Evaluation of Stress Resources in School-Age Children by Fifth and Sixth Grade Teachers

Crystal Edie Stephenson

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Evaluation of Stress Resources in School-Age Children by Fifth and Sixth Grade Teachers

by

Crystal Edie Stephenson

An Honors Capstone

submitted in partial fulfillment of the requirements

for the Honors Diploma

to

The Honors College

of

The University of Alabama in Huntsville

April 20, 2019

Honors Capstone Director: Dr. Thuy Lynch

The Effects of Psychological Stress and Depressive Symptoms on Body Mass, Central Adiposity, and Blood Pressure as Mediated by Cortisol and C-Reactive Protein in 10-12-Year-Old Children: A Feasibility Study

Student

Date 11/20/19

Director

Date 04/25/19

Department Chair

Date 11/25/19

Honors College Dean

Date 5/1/19

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__Crystal Stephenson__

Student Name (printed)

[Signature]

Student Signature

____4/20/19_____

Date
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Student Signature

____ 4/20/19 _____

Date
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Dedication

This thesis is dedicated to Dr. Thuy Lynch for dedicating so much of her own personal time in helping me in every step of this project. She has been such an inspiration to me and has selflessly given me both her guidance and support.

I would also like to dedicate this thesis to Dr. Ann Bianchi for guiding me through the Honors College at The University of Alabama in Huntsville and helping me with all assignments as well as any additional questions I had. She has been so patient and valuable to the betterment of this project and more.

Lastly, I would like to dedicate this thesis to my husband, Garrett Stephenson, as he has pushed me relentlessly to strive to do my absolute best in school and has generously supported me financially so that I never had to feel overworked.

You all have been so crucial in the making of this project, and for that I am incredibly thankful.
Abstract

Background: Stress in children can be detrimental to their health not only mentally, but also physically. One study found that “age and pubertal stage were not significantly associated with BMI, nor was physical activity” yet “depression was positively associated with BMI in both sexes” (Dockray, Susman, & Dorn, 2009). Perhaps mental debility in general is really what correlates with high BMI in children. Stress can negatively impact one’s mental stability as well as other psychological reactions such as depression and anxiety. Consequently, those reactions may lead to higher cortisol levels and thus greater weight gain. Thus, it is important to research how to reduce stress in children and help them find ways to cope with their emotions. One way we may do this is through encouraging teachers to evaluate their students for stress in the classroom, as they are typically trustworthy individuals who spend time with these children on a day to day basis.

Methods: After interviewing participants on the topic of stress in school-aged children, a research manual was created that portrayed ways to help reduce stress in children. Participants then used this research manual with stressed children to test its effectiveness. A second interview was conducted to discuss the research manual’s effectiveness and determine ways to improve it.

Results: A total of eight participants completed the requirements for this project. On average, participants were Caucasian females ages 22-44 with an average of 14.875 years of teaching. The average score given based on effectiveness of the manual on a scale of 0-10 was 7.625. Participants stated that the resource manual was very helpful in identifying stress and giving ways to cope with stress. Participants were overall satisfied with the resource manual and planned to use it again in the future.
**Discussion:** Even children get stressed, and it is important to give these children the tools they need to cope with stressful situations. Resource manuals like this one should be available for all teachers to use to educate students on healthy coping strategies. Recommendations for improvement were made by some teachers for future resource manuals to be produced.
Introduction

Stress in moderate amounts is a perfectly normal part of life. However, an excessive amount of stress may lead to detrimental effects on both a person’s body and mind. Children are especially susceptible to these effects due to their inexperience and unfamiliarity on how to cope with stress. Something that would seem completely tolerable to an adult may be the biggest stressor in a child’s life. These stressors inevitably lead to the “stress hormone” called cortisol to rise. Because stress has been linked to negative changes in the body such as elevated body mass and elevated cortisol levels, it is important to explore ways to reduce stress in children. In this study, several questions must be investigated, including what types of stressors children ages 10-12 years-old experience, what methods of stress relief work in this age group, and what teachers and health care providers can do to assess and alleviate stress in children.

The purpose of this study is to determine common stressors for school-age children and find the best methods to help those children deal with their stress. A resource manual (See Appendix G) will then be created with information for teachers and healthcare providers to use as a resource for this specific population. To fulfill this purpose, a collection of existing data will be examined to determine whether stress in children leads to higher cortisol levels and thus a higher BMI. By determining if this idea is true, further research can be conducted to find ways to reduce stress in children and thus help facilitate healthy weight loss. Since obesity is on a rise in the United States, it would be best to start healthy practices early in childhood to help reduce obesity and its associated complications, and thus create an overall healthier nation.
Review of Literature

Resources that were used to perform a literature search were PubMed and Cumulative Index to Nursing and Allied Health Literature. Through these sites, I was able to find over thirty research articles that fit the criteria needed, which included those that were published within the last five years, were in English language with full text, and were accessible from the University’s online library. The articles also had to include cortisol and BMI in some form, preferably with children included in the studies. The articles were then narrowed down by whether or not the article mentioned stress in relation to cortisol and its effects on the body. Then, a review of the evidence was completed and compiled into a table as seen in Table 1. This research helped me design my study as it allowed me to compare and contrast other studies on similar topics. The results of this compilation are as follows:

Bates and colleagues (2017) examined persistent stress in young children by measuring hair cortisol concentration. Hair samples were collected from 1,243 children with sources of persistent stress such as low socioeconomic status and maternal distress (See Table A). The researchers found that hair cortisol concentration in young children is generally elevated with sources of persistent stress. One of the strengths of this study was that they had a large sample size which allows for the findings to be more generalized to the public as the sample is more representative of the population. Another strength was that this was a quasi-experimental study whereby nine separate studies were reviewed which allows for more generalization to the population. In addition, they used an observational experimental design as well as quasi-experimental which allowed them to see an unbiased view of the information. A weakness of this study is that the authors found other factors may influence hair cortisol concentration such as hair washing, which could possibly change the results (Bates, Salsberry, & Ford, 2017). Another
weakness was that the authors did not conduct their own study; they simply compared other researchers’ studies. Thus, Bates and associates (2017) were unable to determine the validity of the results. Lastly, another weakness was that the children were all between 12-60 months of age. Therefore, more studies need to be done on other age groupings of children, so that the findings can be applied to other children in general.

In a study of 342 children, Kjölhede and colleagues (2014) sought to examine cortisol levels in relation to BMI, age, and sex. Salivary samples were collected early morning, late morning, and evening for four consecutive days and were analyzed using a commercial enzyme immunoassay (See Table A). School nurses calculated the childrens’ BMI. The authors found that average cortisol levels were significantly lower in overweight and obese children than in children with healthy weights. Cortisol levels did not vary significantly with age or sex. One strength of this study was that salivary cortisol levels were used, which is a well-established method that correlates well with serum cortisol levels. Another strength was that the researchers used a standardized saliva sampling protocol. Finally, the last strength was that they used specific Salivette tubes for the saliva. One of the weaknesses of the study was that the number of children in the 6 and 13-year category was low, so the results in those categories may not be generalizable to the population. Another weakness was that the researchers used a cross-sectional design which limits inferences about direction of causality for the association between BMI and cortisol (Kjölhede, 2014). Lastly, another weakness of the study was that the children included were from one school, which does not allow for complete randomization of the sample.

