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An initial development of a hardiness scale for elementary school students

Stephen Ferrara

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An Initial Development of a Hardiness Scale for Elementary School Students

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Abstract

There are limited studies that have investigated levels of hardiness in children. There is even less information on finding hardiness scales that have been normed on children in elementary school. The purpose of this study was to test the validity and reliability of the Hardiness Scale for Children (HSC), which assesses the three subscales of hardiness: Challenge, Control, and Commitment. 121 elementary school students (2nd-5th grade) were selected to complete the HSC. Their parents were also asked to complete a three-item scale to measure their child's hardiness. The results indicated that older children tended to give themselves a higher rating on the HSC, but a clear pattern was not present. Small but adequate correlations were found between the parent ratings and the children's total HSC ratings in addition to the Challenge and Control subscales. The participants' ratings on the Commitment subscale items may not have been significantly correlated with parent ratings because this subscale has the least number of items. A test of internal consistency of all the HSC items yielded a Chronbach's Alpha of 0.73, which indicates adequate full-scale reliability. Subscale tests of internal consistency indicated that removing items two and twelve would increase the reliability of the Challenge and Commitment dimensions. With these changes, alpha for both Challenge and Control would be 0.57, and Commitment would be 0.47. Given the low number of items on the HSC, the limited response options on the HSC, and the fact that the respondents were children—with respect to the findings of Cortina (1993)—the full-scale and subscale alpha levels can be considered adequate. Based on the results, the researcher is cautiously optimistic that the HSC is a fairly reliable and valid assessment of children's hardiness. Information gathered from future studies can facilitate the development of training programs that can be implemented in schools to promote resilience in children.

Introduction

Mrs. Johnson has two students in her class who are both 12-year-old, Caucasian, middle-class students; however, there are differences in how they perform and the level of success they achieve. Jack demonstrates confidence and frequently raises his hand to answer questions. He voluntarily attempts more challenging tasks and appears more calm and relaxed during exams. Conversely, Bill rarely answers questions and appears nervous when Mrs. Johnson calls on him in class. He complains often about the amount of classwork she assigns, and he displays anxiety and uncertainty during exams. The fundamental difference between these two students can be explained by their level of hardiness.

Background

What is Hardiness and why is it an important quality to build in children?

The father of hardiness, Salvatore Maddi, defined hardiness as “the pattern of attitudes and skills that enables people to turn the stress of potential disasters into growth opportunities” (Maddi, 2014, p. 291). Maddi explains that there are three qualities of hardiness: challenge, control, and commitment. These qualities affect how one structures interactions with his or her environment and sustains the motivation necessary to persevere through life’s stressors. An individual who has the quality of challenge acknowledges that stressors are normal in life and sees them as opportunities to learn and grow by actively engaging with them. An individual who has the quality of control attempts to continue having an effect on his outcomes, even when circumstances are poor, rather than being passive or believing himself to be powerless. Finally, an individual who has the quality of commitment is predisposed to be involved with the people and organizations around him as opposed to acquiescence to alienation (Maddi, 2014).

Possessing these qualities serves as a buffer for stressors in daily life, which gives meaning to new situations (Maddi, Hoover, & Kobasa, 1982).

The first study of hardiness was a 12-year natural experiment with Illinois Bell Telephone, in Chicago. Maddi was a psychological consultant for them in 1970s. In 1975, he began collecting data, which included psychological, performance, and health information, on 450 managers. At this time, the government was pushing deregulation to facilitate competition among companies. Maddi tested them comprehensively (psychologically and medically) waiting for deregulation, which was massive and took place in 1981. Even after the deregulation, Maddi continued collecting data for six years. Two-thirds of the managers showed significant deterioration characterized by stress-related physical symptoms, depression and anxiety, violence in the workplace, and poor performance. The other third performed and felt better. This group had higher levels of hardiness.

The hardiness model emerged from Illinois Bell Telephone project and is supported by many studies (Maddi 2002, 2004a, b, 2006). It states that as stress (a combination of acute and chronic circumstances) increases, so does strain (psychophysical arousal). When strain is strong and continues, it eventually depletes the performance and health of the body and mind. Someone with hardy characteristics will take a more positive approach: utilize problem-solving (rather than regressive) coping, socially supportive (rather than conflictual) interactions, and beneficial (rather than undermining) self-care. Beneficial self-care decreases strain, which minimizes loss in performance and health. Problem-solving coping has an even greater effect on performance and health because it decreases strain by resolving stressors that cause it.

