcomes. Further research is warranted to determine whether SFBC may be a valuable counseling technique to implement in the schools with students who are experiencing social, emotional, and behavioral challenges.

REFERENCES


GUIDELINES FOR AUTHORS

Scope and purpose: The California School Psychologist is a refereed journal published annually by the California Association of School Psychologists (CASP). The California School Psychologist is devoted to contemporary issues in school psychology with the goal of publishing high-quality articles that link theory to practice. The journal is an appropriate venue for articles that: (1) critically review research on topics of general interest to school psychologists, (2) report research relevant to practicing school psychologists, (3) present promising practices or programs that address the needs of children and youth, and (4) critically reflect on the professional of school psychology and the challenges faced by the profession. It is also the intent of the journal to highlight the diversity of viewpoints in the profession and of the students, parents, and communities served by school psychologists in California and elsewhere.

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