Wirex and associates (2017) investigated the association between cortisol parameters and hypertension in overweight or obese children. Non-fasting urine and early-morning fasting saliva samples were collected from a sample of 306 children (See Table A). The researchers found that
salivary cortisol and cortisone levels were significantly lower in obese children than children with healthy weights, which contradicts most studies done on this subject. One strength of this study was that there were three different study groups used: hypertensive overweight children, normotensive overweight children, and normotensive non-overweight children. Another strength was that the method used to measure cortisol levels is known to be very specific and sensitive which allows for results to be more accurate. Another strength was that the researchers used both saliva and urine to obtain cortisol levels, which allows for more accurate answers. One of the weaknesses of the study was that hypertension was based on only one blood pressure reading, so those children may not actually be diagnosed with hypertension (Wirex et al., 2017). Another weakness was that this was a convenience sample which does not allow for the sample to be representative of the population. Lastly, another weakness was that only random urine samples were obtained rather than a 24-hour urine.

Ruttle and colleagues (2013) examined concurrent and longitudinal associations between diurnal cortisol and BMI across adolescence. The researchers had a sample size of 560 participants. Salivary cortisol and BMI were measured from the participants (See Table A). All cortisol samples were assayed with salivary enzyme immunoassay kits and frozen. The researchers found that blunted patterns of adolescent cortisol were associated with increased measures of BMI both concurrently and longitudinally. One strength of this study was that they used a longitudinal design which allowed the researchers to gain a large amount of knowledge from specific people over a long period of time. Another strength was that the sample size was quite large, which allowed for the results to be more representative of the population. Another strength was that salivary enzyme immunoassay kits allowed for results to be more accurate (Ruttle et al., 2017). One weakness of this study was that there may have been sampling bias as
the initial sample was mostly Caucasian and Non-Hispanic. Another weakness was that the sample was taken from only two cities, which may lead to results not being generalizable. One final weakness was that the study sample used couples that were married, which makes the sample even more bias.

Schorr and colleagues (2015) investigated cortisol measures across the weight spectrum. Urine and saliva were obtained from 60 participants as well as x-rays for bone mass density (See Table A). The researchers found that cortisol measures demonstrated a U-shaped relationship with BMI and were associated with visceral adipose tissue and total fat mass. One strength of this study was that the researchers measured cortisol across the weight spectrum, not just in obese people. Another strength was that the researchers used urine cortisol levels from various times in the day which allowed for results to be more accurate. One other strength was that they compared these results to body composition, which allows for the amount of fat to be more accurately assessed. One weakness of this study was that the cross-sectional design prevented the researchers from determining whether the association between cortisol and BMI are causal (Schorr et al., 2015). Another weakness is that the cortisol samples rely on the patients, which may lead to inaccurate data. Lastly, one other weakness was the small sample size which does not allow for the study to be representative of the population.

**Theoretical Framework**

Bruce McEwen is known for his work on stress and how it affects the brain (McEwen, 2007). McEwen states that “beyond the flight-or-fight response to acute stress, there are events in daily life that produce a type of chronic stress and lead over time to wear and tear on the body” known as “allostatic load” (McEwen, 2007). This theory applies to the study of the relationship between cortisol and BMI because high cortisol levels may indicate stress that is too
much for the body to handle. Thus, this may create an environment where the body is especially susceptible to weight gain. While “hormones associated with stress” like cortisol described in previous studies “protect the body in the short-run and promote adaptation,” too much can wreak havoc on the body’s homeostasis (McEwen, 2007). McEwen also notes that “events early in life affect how the brain responds to stressors throughout adult life and influences the aging process as well as susceptibility to the diseases of modern life, such as cardiovascular disease, diabetes, and depression” (McEwen, 2007). This information speaks volumes on just how much stress can affect a child. If children are not able to handle their stress in a healthy manner, it is possible that this will affect their entire life as adults as well. Therefore, it is important to examine the relationship between cortisol and BMI in children; if high stress leads to high cortisol levels and thus weight gain, children may be prone to living an unhealthy lifestyle when they do not know how to manage their stress from a young age. Thus, it would be imperative to teach children while they are young how to handle stress so that they remain in homeostasis rather than allostatic overload. Perhaps if this notion was used sooner, childhood obesity would not be as prevalent of a problem as it is now.

Yet, it is not too late to correct the obesity epidemic we have today. If the relationship between elevated BMI and high cortisol levels can definitively be made, then “manipulations of the social environment via policies of government and the private sector” can “help encourage individual behavior change, that, in turn, is an effective way of counteracting the deleterious effects of chronic stress” instead of using “pharmaceutical therapy” (McEwen, 2007). This would not only save money by using less drugs for obesity and the conditions that it may cause, but it may also decrease length of hospital stays and amount of times hospitals are visited altogether.
Methods

Population, Sample and Setting

The sample size included approximately 10 participants employed within a rural area in the southeastern region. Participants included different racial/ethnic backgrounds, various age groups, and males and females from a southeastern region. Inclusion criteria included: 1. Participants who teach 5th or 6th grade classes, 2. 19 years of age or older 3. Capable of understanding and speaking English.

Participants were recruited from elementary and middle schools in a southeastern region who currently teach students ages 10-12 (in the fifth or six grade). Participants were identified by the school principal. Initial contact was face-to-face through visiting the schools with the faculty advisor to discuss our projects. An email was then sent out asking them to participate in the study (See appendix H).

Data Collection

Data collection occurred through informal interviews with open-ended questions (See appendix E). Participants were provided informed consent when meeting in a conference room at the schools. Participants were informed by the PI that they do not have to participate. The PI was available at the meeting and by phone or email to discuss any questions or concerns. Participants were emailed up to 3 times to remind them to complete informed consent.

Participants were identified by randomly selected numbers that are not related to any personal identifiers. All electronic data was stored on password-protected computers using appropriate security drives, and accessible only to the PI. No files or master file were maintained linking participant numbers and their identities. Hard copies of any data collection instruments were archived and secured in a locked cabinet with access limited to the PI. The storage of any
data on removable storage devices were not permitted. All demographic data is to be shredded in 3 years after completion of the study.

**Research Design**

Convenience sampling and purposeful sampling was used to recruit participants who are employed at the local schools, of which the Superintendent has approved (see attached letter of support in Appendix A). This type of sampling was used because the faculty advisor was also using these schools for her research, and it was most convenient to use the same schools as I worked along with her.

**Instruments**

A demographic questionnaire was used (see Appendix D). Demographics data included age, gender, race and ethnicity, and years of teaching. A pre-assessment questionnaire was also used. This included open ended questions used to interview teachers (See Appendix E). Lastly, a research manual was given as a tool to help alleviate stress in children (See Appendix G).

**Procedure**

A recruitment script was used (See Appendix B). Prospective participants were recruited through email, provided consent to participate in the study, and provided demographic information (See Appendix D). Participants were asked to meet for approximately 20 minutes to discuss stress in children with the PI in a private conference room at the school. They were asked by the PI to describe stressors commonly found in children and ways they know of how to deal with it through open-ended interview questions (See Appendix E). A resource manual (See Appendix G) was developed to include more ways to deal with stress that the participants did not know of in hopes that it could help improve how they handle their students’ stress. Participants used these new methods for one month. Following one month, the PI met with the participants in
a private conference room at the school for a second interview (see Appendix F) to provide feedback. Participants were then given school supplies as incentives and thanked for their time.

**Results**

The final sample size consisted of eight participants. The participants signed consent forms, provided demographic information, and participated in an informal group interview with the PI. Demographic information is shown in Table 2. Reported ethnicity and race included 100% Caucasian Non-Latino and Non-Hispanic participants. Of the eight participants, 87.5% (7) were female and 12.5% (1) were male. The participants’ ages ranged from 22-64, with an average age range of 22-44. The participants had a wide variety of teaching experience with most teachers having between 11-15 years (37.5%) of experience.

Two of the participants were instructed to use the resource manual from March 4, 2019, until April 8, 2019. Six of the participants were instructed to use the resource manual from March 8, 2019, until April 12, 2019. The eight participants were then interviewed individually on April 8, 2019, or April 12, 2019, depending on their schedules, to discuss the resource manual and its effectiveness. The results from the first interview are shown in Table 3 and results from the second interview are shown in Table 4.