Other studies have shown that hardiness facilitates performance in other occupations, such as bus drivers (Bartone, 1989), lawyers (Kobasa, 1982), firefighters (Maddi et al., 2007),

military personnel (Bartone & Snook, 1999; Maddi et al., 2012a, b, c; Westman, 1990) and nurses (Keane et al., 1985). In college students, hardy attitudes facilitate retention rates, creativity, and grade-point average (Lifton et al., 2000; Maddi et al., 2011). Studies of working adults showed an improved meaning of life (Battista & Almond, 1973), mental health (Florian et al., 1995; Rodewalt & Zone, 1989), and success in entrepreneurial consulting (Maddi et al., 2006a, b).

Maddi, (2013) discusses in the book *Meaning in existential psychology* that hardiness is positively related to a sense of meaningfulness and enhances performance and health. Hardiness is also negatively related to depression and anxiety. Maddi goes on to say that there is no way of avoiding life's stressors; therefore, it is best to face them openly in a process that existentialists call "choosing the future".

Review of the literature indicates that Kamtsios and Karagiannopouou (2013) was one of the only studies that involved elementary school students. It investigated hardiness and its role in academic-focused goals. These researchers defined academic hardiness as a personality characteristic that differentiates students who avoid challenging academic work from others who are willing to pursue these types of challenges. They investigated its possible dimensions by asking primary school children to reflect on their experience about school failure and a low grade on a test in a school lesson. According to the results of the study, student's behavior and efforts, which are directed to a personal goal, are modified and adjusted in a way that could achieve their final learning goal and the desirable result. In other words, student's ability to recognize and appraise difficult situations, such as a low grade on a test, can lead them to cope better. A student's conscious decision to engage in an activity that offers emotional calm can help remove

him or her from the unpleasant or negative thoughts, which ultimately allows for effective coping of the situation (low grade).

Hardy qualities are clearly beneficial for adults, so why are we not actively building them in children? There appear to be very few studies of hardiness in children. Although there is some research on children and test anxiety, there is little on children's ability to cope in other stressful circumstances. Yet, there have been some studies that looked into resilience of adolescents and undergraduate students. The purpose of the current study is to assess the reliability and validity of a hardiness rating scale for children, with the intent that it will be used to develop effective programs and interventions to build hardiness in children. In the next section, I will discuss the current trends of mental health in children and the need for internal tools of resilience.

Current mental health trends

Child and adolescent mental health is becoming a greater issue today. Adolescents and young adults are reporting more mental health issues due to a rise in academic demands and daily life stressors (Twenge, 2000; Twenge et al., 2010; Scollon & Diener, 2006; Goodwin, 2003; Swindle, Heller, Pesosolido, & Kikuzawa, 2000). Since the 1980s, mental disorders such as anxiety and depression have been on the rise. Twenge and her colleagues (2010) conducted a meta-analysis of the Minnesota Multiphasic Personality Inventory (MMPI). They looked at samples of college students dating back to 1938, and they also looked at samples who responded to an adolescent version of the test dating back to 1951. The results had shown dramatic increases in anxiety and depression in children and adolescents over the last five or more decades (Twenge et al, 2010). Twenge's most recent research has indicated specifically that children, adolescents, and adults were increasingly more likely to report anxiety and neuroticism (Scollon

& Diener, 2006; Twenge, 2000), to say they had experienced a panic attack (Goodwin, 2003), and to report they felt like they were on the verge of a nervous breakdown (Swindle, Heller, Pesosolido, & Kikuzawa, 2000).

There are numerous explanations for this rise in mental health issues. The review of literature indicates that factors such as higher rates of divorce and crime, decreases in social connectedness, and increases in environmental dangers may be responsible for the rise in anxiety (Twenge, 2000). Swindle, Heller, Pesosolido, and Kikuzawa (2000) investigated individuals' response to feeling an impending nervous breakdown. They found that the most prevalent reasons individuals reported feeling this way were divorce and other relationship problems with members of the opposite sex, work and educational problems, and financial problems.

One potential explanation for recent decreases in psychological well-being is a lack of positive risk-taking behavior. Western standards for safety and risk management have risen dramatically, and as a result, parents and daycare providers are reluctant to allow children to engage in risky play that some studies find to be healthy and necessary for their development. Risk-taking in play is essential to a child's exploration and understanding of the world (Smith, 1998; Sutton-Smith, 2009). Risky play includes six categories: play at speed, at height, with dangerous tools, near dangerous elements, rough and tumble play, and play where there is a chance of getting lost (Sandseter, 2007). Brussoni et al., (2017) found that risky play outdoors was positively associated with physical activity and social health, and negatively associated with sedentary behaviors. Other studies have shown that children who attend childcare centers and schools with play spaces that have more natural materials and physical and cognitive challenges experience more positive social relationships and happiness, and engage in more physical activity (Cosco et al., 2014; Farmer et al., 2017; Herrington & Lesmeister, 2006; Pivik,

Herrington, & Gummerrum, 2011). These studies suggest that risky or uncertain situations are opportunities for growth, which can provide children with rich experiences that can promote autonomy and self-efficacy. Based on trends reported by Brussoni et al. (2017), instead of encouraging risky activities, parents and care-providers are becoming more restrictive. Children, therefore, cannot independently entertain themselves for very long because they are limited to less-creative activities, and they are, ultimately, more dependent on adults. By encouraging children to take risks, parents and educators can help children to build characteristics of hardiness.

Why is hardiness a good way to measure resilience?

The literature on current mental health of children and adolescents indicates there is a need for more effective programs and interventions to promote resilience. Furthermore, a measurement tool is needed to assess the internal resources one can access to persevere through challenging situations. Prior to selecting hardiness, I investigated self-efficacy, mental toughness, grit, and resilience itself. Self-efficacy was dismissed because it has primarily been conceptualized as a situation-specific construct that focuses on a single target behavior. Bandura (1977) argued the degree to which individuals experience mastery and the attribution of success to chance or skill results in a general set of expectations that they apply to new situations. Children have not had as many experiences to reflect upon and establish expectations for new situations. Thus, self-efficacy was not determined to be an appropriate construct for this study.

Loehr (1994) defined mental toughness defined as “the ability to consistently perform toward the upper range of your talent and skill regardless of competitive circumstances” (Clough et al., 2002 p.3). It is characterized by flexibility (maintaining balance, and avoiding defensiveness under pressure), responsiveness (remaining focused under pressure), strength

(maintaining a powerful fighting spirit), and resiliency (bouncing back from disappointments, mistakes, and missed opportunities). Mental toughness, by nature, is a sports psychology construct and applies specifically to competitive situations. I do not intend to primarily study resilient qualities in children in competitive situations; therefore, I did not select mental toughness.

Grit is defined as perseverance and passion for long-term goals. It is a quality that involves working strenuously toward challenges and maintaining effort and interest over years despite failure, adversity, and lack of progress (Duckworth et al., 2007). Grit is an excellent determining factor of success; however, for the purposes of this project, I wanted to focus on general attitudes and short-term goals rather than long-term goals.

Finally, according to Zolkoski & Bullock (2012), researchers have developed numerous definitions of resilience and resiliency, and they are still heavily debated. Many studies identified resilient qualities such as easy temperament, self-mastery, self-efficacy, planning skills, internal locus of control, self-discipline, and critical thinking skills; however, they also recognized external influences such as positive school climate, personal relationship with an adult, and a supportive family environment (Garmezy, Masten, & Tellegan, 1984; Werner & Smith, 1992; Rutter, 1979, 1985). When considering measuring the construct of resilience for this study, I anticipated that it would be nearly impossible to separate the internal and external influences; I did not select resilience. The aforementioned literature review of hardiness, however, supports its usage for the purpose of this study. Hardiness characterizes a great deal of the internal resources that influence resilience, which makes it an ideal selection.

Hardiness helps build resilience

Resilience has been studied to investigate the reasons why some individuals succeed despite adversity while others do not. There are numerous definitions of resilience or resiliency; however, empirical support on this construct supports agreement upon three overarching characteristics: (i) personal positive characteristics and resources, (ii) a stable and supportive family and (iii) a social environment outside of the family (Moksnes & Haugan, 2018). Other studies have also supported that resilience is not one-dimensional. According to Zolkoski & Bullock (2012), it has been suggested that resilient individuals show positive outcomes across multiple aspects of life over a period of time and possess a variety of skills that helps them to cope. Providing children with stable and available support systems will ultimately enable them to be more successful. This begs the following questions: How can we enable children to be more resilient when their family, school, or community resources are limited? How can we build their internal resources so that they can independently bounce back from adversity? The answer is to strengthen children's personal positive characteristics and build their repertoire of coping strategies. The following research studies indicate that this can be accomplished through hardiness training.

Hasel, Abdolhoseini, and Ganji (2011) found that a hardiness training model successfully increased hardiness levels in college students. The content of this training included stress-management, adaptive coping strategies, healthy communication, conflict management, and problem-focused resolution. These elements were applied in real-life scenarios in which the focus was less on reducing the stress of the situation and more on resolving the problem. The results of this study were consistent with findings from Maddi, Harvey, Khoshoba, Fazel and Resurreccion (2011), Judkins and Ingram (2002), and Tierney and Lavelle (1997). This body of

research found that educational training can effectively increase hardiness levels. A similar study implemented a preventative counseling program to improve psychological hardiness and positive use of social networking sites. Thirty male university students in Jordan were divided evenly into a control and experimental group and completed a hardiness scale. There was a statistically significant difference between the experimental group and control group for challenge, control, and commitment, and for the total score on the Psychological Hardiness Scale, indicating that this preventative counseling program helped the students deal with stress (Almahaireh, Aldalaeen & Takhaine, 2018). This literature suggests that hardiness training would be an extremely valuable tool for students who are particularly susceptible to adversity.