Results show that participants overall had a positive reaction to the manual. Most participants used the manual with only one student, while others used the manual with multiple students. When rating the manual on a scale of 0-10, most people ranked the manual high with an average score of 7.625. Participants stated that they enjoyed getting to know their students more through this manual and they got to learn of ways to help their students deal with stress. They also liked that it was easy to read, and it had a variety of ways to cope with stress. Many said there was plenty for students to choose from. As for improvements, teachers suggested
giving more time to use the resource manual, making the pages less blurry, and making certain questions more user-friendly. Overall, the resource manual ended up being a valuable resource for teachers to use, and some teachers even planned on keeping it for future use.

Limits

The main limitation to this study was the small sample size. Originally, a total of thirteen participants agreed to follow through with this research project. However, eight of those thirteen actually used the resource manual. Those that did not use the resource manual cited that they either did not have time or forgot to use it. In order to gather more information on the effectiveness of the resource manual, it would have been beneficial to recruit more participants for the study.

Another limitation of this study was that participants were only given one month to use the resource manual. This led to less use than could have been possible with more time. Allowing more time for the participants to use the resource manual may have also given more information on what could be improved.

Lastly, two of the participants stated that they were worried to ask some of the questions in the resource manual to children because they though it may overstep boundaries. They worried some of these questions may require parental consent to ask. This evidently led to less use of the manual as they felt they were unable to ask certain things of their students, specifically some of the questions on the Feel Bad Scale.

Discussion
It is important to remember that everybody gets stressed, even children. Some teachers noted that they don’t always think about the stress their children may go through unless the students explicitly say so. Resource manuals like this one may benefit all students as it gives ideas for stress relieving measures that they may not have tried before. Talking about stress is the first step in finding a solution. Perhaps using this resource manual in classes would allow for discussions to start on stress and how to combat it in a health manner. Children may not have the tools and resources that they need to cope. This resource manual can be the first step for some children in finding what stress relieving methods work for them.

Positive reactions from the resource manual were very helpful in determining its effectiveness. Overall, participants gave the resource manual a high score. The average score from 0-10 was 7.625. Many participants had positive feedback about the manual, and some did not have any suggestions for improvements. One particularly noted that this resource manual allowed them to get to know their students better. It also helped teach children healthy strategies and gave them great ideas for future use. Many participants liked the variety of activities to choose from and they also appreciated how insightful it was for both themselves and their students. Some participants even claimed they would use the resource manual again in the future. The impact the resource manual made was enough for some to want to keep the manual for future use.

There were also some main points identified by multiple participants where improvements could be made. Some pages were blurry which can easily be corrected in future resource manuals. Making it easier to read may influence teachers to use it more with their students. Another good point noted was that an abbreviated version should be given as well. This would help use the resources in a quicker manner and also allow for easier use. Another
consideration was to use this in the beginning of the school year so that students have resources before stress is already apparent. This is a great point, as the study was done towards the end of the year when finals are approaching. Perhaps, giving it sooner would allow students to be more prepared. Lastly, an interesting point noted was that one teacher stated she was not prepared for what she heard from her students after asking some of the questions. This point is important as to create another resource on what should be done if students reveal something disturbing to teachers. This resource should give a step-by-step process on how to handle this information, and if others such as a counselor or parents need to get involved.

In the future, it would be beneficial for all teachers to talk about stress and educate children through resource manuals like this one. This specific manual may not be widely spread due to conflicts with copyright laws, however similar techniques found in these resources can be used widely across school systems through educating. Perhaps it is time for teachers to start conversations with their students about stress to help guide them to healthy behaviors. This is especially important, as young students who find healthy coping mechanisms early may keep these same healthy mechanisms as they become adults. Then, perhaps they may be able to teach their own children one day and create a cycle where stress is continuously dealt with in a healthy manner for generations to come.

**Implications to Nursing Practice**

Participants and healthcare providers alike may benefit from this study because it will provide ways to help children deal with stress in a healthy manner. Stress is known to have physical effects on a person’s mind and body, therefore by decreasing stress in children this study may help children maintain their health. The education provided through this study will
benefit both children and those who take care of children by providing effective ways to manage stress.

Further research is needed to determine whether cortisol levels are associated with a person’s weight and to what extent. As of now, children are not screened regularly for stress. Perhaps an assessment tool is needed for children that will allow us to further investigate the consequences of that stress, such as high cortisol levels that may impact weight loss or gain. For now, we may be able to educate our children on how to lower stress and increase exercise to get them to a healthier weight and possibly a more regular cortisol level. We may also teach children how to prevent obesity and anorexia, as well as how to eat a healthy diet. If there was a definite relationship between cortisol and weight gain, schools could start focusing on stress management more than just exercise to help children lose weight. While exercise and healthy eating help lower BMI, it may not be enough when high levels of stress impact the body so heavily, as seen with increased cortisol levels.

Conclusion

Overall, the study was successful in starting a real conversation about stress. Individuals were educated, both teachers and students alike, on ways that they can identify and deal with stress. The resource manual was effective, but of course can be improved.

In future research, it would be beneficial to use stress resources on a broader scale, not only to find better solutions, but to help a greater amount of people. The goal of this project is to help as many children as possible gain the tools they need to mentally cope with their problems. Everyone is different, which is why there are so many different methods of coping shown. Perhaps some unhealthy coping habits may be replaced by the healthy ones shown in this
resource manual. Perhaps the more people that can be helped, the healthier of a population there will be.

**Dissemination of Scholarly Work**

As this research came to an end, I presented this project locally at University of Alabama in Huntsville’s Research Horizons Day. Here I displayed my project and stood by to discuss my work with others at this event. I had copies of my resource manual about stress in children available so that others may learn how to help children they know deal with stress. I gained valuable feedback from the public on this pamphlet on ways to improve it for use at a broader level.

Next, if the authors cited in the resource manual agreed, this research would be submitted to the Alabama Board of Education. Because this study focuses on how teachers can help students deal with stress, submitting the pamphlet to the Board of Education would allow it to be used by all teachers across Alabama’s schools. If approved, I may submit it to principals and ask them for feedback on the effectiveness of the content in the pamphlet. If the pamphlet cannot be implemented in every school, it may still be used as a resource on the State Board of Education’s website.

Lastly, a great way to disseminate this work nationally would be through publishing in a pediatric journal such as Journal of Pediatric Nursing, Journal of School Nursing, or Journal of Pediatric Psychology, and possible a health education journal such as the Journal of Health Education Research and Development. I would like to submit my research to one of these journals in hopes of making a bigger impact on how healthcare providers handle stress in the
pediatric patients. Again, those cited in the resource manual would have to give their permission in order for their work to be published.
Evaluation of Stress

References


Table 1: Research Compilation

Breakdown of current studies that had to do with stress, body mass index, and/or cortisol