Special needs students would benefit greatly from hardiness training. Dina Ye. Shchipanova and her colleagues, (2016) found that adolescents with special education needs (SEN) are less resistant to stress and, to a degree, less prepared to act actively and flexibly in a difficult situation. The results of their study indicated that students with SEN did not express high levels of hardiness components. Hardiness training may help students with SEN to become more resilient to stress.

Maddi and Kobasa (1984) suggest that hardiness emerges in early childhood as a result of rich, varied, and rewarding life experiences. According to Kobasa (1979a), the effects hardiness has on mental health are mediated by individuals' cognitive appraisal of a stressful situation and their repertoire of coping strategies. Specifically, hardiness alters two appraisal components: it reduces the appraisal of threat and increases one's expectations that coping efforts will be successful (Tartasky, 1993). Hardiness has also been shown to be associated with the individual's use of active, problem-focused coping strategies for dealing with stressful events (Kobasa, 1982). These two mechanisms are, in turn, hypothesized to reduce the amount of

psychological stress one experiences. If we can teach these skills to children, we can help them to tackle challenges with a positive attitude while also enabling them to independently reduce the psychological stress that is associated with these challenges. Nevertheless, the following questions remain: How should hardiness training programs for children be structured? What activities and interventions would teach children to be more resilient to adverse or challenging situations they may encounter?

Interventions to promote hardy qualities

Salvatore Maddi and a team of researchers at the University of Chicago developed the Hardiness Institute, which offers consulting services and training programs for businesses, individuals, public safety organizations, and colleges and universities. These services and programs seek to strengthen the ability to manage change and stress, specifically with coping skills, social support, and self-care. These elements are essential to hardiness training.

As I ponder potential designs for children's hardiness training programs, I am reminded that when presenting new information to children, it is helpful to make it meaningful to them. Additionally, children's cognitive and developmental abilities also need to be carefully considered. With these considerations in mind, I hypothesize that a non-traditional design may be an effective approach to increase hardiness in children.

In the past, I have led groups and individuals in adventure and challenge-based activities such as paddling, hiking, climbing, and team building. Based on my experiences working in the adventure recreation field and extensive review of literature, I have developed a theory that adventure or challenge-based activities, such as indoor rock climbing, can be an effective method to increase hardy qualities in children. A recent study had shown that rock climbing helps to reduce symptoms of anxiety and depression and increase coping emotions in adolescents

(Kleinstauber, Reuter, Doll, & Fallgatter, 2017). Indoor rock climbing is an activity that involves individuals maneuvering themselves up a wall using their hands and feet on artificial rocks and features. It requires a variety of cognitive functions, such as concentration, planning, critical thinking, and problem-solving, as well as moderate physical strength. There are two forms of climbing: bouldering and rope-climbing. Bouldering is climbing at a lower height (typically 8-10 feet), and crash pads and spotters are utilized for protection. In rope-climbing, the climber wears a harness and ties himself or herself to a rope. A belayer holds the other end of the rope with a braking device as the climber ascends the wall.

I believe indoor rock climbing is a fitting method to teach hardiness to children because it is an activity that uses a “challenge-by-choice” model. Participants are encouraged to attempt new and difficult challenges; however, each participant develops his or her own goal. For example, one participant may decide his goal is to climb halfway up the wall, whereas another’s goal may be to follow a specific route that is marked with colored tape. Furthermore, rock climbing requires all three qualities of hardiness (challenge, control, and commitment).

Regarding Challenge and Control, indoor rock climbing is mentally and physically demanding but can accommodate individuals of varying levels of skill, ambition, and fear tolerance. Participants can challenge themselves how they see fit. Additionally, they will likely develop confidence in their abilities and have a greater sense of control when attempting to achieve their goal. By nature, rock climbing provides clear and immediate reinforcement when a climber achieves his or her goal, which can be facilitated by verbal praise from adult instructors and peers. Thus, there is a collective social component to this activity. Rock climbing also involves the quality of Commitment because of required adherence to safety procedures. Rock climbing is inherently dangerous; however, it is a safe activity when these safety procedures are

maintained. Participants help protect each other by moving a crash pad so that it is underneath a climber or communicating dangers to others who may be unaware. Participants develop genuine concern for each other's safety and become more involved in each other's success. I am curious to see whether rock climbing has a positive effect on hardiness, and the HSC may be an appropriate measurement tool to assess this hypothesis.

Need for hardiness scales normed on children

There is clearly a need to develop hardiness training programs for children; however, a valid and reliable measurement tool is needed. The researchers who have first studied hardiness have stated that the components of hardiness are developed in childhood and partly in adolescence (Leontiev & Rassosova, 2006; Maddi, 2006). Hardy attitudes are an effective tool that may help children combat the rising stressors that they experience in life. There are limited studies that have investigated hardiness in children. There is even less information on hardiness scales that have been normed on samples of children. I have, therefore, adapted the Psychological Hardiness Scale (PsyH) to create the Hardiness Scale for Children (HSC). The purpose of this study is to assess the reliability and validity of the HSC on elementary school-aged children.

Method

Participants

I sought the approval of three elementary schools from a rural school system in Virginia to participate in this study. The sample included 132 second- through fifth-grade students (male and female) and their parent or guardians. Eleven children did not complete the HSC properly and were not included. 121 students remained in the sample, which included 11 second-graders, 18 third-graders, 34 fourth-graders, and 58 fifth-graders (one 3rd-grade class, one 2nd-grade

class, four 4th-grade classes, and four 5th-grade classes). Specific demographic information, such as age, gender, and race were not collected. According to the school administrators and observations made by the researcher, the sample included white, Hispanic, and African American children, and potentially children from other ethnically diverse groups. The parents of the students received a letter that briefly explained the purpose of the study, emphasizing that participation was voluntary and anonymous, that the participants could withdraw at any time, and that all the information collected would be confidential. The letter included a consent form with a three-item questionnaire on which the parent was requested to rate their child's hardiness. The parents were asked to rate their child's hardiness on Likert scale ranging from (1) strongly disagree to (4) strongly agree (see *A.1* in the Appendix). This scale included one statement for each of the dimensions of hardiness: Challenge, Control, and Commitment. Seventy-four parents completed and returned these scales with the consent form. Additional ratings from teachers were intended to be used; however, essential information was missing and the data was unusable.

Procedure

The HSC was administered to all of the students in each classroom that was approved by the principal of the building; however, only the students whose parents gave consent were included in the study. Prior to administration, the HSC forms were numbered according to the attendance list in order to identify the students who were participating in the study. The remaining forms were shredded after they were collected the completed forms from each classroom. With the help of the classroom teacher, the HSC forms were handed to the students according to their number code. Then, the students were directed to honestly respond to each statement on the form and to ask for help if needed. Assistance was provided by myself, the

teacher, or other adults within the classroom by reading certain words, or clarifying the meaning of a statement.

Measures

The HSC is a 15-item self-report scale on which the user rates statements about how much they demonstrate the three characteristics of hardiness: challenge, control, and commitment. I referenced the Psychological Hardiness Scale (PsyH) developed by Almahaireh, Aldalaeen, and Takhaineh (2018) and selected 15 items that were most applicable to elementary school students (The PsyH can be found in the Appendix). Some of these items were modified to be more readable for a second-grade student. Microsoft Word was used to determine the approximate reading level of the HSC, and pilot testing was conducted with volunteer elementary school students. The pilot testing indicated adequate comprehension of the items. The authors of the PsyH were contacted and permission to use the PsyH was requested (see Appendix); however, they did not reply.

The participants in the current study provided a response to each item on a Likert scale: (1) “Never,” (2) “Sometimes,” and (3) “Almost Always.” Each response was signified by a frowning face, a neutral face, and a smiling face, respectively. Subscale index scores for Challenge (items 1-5), Control (items 6-11), and Commitment (12-15) were obtained, as well as an overall score. In theory, higher overall scores indicate more hardiness (The HSC can be found in the Appendix).

Statistical Analysis

Normative scales were computed for the participants’ grade. Reliability analyses were completed to test for the full-scale internal consistency in addition to the three hardiness subscales. An item analysis was measured for correlations between each item and its respective

subscale score and also with the total HSC score. I considered the findings of Nunnally (1978) and Cortina (1993) for the analysis of reliability. Cortina (1993) evaluated the coefficient alpha and explained that it is affected by the number of items, average item intercorrelation, and dimensionality. He claimed that researchers generally state that an alpha greater than 0.70 is adequate without comparing it with the number of items in the scale. His findings showed that alpha can be high in spite of low average item intercorrelation or multidimensionality, provided there is a sufficient number of items (typically 19 or more items). The findings of Cortina (1993) were essential to analyzing the coefficient alphas in the current study. The analysis of internal consistency assisted in the determination of which items to keep and which should be removed to maximize the internal consistency of the HSC. An assessment of validity was obtained by assessing for correlations between parents' ratings on the three-item questionnaire and their respective child's ratings on the HSC. Full-scale and subscale analyses were conducted for both reliability and validity assessments.