<table>
<thead>
<tr>
<th>Study Author/year/title</th>
<th>Objectives/Aim/Purpose</th>
<th>Research design / Sample/Setting</th>
<th>Intervention (competencies &amp; methods)</th>
<th>Study findings/results</th>
<th>Strengths</th>
<th>Limitations</th>
<th>Implications and recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randi Bates, Pamela Salsbery, and Jodi Ford 2017 Measuring Stress in Young Children Using Hair Cortisol: The State of the Science</td>
<td>Approximate persistent stress in young children by measuring hair cortisol concentration</td>
<td>Design: Experimental, quasi-experimental, and observational Sample: children 12-60 months of age, 1,243 participants total. Setting: multiple because this is review of 9 other studies – Germany, Netherlands</td>
<td>Hair cortisol concentration was obtained from children 12-60 months</td>
<td>Collect hair samples from children with sources of persistent stress such as low SES and maternal distress, obtain hair cortisol concentration, and determine if levels are high</td>
<td>Hair cortisol concentration in young children is generally elevated with sources of persistent stress</td>
<td>Large sample size</td>
<td>Large sample size, 9 separate studies reviewed, Participant are from several different areas of the world, Several designs used</td>
</tr>
<tr>
<td>Kjölhede, E. A., Gustafsson, P., Gustafsson, P., &amp; Nelson, N. 2014 Overweight and obese children have lower cortisol levels than normal weight children</td>
<td>Examine cortisol levels in relation to body mass index (BMI), age and sex.</td>
<td>Design: Cross sectional design. Setting: School and home setting in Sweden. Sample: 342 children 6-12 years old.</td>
<td>Salivary samples were collected in early morning, late morning and evening, on four consecutive days. School nurses measured the children’s height and weight, and these measurements were used to calculate their BMI.</td>
<td>Samples were analyzed using a commercial enzyme immunoassay (EIA). Salivette tubes used for saliva.</td>
<td>Average cortisol levels in early morning, late morning and evening were significantly lower in overweight and obese children than in their normal weight counterparts. Cortisol levels did not vary significantly with age or sex.</td>
<td>Salivary cortisol is a well-established method that correlates well with serum cortisol levels.</td>
<td>Number of children in 6 and 13 year olds was low, Cross-sectional design limits any inferences about the direction of causality for the association between BMI and cortisol.</td>
</tr>
<tr>
<td>Is There an Association Between</td>
<td>Investigate the association between</td>
<td>Design: cross sectional</td>
<td>Non-fasting urine and early-</td>
<td>Random urine and early-</td>
<td>After adjusting for body</td>
<td>Inclusion of three study groups</td>
<td>Only random daytime urine samples (with Use larger sample size</td>
</tr>
<tr>
<td>Cortisol and Hypertension in Overweight or Obese Children?</td>
<td>cortisol parameters and hypertension in overweight or obese children.</td>
<td>Sample: 306 children age 10-18 Setting: Germany</td>
<td>morning fasting saliva samples were collected from a convenience sample</td>
<td>morning saliva samples for assessment of cortisol and cortisone were collected from hypertensive overweight children, normotensive overweight children, and normotensive non-overweight children</td>
<td>mass index-standard deviation score and urinary cortisone/cortisone ratio, but not cortisol/cortisone ratio, was significantly associated with presence of hypertension. Salivary cortisol and cortisone levels were significantly lower in overweight or obese than in non-overweight children. There were no significant differences in cortisol parameters between hypertensive and normotensive overweight or obese children.</td>
<td>consisting of hypertensive overweight and obese children, normotensive overweight and obese children, and normotensive non-overweight children</td>
<td>unspecified sampling times) were collected instead of 24-hr urine, although cortisol/creatinine ratio in spot urine has proven to be a reliable tool for the assessment of cortisol production. Only early-morning saliva samples were collected, so that association with diurnal rhythmicity in HPA axis activity could not be tested. Hypertension was based upon blood pressure measurements obtained on only one occasion.</td>
</tr>
<tr>
<td>Concurrent and Longitudinal Associations Between Diurnal Cortisol and Body Mass Index Across Adolescence, P. Ruttle 2013</td>
<td>Current study examines concurrent and longitudinal associations between diurnal cortisol and BMI across adolescence.</td>
<td>Design: Longitudinal design Sample: 560 participants Pregnan women and their partners/husbands Setting: health care clinics in Milwaukee (80%) and Madison (20%), Wisconsin.</td>
<td>Salivary cortisol and BMI taken and frozen All cortisol samples were assayed in duplicate using well-established, salivary enzyme immunoassay kits. Raw cortisol scores were log-transformed and extreme values were Winsorized to Linear regressions revealed that blunted patterns of adolescent cortisol were associated with increased measures of BMI across adolescence both concurrently and longitudinally.</td>
<td>• Longitudinal study • Large sample size</td>
<td>• It is possible that there is inherent sampling bias as the initial sample of mothers was largely Caucasian and drawn from two large cities in a single Midwestern state.</td>
<td>Have a sample that is less bias and more representative of population.</td>
<td></td>
</tr>
</tbody>
</table>
### Evaluation of Stress

<table>
<thead>
<tr>
<th>m. Schorr 2015</th>
<th>Cortisol Measures Across the Weight Spectrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>This study aimed to investigate cortisol measures across the weight spectrum.</td>
<td></td>
</tr>
<tr>
<td>Design: cross-sectional Sample: 60 women, 18-45 years of age Setting: clinical research center (unknown)</td>
<td></td>
</tr>
<tr>
<td>Urine obtained for cortisol and x-rays used for bone mass density</td>
<td></td>
</tr>
<tr>
<td>HPA dynamics were assessed by urinary free cortisol, mean overnight serum cortisol obtained by pooled frequent</td>
<td></td>
</tr>
<tr>
<td>Cortisol measures demonstrate a U-shaped relationship with BMI, and were similarly associated with visceral adipose</td>
<td></td>
</tr>
<tr>
<td>Measured cortisol across weight spectrum, not just obese</td>
<td></td>
</tr>
<tr>
<td>Cross-sectional design prevents from determining whether the associations between cortisol measures and BMI, body composition, and/or BMD are causal.</td>
<td></td>
</tr>
<tr>
<td>Samples rely on patient compliance</td>
<td></td>
</tr>
<tr>
<td>Small sample size</td>
<td></td>
</tr>
</tbody>
</table>

| Sampling every 20 minutes from 0000–0800 h, 0800 h serum cortisol and cortisol-binding globulin, morning and late-night salivary cortisol, and dexamethasone-CRH testing. Body composition and bone mineral density (BMD) were assessed by dual-energy x-ray absorptiometry |
| Tissue and total fat mass. |

Use larger sample and a different design.
Table 2: Participant Demographics

<table>
<thead>
<tr>
<th>Demographic Question</th>
<th>n=8</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22-34</td>
<td>3</td>
<td>37.5%</td>
</tr>
<tr>
<td>35-44</td>
<td>3</td>
<td>37.5%</td>
</tr>
<tr>
<td>45-54</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>55-64</td>
<td>2</td>
<td>25%</td>
</tr>
<tr>
<td>65-74</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>75+</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>12.5%</td>
</tr>
<tr>
<td>Female</td>
<td>7</td>
<td>87.5%</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American/Black</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Caucasian/White</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td>Multicultural</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Other</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>-------</td>
<td>----</td>
<td>----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Latino/Non-Hispanic</td>
<td>8</td>
<td>100%</td>
</tr>
<tr>
<td>Latino/Hispanic</td>
<td>0</td>
<td>0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Years of Teaching</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>1</td>
<td>12.5%</td>
</tr>
<tr>
<td>6-10</td>
<td>1</td>
<td>12.5%</td>
</tr>
<tr>
<td>11-15</td>
<td>3</td>
<td>37.5%</td>
</tr>
<tr>
<td>16-20</td>
<td>1</td>
<td>12.5%</td>
</tr>
<tr>
<td>21-25</td>
<td>2</td>
<td>25%</td>
</tr>
</tbody>
</table>
Table 3: Pre-Assessment Interview