Results

The descriptive statistics are displayed in Table 1. In general, the students in higher-grade levels tended to give themselves a higher HSC rating, but a clear pattern was not present. For example, the third-grade students often rated themselves higher than the fourth-grade students.

Table 1
Descriptive Statistics for HSC Responses

	Grade/ Total Score	<i>n</i>	<i>M</i>	<i>SD</i>
Control	2	11	14.909	1.814
	3	18	15.150	2.159
	4	34	14.941	2.187
	5	58	15.271	1.818
	Total	121	15.129	1.963
Commitment	2	11	7.909	1.221
	3	18	8.400	0.883
	4	34	8.114	1.278
	5	58	8.491	0.704
	Total	121	8.320	0.980
Challenge	2	11	9.545	1.695
	3	18	10.421	1.465
	4	34	9.829	1.424
	5	58	9.690	1.614
	Total	121	9.830	1.550
Total HSC	2	11	32.364	3.414
	3	18	34.400	3.632
	4	34	32.824	3.745
	5	58	33.400	3.33
	Total	121	33.300	3.330

Reliability

A test of internal consistency for all of the HSC items yielded a Chronbach's Alpha of 0.73, which indicates adequate full-scale reliability. Analysis of the results of internal consistency within subscales indicated that items two and twelve were the least reliable items. With item two removed, Chronbach's Alpha for the Challenge subscale (items 1-5) would be raised from 0.51 to 0.57. The Control subscale (items 6-11) yielded a Chronbach's Alpha of 0.57. These items were adequately consistent; therefore, no items were suggested to be removed. With item twelve removed, Chronbach's Alpha for the Commitment subscale (items 12-15) would be raised from 0.39 to 0.47.

I considered three factors when analyzing this data: first, the low number of items on the HSC; second, the limited response options on the HSC (three); and third, the fact that the respondents were children. With respect to these factors and the findings of Cortina (1993), the full-scale and subscale alpha levels can be considered adequate. Thus, the HSC has sufficient full-scale and subscale internal consistency.

Validity

The Total Parent Scores were significantly correlated at the 0.05 level with the Total HSC scores ($r = 0.279$) and also with the Challenge ($r = 0.235$) and Control ($r = 0.262$) dimension scores, but not with the Commitment ($r = -0.17$) dimension scores. In summary, small but adequate correlations were found between the parent ratings and the children's total HSC ratings in addition to the Challenge and Control subscales. The participants' ratings on the Commitment subscale items may not have been significantly correlated with parent ratings because this subscale has the least number of items. Given that there are only three response options and the participants are children, these results suggest that the HSC is a fairly valid assessment tool for measuring hardiness in children.

Discussion

The results of the current study suggest that the HSC is a fairly reliable and valid scale of hardiness in children and can be used for future studies of hardiness in elementary school students. A test of internal consistency of all HSC items yielded a Chronbach's Alpha of 0.73, which indicates adequate full-scale reliability. Subscale tests of internal consistency indicated that removing items two and twelve would increase the reliability of the Challenge and Commitment subscales (the Control subscale yielded adequate internal consistency and no items were suggested to be removed). These changes will be made to the HSC for future studies and

experiments. Furthermore, significant positive relationships exist between the Total Parent ratings and the Challenge and Control dimensions and the total HSC scores as well, which suggests that the items on the HSC accurately measure hardy qualities. The participants' ratings on Commitment subscale items may not have been significantly correlated with parent ratings because this subscale has the least number of items. Overall, the results indicate that the HSC's full-scale and subscale reliability and validity is not ideal but strong enough to use as a measurement tool for future studies.

There were some significant differences between classrooms of students regarding hardiness ratings. In general, older students tended to rate themselves higher, particularly in the Control and Commitment dimensions. This may have occurred because these students have had more time to refine their skills and abilities, which may cause them to be more self-confident and dedicated individuals. Interestingly, the third-grade students provided the highest ratings on the Total HSC score and the Challenge dimension. It could be that this particular group of students was genuinely hardier; however, these high scores may also be due to response bias. Another explanation is that the third-grade students were from a school that may have included families with a higher socioeconomic status and less ethnic diversity when compared to the other schools in the sample. I also anticipate that developmental maturity may have also been a factor. Younger students have not experienced as many stressors to test their coping skills as older students; and therefore, they may have a skewed perception of their level of hardiness. Researchers interested in advancing the field of childhood hardiness should consider these factors when developing future studies.

In regards to these findings, what is the next step? Researchers should develop a preliminary intervention that will teach children the foundation of hardiness and provide them

with real-world opportunities in which these skills and attitudes can be applied. The HSC could be used to measure the effectiveness of this program, such as a pre-post test experiment. One consideration that I think poses a challenge with instructing children on hardiness is in the nature of the concept itself. Maintaining hardy qualities results in developmentally advanced benefits (such as increased self-concept, leadership skills, or logical reasoning skills) that children may not find naturally reinforcing. Therefore, I believe that hardiness training programs for children should involve practice methods that they will be interested in and will provide immediate reinforcement. Furthermore, a traditional classroom-style intervention may not be the most effective method for implementation, and therefore, alternative methods should be considered.

Based on my experiences working in the adventure recreation field and extensive review of literature, I hypothesize that challenge-based activities such as indoor rock climbing can be an effective method to increase hardy qualities in children. Hardiness training programs for children could involve sessions to teach children strategies to manage distress and deal with change, and then apply these strategies to a rock climbing activity. For example, the instructor may teach the children how to combat negative self-talk and then apply these new skills to a rock climbing activity. The model used by Luttenberger, Stelzer, Forst, Schopper, Kornhuber and Book, (2015) to treat individuals with depression would be a good model to consider. Indoor rock climbing, specifically, may be an ideal challenge-based activity to build hardiness in children because it utilizes all three qualities of hardiness. Rock climbing involves demanding but manageable cognitive and physical obstacles, and because of its challenge-by-choice nature, participants can feel more in control of their decisions and the outcome. Rock climbing is also unique in that participants can pursue individual goals while also in a group setting. This allows for independent engagement of challenges while also creating opportunities for social support

and collective problem solving. When participants achieve goals, they can experience an internal sense of pride and satisfaction while also receiving verbal praise from other participants and the instructor. As a result, participants may pursue more challenging goals. The training program could also use visual aids to track participants' achievement of individual goals, which may provide additional reinforcement. I intend to design a hardiness training program that incorporates these ideas and then assess its effectiveness with the HSC. This experiment would test my hypothesis that rock climbing increases hardiness in children.

Limitations

This study may have been improved by increasing parent participation, rater diversity, and the number of items on the parent rating scale. Only 74 parents of the 121 participants provided ratings of their child's hardiness. Although, they gave consent for their child to participate in the study, they did not complete the three-item questionnaire. This may have been due to not carefully reading the forms or these parents may have intentionally left it blank. The researcher could have maximized participation by contacting these parents on the phone and asking whether they would be willing to provide a response. Another factor for consideration is the fact that validity of the HSC was determined only by correlations between the parent and student ratings. Teacher ratings were intended to be used for additional tests of validity; however, essential information was missing and the data was unable to be used. Had this data been available it may have strengthened the assessment of validity.

Although no specific demographic information was collected from the participants, the sample of students was from one school county, which likely had limited the ethnic and socioeconomic diversity. It may be beneficial for future studies to collect data from multiple counties. It may be possible that ethnicity, socioeconomic status, gender, and age have a

significant impact on hardiness due to potentially varying psychological growth and development. Investigating these factors in future studies would provide valuable information for the childhood hardiness field.

It is possible that the correlations between parent and student ratings may have been stronger if the parent rating scale consisted of more than three items. Furthermore, the commitment item on the parent scale did not seem to accurately reflect Maddi's definition. This may explain why the parent ratings did not correlate significantly with the children's ratings on the HSC. Researchers who may conduct a follow up study of validity should generate a new item of commitment that better captures Maddi's definition.

Finally, I also suspect that the smiling faces on the HSC may have influenced some children's responses. It is possible that they saw the frowning face and concluded that selecting this response option may reflect negatively on them.

Conclusion and Recommendations

The findings of this study show that the HSC is a fairly reliable and valid assessment of children's hardiness. It should be used to measure levels of hardiness in larger, more diverse samples of elementary school students. Information gathered from future studies can help develop appropriate and effective hardiness measures, which can facilitate the development of training programs that can be implemented in schools to promote resilience in children.

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Appendix

A.1 HSC Validity Rating Scale

Rate how much you agree this student...

	<u>strongly</u> <u>disagree</u>	<u>disagree</u>	<u>agree</u>	<u>strongly</u> <u>agree</u>
Challenge				
1.) attempts something s/he has never done before	1	2	3	4
Control				
2.) perseveres even when the task was difficult	1	2	3	4
Commitment				
3.) continues to try after a failed attempt	1	2	3	4

A.2 Letter of Consent to Researchers

Hello Professors Almahaireh, Aldalaeen, and Takhaineh.