<table>
<thead>
<tr>
<th>Interview Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>What types of behaviors do you see as indicators of stress in children?</td>
<td>“Tapping their pens, bouncing their legs.”</td>
</tr>
<tr>
<td></td>
<td>“Fidgeting and being restless.”</td>
</tr>
<tr>
<td></td>
<td>“Acting out in class.”</td>
</tr>
<tr>
<td>Are you able to detect stress in children?</td>
<td>“Sometimes.”</td>
</tr>
<tr>
<td></td>
<td>All participants agreed.</td>
</tr>
<tr>
<td>What are signs of stress in children?</td>
<td>“They may not be doing well on assignments.”</td>
</tr>
<tr>
<td>Do you talk to your school children about stress?</td>
<td>Most participants shook their heads no.</td>
</tr>
<tr>
<td></td>
<td>“Sometimes I will confront students if they are showing outbursts in class.”</td>
</tr>
<tr>
<td>Do you know how to help kids with out-of-school stress?</td>
<td>Participants shook head no.</td>
</tr>
<tr>
<td>Do you allow for breaks during class-time?</td>
<td>“Probably about five-minute breaks.”</td>
</tr>
<tr>
<td>Have any children come up to talk to you about their stress?</td>
<td>“Some have, and I just give them encouragement and let them know I’m here.”</td>
</tr>
<tr>
<td>Question</td>
<td>Response</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>What techniques do you use to manage stress in children?</td>
<td>“I just talk with them and try to work it out.”</td>
</tr>
<tr>
<td></td>
<td>“Counselors can help too.”</td>
</tr>
<tr>
<td>What do you feel like stresses kids the most?</td>
<td>“Schoolwork.”</td>
</tr>
<tr>
<td>What type of resources do you need for stress management?</td>
<td>“It would be helpful if we had some resource to turn to.”</td>
</tr>
<tr>
<td></td>
<td>Other participants agreed.</td>
</tr>
<tr>
<td>How can you incorporate stress management into class-time?</td>
<td>“We can use it as an activity in class.”</td>
</tr>
<tr>
<td></td>
<td>Others nodded in agreement.</td>
</tr>
<tr>
<td>Interview Question</td>
<td>Response</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>How many students did you use the research manual with?</td>
<td>“I used the manual with one student because we wrote in it.”</td>
</tr>
<tr>
<td></td>
<td>“One.”</td>
</tr>
<tr>
<td></td>
<td>“I used the manual with two students.”</td>
</tr>
<tr>
<td></td>
<td>“One student.”</td>
</tr>
<tr>
<td></td>
<td>“One student.”</td>
</tr>
<tr>
<td></td>
<td>“I actually used it with all of my classes.”</td>
</tr>
<tr>
<td></td>
<td>“Probably about 5-10 students.”</td>
</tr>
<tr>
<td></td>
<td>“One student.”</td>
</tr>
<tr>
<td>On a scale of 0-10, with 0 being the worst and 10 being the best, how effective do you think the research manual was? Why or why not?</td>
<td>“I would rate it a five, not because there was anything that was unsatisfactory about the manual, but because I would need a lot of training on working with kids who are stressed to see the benefit of using it on a regular basis. In the public-school setting when a student is stressed they see the counselor. A classroom teacher might not need a whole manual, but maybe an abbreviated version.”</td>
</tr>
</tbody>
</table>
“Seven.”

“This one is a difficult question. I think it is very helpful in providing suggestions of activities for students with a variety of stressors in their lives. It certainly helps them to identify/name their stressors, and often, this is a big step in learning to cope. I guess I would suggest that it might be an eight.”

“Ten. Great information and suggestions on how to deal with stress.”

“Eight. This manual helped me relate to the student on a more personal level. I was able to figure out things that motivate him, things that make him upset, and ways to help him when he becomes upset.”

“Seven. There was some artistic stuff in there that I didn’t think of. We talked about what is stress, we did a poll for what stressed them out and what everyone liked, we had a good time with it. I noticed that students who were more responsible were more stressed out about
school while others were more stressed about home stuff.”

“Eight. I really liked page 17 and all the ideas it had for kids. Jumping on a trampoline, music, video games… even teachers can use some of these. My students pointed out the ones they really liked.”

“Eight. It is a very good manual for kids.”

<table>
<thead>
<tr>
<th>What did you like about the research manual?</th>
<th>“The manual was a quick reminder of signs to look for in kids. I should be familiar with them but since it is not my primary focus it gets lost among the teaching of the math. Also, the coping skills in the back of the book were easy to access. I can see where it would be a great tool to have in a one-on-one situation where those skills could be done with others. I also enjoyed getting to sit and talk with a student about non-school related things. It is not something I get to do. It gave me a little more insight into the student.”</th>
</tr>
</thead>
</table>

“I believe it was very easy to follow. It had a
questionnaire at the beginning that really narrowed the stressors for my student. There were several techniques that would work for a variety of students. They have lots of choices.”

“I like the variety of activities included in the manual, especially the coping tools checklist and the puzzle solvers. I loved the colored dot visuals with the never, a little, sometimes, and a lot of answer choices—very helpful for younger students.”

“It is good for kids to know that it is "normal" to feel stress. Again, it is great to give them coping skills.”

“The manual is very user friendly. I also feel that it is child friendly, in the fact that I can ask the questions to the child, or they can fill them out themselves. The stress relieving activities and coping tools are also very helpful.”

“I liked that it was different and had a lot of extra things you may not think off. It’s not too long and it has basic language for the kids. A
lot of my football kids said they liked to exercise and they didn’t think of using it for stress until now, drinking water, calming down, things like that. Some kids talked about how video games help because it brings them to another world and they don’t have to think about the real world.”

“There was a variety of things to choose from. There really is something for everyone.”

“It was very colorful and easy to read for the students. Kid friendly.”

<table>
<thead>
<tr>
<th>What did you not like about the research manual?</th>
<th>“Nothing.”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“The print was blurry on some sections.”</td>
</tr>
<tr>
<td></td>
<td>“I can’t think of anything.”</td>
</tr>
<tr>
<td></td>
<td>“I wish that I would have had the time to utilize it with all of my students.”</td>
</tr>
<tr>
<td></td>
<td>“Nothing.”</td>
</tr>
</tbody>
</table>
|                                                 | “I would take some of the questions out to make it more user friendly. We were worried we may need to get consent to ask some of the
questions. The principal looked through it and said we probably can’t ask them some of these questions. Nine times out of ten it wouldn’t be a problem, but we just wanted to be careful.”

“There were some things we couldn’t use on the feel bad scale because of privacy and parental consent. Same with pages 9-11 with the survey. We didn’t ask some of those just in case.”

“It was a little blurry to read.”

| What would you change about the research manual? | “I would make it smaller, and less conspicuous. It is very obviously about kids and stress and students don't like to be singled out or have anyone knowing that something may be wrong.”

“Sentence starters on some of the questions. The student had difficulty expressing their thoughts on some of the questions. If they had a sentence stem, it might help their thoughts begin to flow more easily.”

“Nothing.” |
“I would have liked to have the information separate from the questionnaire.”

“Maybe some of the questions on the Feel Bad Scale. Although they helped me get to know the student on a more personal level, the student wanted to go into major detail about specific questions and I was not prepared for some of the things I heard.”

“Nothing, it was very straight forward, down to earth, not over the top. Kids may not admit stress without a teacher bringing it up.”

“Nothing.”

“Just the blurry writing. Student had a hard time on a few things, seeing it clearly.”

<table>
<thead>
<tr>
<th>Do you have any comments or questions regarding the research manual?</th>
<th>“No.”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Nope, nothing.”</td>
</tr>
<tr>
<td></td>
<td>“I was quite impressed with the manual. I think that using the manual with all students at the beginning of each school year might be</td>
</tr>
</tbody>
</table>
very beneficial for students in reducing stress over the course of a school year.”

“No.”

“I plan on using the Stress activities in class.”

“None.”

“I liked that it was on their level. It applies easily to kids.”