My name is Stephen Ferrara, and I am a school psychology student in the Ed.S program at James Madison University in Harrisonburg, Virginia. I am currently writing a thesis proposal on hardiness in children. My research on this topic has lead me to your article, in which you tested the efficacy of a preventative counseling program on university students. Ultimately, I am interested in developing interventions that may improve the hardiness of elementary school children; however, there are no measures that are normed on children this age. I was impressed with validity and reliability of the Psychological Hardiness Scale and would like your permission to use particular items from it to develop a 15-item scale that is appropriate for children. The items that I chose from the PsyH are listed below:

1. I try to prevent problems before they occur.
2. **I have the love of adventure and exploration.**
3. **I can overcome my problems.**
4. **I do not give up easily.**
5. **I look at myself as a strong person.**
6. **I have the ability to execute my plans.**
7. **I can control my anger and stress.**
8. I can adapt to changes.
9. **I know where I can get help from.**
10. I work to achieve my goals.
11. **I can focus and think clearly under pressure.**
12. **I do my best to help if someone asks me a favor.**
13. **I adhere to regulations and laws at the university.**
14. I stop doing my homework when I am feeling unhappy.
15. I do my assignments.

The items in bold were modified to make them more readable or relevant for children in second to fifth grade.

These modified items are listed below:














































2. I love to explore and go on adventures.
3. I can solve my problems.
4. I give up easily
5. I keep working even when things get tough.
6. I can complete my plans.
7. I can control my anger.
9. I know where I can get help.
11. I can focus under pressure.
12. People can count on me to do them a favor.
14. I do my homework, even when I am feeling unhappy.
13. I follow the rules at my school.

Additionally, I reduced the item responses to 3 options: "Never," "Sometimes," and "Always," which were signified by a frowning face, a neutral face, and a smiling face, respectively. I named this 15-item scale the Hardiness Scale for Children (HSC). The research question for my project is this: Is the HSC a reliable measure of hardiness for children in grades 2nd through 5th grade? In the future, I hope to use the HSC to evaluate the effectiveness of interventions that will improve the levels of hardiness in children. If you have any questions or conditions regarding my usage of the PsyH for my thesis project, please contact me. Thank you.

Stephen

A.3 Hardiness Scale for Children (HSC)

Read each item and circle the answer (face) that is most true for you: almost always true, sometimes true, or never true.

	<u>Never</u>	<u>Sometimes</u>	<u>Almost Always</u>
1. I try to prevent problems before they occur			
2. I love to explore and go on adventures			
3. I can solve my problems			
4. I give up easily			
5. I keep working, even when things get tough			
	<u>Never</u>	<u>Sometimes</u>	<u>Almost Always</u>
6. I can complete my plans			
7. I can control my anger			
8. I can adapt to changes			
9. I know where I can get help			
10. I work to achieve my goals			
11. I can focus under pressure			
	<u>Never</u>	<u>Sometimes</u>	<u>Always</u>
12. People can count on me to do them a favor			
13. I follow the rules at my school			
14. I do my homework, even when I am feeling unhappy			
15. I complete all my assignments			

A.4 Psychological hardiness (PsyH) scale statements

Challenge

1. I think the fun of life lies in facing challenges.
2. I try to prevent problems before they occur.
3. I trust my ability to deal with new situations.
4. I feel disordered if I face problems.
5. I have the love of adventure and exploration.
6. I can overcome my problems.
7. I am enjoying a trouble-free life.
8. I think facing my problems is a test of my ability to challenge.
9. I think life without change is a boring one.
10. I have the challenge of change.
11. I do not give up easily.
12. I do my maximum effort regardless of the results.
13. I look at myself as a strong person.
14. I can complete the tasks despite my difficulties.

Control

15. I can resist difficult situations despite the difficulties I face.
16. I have the ability to manage and control situations.
17. I have the ability to execute my plans.
18. I can control my anger and stress.
19. I can make my own decisions.
20. I rely more on myself than I do on others.
21. I can adapt to changes.
22. I know where I can get help from.
23. I have a strong sense of what the purpose of life is.
24. I work to achieve my goals.
25. I feel that I am controlling my life.
26. I love challenge.
27. I can focus and think clearly under pressure.
28. My success depends on how much effort I make.

Commitment

29. I can achieve my goals no matter what the obstacles are.
30. I think the value of life lies in the loyalty of an individual to certain principles and values.
31. I find difficulties to adapt with others.
32. I do my best to help if someone asks me a favor.
33. I adhere to regulations and laws at the university.
34. I care about what is going on around me.
35. I waste my time in meaningless activities.
36. I have trouble being on time.
37. I think I have a goal for my life.
38. I feel responsible towards others.
39. I do not hesitate to participate in the various activities.
40. I stop doing my homework when I am feeling unhappy.
41. I feel strongly associated with a group of people.
42. I do my assignments.