“None.”
Appendix A

Letter of Support

September 13, 2018

Crystal Stephenson
UAH Honors College Nursing Student
University of Alabama in Huntsville
301 Sparkman Drive
Huntsville, AL 35899

Dear Mrs. Stephenson:

This letter is in support of your Honors College project entitled “Evaluation of Stress Resources in School-Age Children by Fifth and Sixth Grade Teachers”. I understand that your faculty advisor, Dr. Thuy Lynch, will help provide guidance with your project.

I am granting you access to the Limestone County School District starting November 1, 2018 and ending on May 30, 2019 in order to recruit participants and collect data for your project. The participants will include fifth and sixth grade teachers from elementary and middle schools within the school district.

This study will help provide school teachers with resources and interventions to help identify and manage stress in children. In addition, teachers will have the opportunity to provide an evaluation of the resources, so they can be potentially used within the schools across the school district.

Sincerely yours,

Thomas M. Sisk
Superintendent of Education
Limestone County Schools

Focused on Quality...Committed to Excellence
Appendix B
Recruitment Script

1. The PI or faculty supervisor will make sure the teacher is physically comfortable and available to talk (meeting will be arranged in a quiet conference room).
2. The PI or faculty supervisor may begin by stating something similar to: “I am (PI’s name) and I am interested in evaluating the effectiveness of stress resources for children provided by fifth and sixth grade teachers at ____ School Name ________.
3. Then the PI will say, “Would you be interested in learning more about this study and how you can participate?”
4. If the teacher responds “no”, he/she will be thanked for their time.
5. If the teacher responds “yes”, the PI will confirm the teacher meets the inclusion criteria and will describe the steps of the study.
6. The PI or faculty supervisor will say, “this study will ask that you:
   - Fill out the demographic questionnaire
   - Respond to the interview questions about stress in children
   - Use the stress resources manual over a one-month period
   - Complete the Post-Assessment to evaluate the stress resources manual
7. If the teacher agrees to participate, he/she will provided a consent form to read and sign.
8. Upon receiving the signed consent form, the PI will be instructed about confidentiality, anonymity, risk of participating, and informed about the benefits of the study.
9. Throughout the face-to-face meeting, the teacher (prospective participant) is treated with kindness and respect.
Appendix C
Citi Training

This is to certify that:

Crystal Whitehouse

Has completed the following CITI Program course:

- CITI Conflicts of Interest (Curriculum Group)
- Conflicts of Interest (Course Learner Group)
- 1 - Basic Course (Stage)

Under requirements set by:

The University of Alabama in Huntsville

Verify at www.citiprogram.org/verify?wa4d1884a-6c0f-4c3a-a555-6e8e04bbaa2-26729419

This is to certify that:

Crystal Whitehouse

Has completed the following CITI Program course:

- Export Compliance (Curriculum Group)
- Export Compliance (Course Learner Group)
- 1 - Stage 1 (Stage)

Under requirements set by:

The University of Alabama in Huntsville

Verify at www.citiprogram.org/verify?wcd8a0212-810c-4e21-a166-5ce5fcd433-26729420
This is to certify that:

Crystal Whitehouse

Has completed the following CITI Program course:

**Human Subjects Researchers**
- (Curriculum Group)
- Human Subjects Researchers
- 1 - Basic Course

Under requirements set by:

**The University of Alabama in Huntsville**

Verify at www.citiprogram.org/verify?w=40&c7d259-d3e49-fa179-39c197f15e73-26729422
Appendix D
Demographic Questionnaire

Please fill out the following information as part of your participation in the *Evaluation of Stress Resources in School-Age Children by Fifth and Sixth Grade Teachers* study. It should take approximately 2 minutes to complete this questionnaire. Please remember your answers will be confidential.

1. Name: ________________________________

2. Age:  22-34 _____  75 years or older _____
         35-44 _____
         45-54 _____
         55-64 _____
         65-74 _____

3. Gender: M_______ F_______

4. Race:
   __________ African American/Black
   __________ Asian/Pacific Islander
   __________ Caucasian/White
   __________ Multiracial
   __________ Other, please indicate

5. Ethnicity:
   __________ Latino/Hispanic
   __________ Non-Latino/Non-Hispanic

6. Years of Teaching: _________________
Appendix E
Pre-Interview Questions

Teachers will informally discuss the following questions with the Principal Investigator:

1. What types of behaviors do you see as indicators of stress in children?

2. Are you able to detect stress in children?

3. What are signs of stress in children?

4. Do you talk to your school children about stress?

5. Do you know how to help kids with out-of-school stress?

6. Do you allow for breaks during class-time?

7. Have any children come up to talk to you about their stress?

8. What techniques do you use to manage stress in children?

9. What do you feel like stresses kids the most?

10. What type of resources do you need for stress management?

11. How can you incorporate stress management into class-time?
Appendix F
Post-Interview Questions

1. How many students did you use the research manual with?

2. On a scale of 0-10, with 0 being the worst and 10 being the best, how effective do you think the research manual was? Why or why not?

3. What did you like about the research manual?

4. What did you not like about the research manual?

5. What would you change about the research manual?

6. Do you have any comments or questions regarding the research manual? If so, explain.
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Why Are Kids Stressed?

- Worried about grades
- Pressure from parents
- Problems with friendships
- Bullying
- Self-esteem issues
- Problems at home such as money, divorce, moving, etc.

(Kaneshiro, 2018)
Kids who are stressed out may...

- Tap their pencil or fingers on desk
- Hum out loud
- Have sudden outbursts
- Hit objects, themselves, or others
- Not do well on assignments
- Cry or scream
- Have a decreased appetite
- Not sit still
- Have more aggressive behavior
- Have an upset stomach or headaches
- Not participate in class
- Seem reserved

(Kaneshiro, 2018)
What Can You Do?

As a teacher, there are several resources you can use to help your school children manage their stress in an effective manner. Please see the following pages for ways to identify stress in children and how help children lower their stress!
The first step in helping children cope with stress is identifying the problem. Certain things may stress some children more than others, therefore it is important to identify exactly what specific children need help coping with. Use the Perceived Stress Scale and the Feel Bad scale to help understand what stressors to focus on.

Perceived Stress Scale: Give each answer a score as such: never=0, a little=1, sometimes=2, a lot=3. Scores can range from 0-42. Scores above 10 may require assistance in relieving stress. Use your own discretion with each student’s score.

Feel Bad Scale: Questions assess both frequency (1-“Never” to 5-“Always”) and severity (1-“Not bad” to 5-“Terrible”) of stressful events. A total score is obtained by multiplying the frequency by severity of each item and summing the products (Lewis et al., 1984). Scores may range from 20 to 500 (Lewis et al., 1984). Scores above 50 may require assistance in relieving stress. Use your own discretion with each student’s score.
## Perceived Stress Scale (Children)

The following questions ask you about your feelings and thoughts during the last week. For each question you will be asked to circle the picture that best fits your answer.

<table>
<thead>
<tr>
<th>Name:</th>
<th>Date:</th>
<th>Age:</th>
<th>Birthday:</th>
<th>I am a:</th>
<th>Boy</th>
<th>Girl</th>
</tr>
</thead>
</table>

1. Which one has a lot of something?

   - Never
   - A little
   - Sometimes
   - A lot

2. In the last week, how often did you feel rushed or hurried?

   - Never
   - A little
   - Sometimes
   - A lot

3. In the last week, how often did you have enough time to do what you wanted?

   - Never
   - A little
   - Sometimes
   - A lot

4. In the last week, how often did you feel worried about being too busy?

   - Never
   - A little
   - Sometimes
   - A lot

5. In the last week, how often did you feel worried about grades or school?

   - Never
   - A little
   - Sometimes
   - A lot

6. In the last week, how often did your mom and/or dad make you feel better?

   - Never
   - A little
   - Sometimes
   - A lot

7. In the last week, how often did your mom and/or dad make you feel loved?

   - Never
   - A little
   - Sometimes
   - A lot

(White, 2014)
8. In the last week, how often did you feel scared or nervous?

NEVER  A LITTLE  SOMETIMES  A LOT

9. In the last week, how often did you feel angry?

NEVER  A LITTLE  SOMETIMES  A LOT

What made you angry?

10. In the last week, how often did you feel happy?

NEVER  A LITTLE  SOMETIMES  A LOT

What made you happy?

11. In the past week, how often did you get enough sleep?

NEVER  A LITTLE  SOMETIMES  A LOT

12. In the past week, how often did you have fights with your friends?

NEVER  A LITTLE  SOMETIMES  A LOT

13. In the past week, how often did you play with your friends?

NEVER  A LITTLE  SOMETIMES  A LOT

14. In the past week, how often did you feel that you had enough friends?

NEVER  A LITTLE  SOMETIMES  A LOT

(White, 2014)

Thank You!
(Lewis, Siegal, and Lewis, 1984)  
Feel Bad Scale

**Instructions:** The following is a list of things that some kids say makes them feel bad, nervous, or make them worry. For each item, mark an “X” in the box next to the best phrase showing how you would feel if this happened to you, or if this has happened to you, how you felt. There is no wrong or right answer.

<table>
<thead>
<tr>
<th></th>
<th>Having parents separate</th>
<th>Not bad</th>
<th>A Little Bad</th>
<th>Pretty Bad</th>
<th>Real Bad</th>
<th>Terrible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
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(Lewis, Siegal, and Lewis, 1984)

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**Instructions:** Now please indicate if any of these things has happened to you in the past year, and if so, how often. There is no wrong or right answer.

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<tr>
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Now that you are aware of the problem, it is time to figure out which activities help your child cope best. Stress Lessons Activities and Coping Skills and Tools will provide several ideas on how to cope. Ask your child to try the activities they like best to test how well they work in relieving their stress. Writing down the problems using Express Yourself to Bust Stress and Puzzle Planner may also help in creating a plan to help deal with future stress in a healthy manner.
Stress Lessons Activities

Learning to manage stress can be fun for both you and your child. We've created several activities that you can do together to help cope with and manage stress.

**Point it Out**

Movie night, story time and even just watching regular TV can be a great opportunity for your child to see how people react to stress in different ways and develop self-awareness and reflection.

**How it works:** During a movie, television show or story time, ask your child to point out moments when the characters are faced with stress. Ask them to think about how they managed their stress and how they might have handled things differently.

**Why it works:** This activity is an effective way for parents to start a discussion and encourage children to become more self-aware and reflective.

**Deep Breathing**

Deep breathing is one of the best ways to lower stress in the body. This is because when you breathe deeply it sends a message to your brain to calm down and relax.

**How it works:** Visit [morethanmedication.ca/stresslessons/parents](http://morethanmedication.ca/stresslessons/parents) to watch a short video with your child on deep breathing. Together, you'll learn three basic deep breathing techniques from stress expert Eli Bay.

**Why it works:** When students practice deep breathing regularly, they learn that it's a tool they can use anytime, anywhere.

**Worry Box**

This exercise will help your child to think about their worries and fears in a realistic, productive way that can lessen stress and anxiety.

**How it works:** Invite your child to create a family Worry Box out of an old shoebox or envelope. Decorate and personalize it together. Encourage your child to write down their worries and fears and place them in the box anytime they're feeling stressed.

**Why it works:** The Worry Box is a great conversation starter that will help you know what your child is concerned about so that you can provide them with support. "Just talking about their concerns with their parents or a trusted adult helps children process anxiety and stress in a healthy way," explains Dr. Alter.

(Kids Have Stress Tool The Psychology Foundation of Canada, n.d.)
Puzzle Solvers

This exercise is designed to help your child learn problem solving skills. It will help your child to think critically about different kinds of problems and break them down into smaller pieces that can be managed proactively.

How it works: Sit down with your child and fill in the Puzzle Solving Activity Sheet found at the end of this guide. Use it as a family tool to talk about issues, build consensus and explore positive solutions to your child’s worries.

Why it works: Problem solving can have a number of benefits including: better functioning at school, higher self-esteem, more satisfying relationships, and higher life satisfaction. This exercise teaches your child to break down problems into smaller, more manageable steps to figure out proactive solutions to their concerns.

Express Yourself

Self-expression is an important tool in learning how to recognize and manage stress. Self expression allows people to distinguish themselves from others, to reflect their own needs and beliefs and validate their own self concepts. This exercise will help you encourage your child to regularly explore journaling, drawing, art and music as a means of busting stress.

How it works: Encourage your child to set aside time everyday to explore various means of self-expression. They can write in a journal, play or listen to music, or draw. Create an Expression Wall at home where they can feature their works of art.

Why it works: Art, music, journaling and even role playing are safe, concrete ways to encourage your child to express more complex emotions and feelings.

Additional Tips and Exercises:

Get active: Physical activity is great way for your child to manage stress. Encourage them to play sports, swim, dance or anything else that gets them moving.

Connect: One of the best ways to show support, is by making time for your child because contact is a great stress reliever. Set aside time to throw a Frisbee, enjoy a family day, volunteer together or just hang out and connect.

Hug it out: Show your children that you love them with words, hugs, kisses. Play and laugh together.

Laugh and have fun: A good sense of humor can’t cure all ailments, but it can help your child feel better because laugher actually causes physical changes in our bodies that help to relieve stress. Laughter fires up and then cools down the stress response and increases our heart rate and blood pressure, producing a good, relaxed feeling.

(Kids Have Stress Too! The Psychology Foundation of Canada, n.d.)
(Coping Skills Bingo Game, n.d.)
Coping Tools: What Helps Me

- Read A Book or Magazine
- Hug or Climb a Tree
- Journal or Write a Letter
- Use Kind & Compassionate Self-Talk
- Make a Collage or Scrapbook
- Rest, Nap or Take a Break
- Go on a Hike, Walk or Run
- Take Good Care of the Earth
- Drink Water
- Play a Board Game
- Do Something Kind
- Make and Play with slime
- Discover Treasures in Nature
- Take a Shower or Bath
- Exercise
- Drink a Warm Cup of Tea
- Forgive, Let Go, Move On
- Practice Yoga
- Garden or Do Yardwork
- Jump on a Trampoline
- Cuddle or Play with Your Pet
- Practice Gratitude
- Do a Puzzle
- Blow Bubbles
- Smile and Laugh

- Ride a Bike or Skateboard
- Create Origami
- Cook or Bake
- Ask for Help
- Talk to Someone You Trust
- Weave, Knit or Crochet
- Build Something
- Get a Hug
- Visualize a Peaceful Place
- Stretch
- Make Art
- Use Positive Affirmations
- Take Slow, Mindful Breaths
- Clean, Declutter or Organize
- Use Aromatherapy
- Cry
- Try or Learn Something New
- Listen to Music
- Use a Stress Ball or Other Fidget
- Get Plenty of Sleep
- Kick, Bounce or Throw a Ball
- Take or Look at Photographs
- Eat Healthy
- Play健康的
- Sing and/or Dance

(Kids coping skills! School Counseling Lesson, Posters, Art & Sorting Activities, n.d.)
**Express Yourself to Bust Stress!**

**Stress Busting**

Today, your mission is to be your own personal Stress Buster.

On the left side of the sheet, write down some of the things that stress you out.

On the right side of the sheet, share your best idea on how to Bust that Stress!

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<tr>
<th>#1 Stressful Situation</th>
<th>Stress Buster</th>
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(Kids Have Stress Too! The Psychology Foundation of Canada, n.d.)
Puzzle Solvers

Puzzle Planner

What problem do I want to work on?

How does the problem make me feel?

What do I have control over about the problem?

What don’t I have control over about the problem?

What’s the worst thing that could happen?

What’s the best?

What do I think will REALLY happen?

(Kids Have Stress Too! The Psychology Foundation of Canada, n.d.)
Puzzle Planner (cont’d)

What are some ways I can try to solve the problem?
__________________________
__________________________

Which solution do I want to try?
__________________________
__________________________

Who can I ask for help – or talk to – about this problem?
__________________________
__________________________

How did it work out?
__________________________

My Plan:

What are three things that I can do immediately to help me learn more about – or start to – solve this problem?

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________

Remember:
You don’t have to solve every problem on your own. Sometimes you need help.
And if you do, talking about your feelings can be the first step toward getting it.

(Kids Have Stress Too! The Psychology Foundation of Canada, n.d.)
While activities may help alleviate the stress, it is important that the child knows they have someone to talk to. Being there for your stressed children can help tremendously in dealing with their stress. See the next page on Helping Kids Cope with Stress to find ways to help children through talking.
Notice out loud. Tell your child when you notice that something's bothering him or her. If you can, name the feeling you think your child is experiencing. ("It seems like you're still mad about what happened at the playground.") This shouldn't sound like an accusation (as in, "OK, what happened now? Are you still mad about that?") or put a child on the spot. It's just a casual observation that you're interested in hearing more about your child's concern. Be sympathetic and show you care and want to understand.

Listen to your child. Ask your child to tell you what's wrong. Listen attentively and calmly — with interest, patience, openness, and caring. Avoid any urge to judge, blame, lecture, or say what you think your child should have done instead. The idea is to let your child's concerns (and feelings) be heard. Try to get the whole story by asking questions like "And then what happened?" Take your time. And let your child take his or her time, too.

Comment briefly on the feelings you think your child was experiencing. For example, you might say "That must have been upsetting." "No wonder you felt mad when they wouldn't let you in the game," or "That must have seemed unfair to you." Doing this shows that you understand what your child feels, why, and that you care. Feeling understood and listened to helps your child feel supported by you, and that is especially important in times of stress.

Put a label on it. Many younger kids do not yet have words for their feelings. If your child seems angry or frustrated, use these words to help him or her learn to identify the emotions by name. Putting feelings into words helps kids communicate and develop emotional awareness — the ability to recognize their own emotional states. Kids who can do so are less likely to reach the behavioral boiling point where strong emotions come out through behaviors rather than communicated with words.

Helping Kids Cope with Stress (Lyness 2013)

Help your child think of things to do. If there's a specific problem that's causing stress, talk together about what to do. Encourage your child to think of a couple of ideas. You can start the brainstorming if necessary, but don't do all the work. Your child's active participation will build confidence. Support the good ideas and add to them as needed. Ask, "How do you think this will work?"

Listen and move on. Sometimes talking and listening and feeling understood is all that's needed to help a child's frustrations begin to melt away. Afterward, try changing the subject and moving on to something more positive and relaxing. Help your child think of something to do to feel better. Don't give the problem more attention than it deserves.

Limit stress where possible. If certain situations are causing stress, see if there are ways to change things. For instance, if too many after-school activities consistently cause homework stress, it might be necessary to limit activities to leave time and energy for homework.

Just be there. Kids don't always feel like talking about what's bothering them. Sometimes that's OK. Let your kids know you'll be there when they do feel like talking. Even when kids don't want to talk, they usually don't want parents to leave them alone. You can help your child feel better just by being there — keeping him or her company, spending time together. So if you notice that your child seems to be down in the dumps, stressed, or having a bad day — but doesn't feel like talking — initiate something you can do together. Take a walk, watch a movie, shoot some hoops, or bake some cookies. Isn't it nice to know that your presence really counts?
References


Kids Have Stress Tool (n.d.). The Psychology Foundation of Canada. Retrieved January 13, 2019, from https://www.psychologyfoundation.org/Public/Resources/KHST_Download_Resources/Copy_of_Download_Resources.aspx?WebsiteKey=7ec8b7ce-729b-4aff-a0d8-2f6b59cd21ab&hkey=0e18b555-9114-49b4-9838-084fab967f0e


Special thanks to Dr. Thuy Lynch and Dr. Ann Bianchi for helping complete this resource manual!
WE WOULD LOVE TO HEAR YOUR FEEDBACK!
PLEASE SEND ANY COMMENTS YOU MAY HAVE TO
CRYSTALWHITEHOUSE1@GMAIL.COM

Crystal Stephenson
University of Alabama in Huntsville
College of Nursing
Honors College
Appendix H

Consent Form

Consent Form: Evaluation of Stress Resources in School-Age Children by Fifth and Sixth Grade Teachers

You are invited to participate in a research study about stress in school-age children. This study is designed to help us to better understand common stressors experienced by school-age children and determine the best methods to help those children deal with stress. A resource manual is created with this information for teachers and healthcare providers to use as a resource for this particular population.

The primary investigator is Mrs. Crystal Stephenson from the University of Alabama in Huntsville College of Nursing. The faculty supervisor is Dr. Thuy Lynch at the University of Alabama in Huntsville College of Nursing.

PROCEDURE TO BE FOLLOWED IN THE STUDY: Participation in this study is completely voluntary. Once written consent is given, you will be asked to complete a demographic questionnaire that will take 2 minutes. Then, you will be interviewed by the PI to determine stressors in children and what you as a teacher typically do when a student’s stress is apparent. This session will take approximately 20 minutes. You will then be asked to use resource materials in a packet form, evaluate it for one month, and provide feedback on the resource materials’ usefulness and have the opportunity to provide recommendations for improvement. Each time you use the resource packet with a child, it will take approximately 10 minutes. After one month, you will meet with the researcher again to provide feedback about the resource material. This session will last 20 approximately minutes.

DISCOMFORTS AND RISKS FROM PARTICIPATING IN THIS STUDY: There are no expected risks associated with your participation. However, you may feel emotional reactions while answering information while using the resource materials with your stressed students; however, these risks are minimal. Participants may see the school counselor as needed.
EXPECTED BENEFITS: Teachers and healthcare providers alike may benefit from this study because it will provide ways to help children deal with stress in a healthy manner. Your feedback on the evaluation of the resource materials may help healthcare providers determine better strategies to help children deal and cope with stress.

INCENTIVES AND COMPENSATION FOR PARTICIPATION: Teachers who participate in this study will be given school supplies such as pencils, pens, markers, and folders ($10 value) for participating in this study.

CONFIDENTIALITY OF RESULTS: Participant numbers will be used to record your data, and these numbers will be made available only to those researchers directly involved with this study, thereby ensuring strict confidentiality. This consent form and data associated with this study will be destroyed after 3 years. The data from your session will only be released to those individuals who are directly involved in the research and only using your participant number.

FREEDOM TO WITHDRAW: You are free to withdraw from the study at any time. You will not be penalized because of withdrawal in any form. Investigators reserve the right to remove any participant from the session without regard to the participant’s consent.

CONTACT INFORMATION: If you have any questions, please ask them now. If you have questions later on, you may contact the Principal Investigator Crystal Stephenson, at the University of Alabama in Huntsville, at 256-975-9792 or at cew0023@uah.edu or the faculty supervisor Dr. Thuy Lynch at the University of Alabama in Huntsville College of Nursing at 256-824-4880 or at tdl0006@uah.edu. If you have questions about your rights as a research participant, or concerns or complaints about the research, you may contact the Office of the IRB (IRB) at 256.824.6992 or email the IRB chair Dr. Bruce Stallsmith at irb@uah.edu.

If you agree to participate in our research, please sign and date below.

This study was approved by the Institutional Review Board at UAH and will expire in one year from February 21, 2019.

__________________________________________________________  _________________________
Name (Please Print)                                               Signature              Date