School bullying is a source of growing concern. A number of intervention programs emphasize the importance of a positive school climate in preventing bullying behavior. The aim of the presented pilot study was to examine whether calming background music, through its effect on arousal and mood, could create a pleasant atmosphere and reduce bullying occurrence. On the first week, 56 sixth-grade students from two classes completed a bullying and arousal questionnaire after the big recess on three consecutive days, as a baseline measurement. On the second week, calming background music was played during the big recess on three consecutive days and children completed the same questionnaires. On the final week, music was removed and participants completed the questionnaires again on three consecutive days. Results showed significantly reduced bullying occurrence, lower arousal levels, and higher enjoyment of recess when music was played. Bullying occurrence increased on the third week, though it remained lower than on the first week. Arousal levels returned to baseline level once music was removed. Results suggest calming background music may be used in combination with other intervention actions to create a positive school atmosphere and reduce aggressive behavior.

KEY WORDS: arousal; bullying; music

In recent years, awareness surrounding the problem of bullying in schools and the negative consequences associated with it has steadily increased and is now widely acknowledged as a problem in many countries around the world (Cook, Kirk, Guerra, Kim, & Sadek, 2010; Craig, Pepler, & Atlas, 2000; Nansel et al., 2004). In Israel, the problem has received a growing amount of attention (Benbenishty & Astor, 2005; Benbenishty, Astor, Zeira, & Vinokur 2002), and high rates of school violence are common (Due et al., 2005; Zeira, Astor, & Benbenishty, 2003). Bullying is defined as the systematic use of power by one dominant or powerful individual or group over another less dominant individual (Olweus, 1993; Rigby, 2007), with this behavior occurring repeatedly and over time, and with the intention of hurting the other (Nansel et al., 2001; Selekman & Vessey, 2004). It is a form of abuse that can take a direct form, by hitting, kicking, threats, teasing, and taunting, or an indirect form, through rumors, exclusion, or manipulation (Garrett, 2003; Olweus, 1997). The aim of this pilot study was to examine whether rates of bullying behavior in schools could be reduced by playing calming background music during recess.

Bullying or being bullied in school can have numerous negative effects on anyone involved. Several cross-cultural studies have shown that although the rate of the phenomenon varies widely from country to country (Craig et al., 2009; Nansel et al., 2004; Smith-Khuri et al., 2004), bullies and bullying victims both suffer from a variety of physical symptoms and health problems (Stein, Dukes, & Warren, 2007), such as headaches, stomachaches, backaches, and dizziness spells. A host of psychosocial symptoms have also been linked with this issue, such as bad temper, nervousness, loneliness, helplessness, and poorer emotional and social adjustment (Champion, Vernberg, & Shipman, 2003; Due et al., 2005; Nansel et al., 2004; Warden & MacKinnon, 2003; Wang, Iannoti, Luk, & Nansel, 2010).

Beyond these immediate effects, bullying or being the victim of a bully can have serious long-term consequences (Smokowski & Holland Kopasz, 2005). Children who are bullied, and their bullies, tend to continue on those same paths throughout the course of their school years. (Olweus, 1993). Children who bully others at school are more likely to have a criminal record as adults (Garrett, 2003) and are more likely to develop an antisocial personality or a substance abuse problem, or suffer from depressive or anxiety disorders. Victims of bullying are more likely to
develop anxiety disorders, and bully-victims are likely to develop both anxiety and antisocial personality disorders (Sourander et al., 2007). Victims are more likely to be depressed as adults (Gladstone, Parker, & Malhi, 2006).

In recent years, a wide variety of intervention programs have been introduced in schools and subsequently studied. These types of antibullying programs typically focus on providing a clear definition of bullying, identifying the various types of bullying and the development of coping strategies for bullies and victims (Olweus, Limber, & Mihalic, 1999). Some of these programs aim at improving social skills and competence and reducing antisocial behavior (Farrell, Meyer, & White, 2001; Taub, 2001), using counseling, crisis intervention, skills training and community programs as tools (for a review, see Astor, Meyer, Benbenishty, Marachi, & Rosemond, 2005). Other intervention programs concentrate on the relationship between the bully and the bullied, encouraging forgiveness and reconciliation (Ahmed & Braithwaite, 2006), or focus on the individual emotional and cognitive dimensions of bullying (Jolliffe & Farrington, 2006). Meta-analyses and reviews of intervention programs show that although most programs lead to a positive effect, this effect is usually small (Smith, Schneider, Smith, & Ananiadou, 2004). Whereas certain scholars underscore the practical significance of reducing rates of bullying behavior (Wilson & Lipsey, 2007), others consider the effect too weak to create noticeable and long-lasting change in bullying behavior (Ferguson, San Miguel, Kilburn, & Sanchez, 2007).

In an attempt to deal with the multifaceted problem of school bullying, many of these intervention programs have shifted the emphasis from the treatment of existing problems to the prevention of bullying behavior (Roland, 2000). Within this context, one of the most crucial factors to consider in confronting the issue of bullying in schools is fostering a safe school climate that promotes positive interactions among children (Hernandez & Seem, 2004; Nansel et al., 2001). Bullying behavior is related to high physiological arousal levels (Olweus, 1997; Wilton & Craig, 2000; Woods & White, 2005), and a positive school atmosphere provides a context in which bullying behavior is less likely to occur (Cook et al., 2010; Kasen, Berenson, Cohen, & Johnson, 2004; Olweus, 1993). With the goal of creating a calmer school environment, it is the aim of this article to examine whether background music played during recess would have an effect on bullying behavior among students.

Background music is used in a variety of contexts to create a positive atmosphere, to influence behavior, and to influence physiological, emotional and cognitive processes. In everyday life, individuals intuitively use music in order to create a desired atmosphere and regulate their moods (North, Hargreaves, & Hargreaves, 2004; Saarikallio & Erkkila, 2007). In experimental settings, studies conducted with adult participants have shown that music can increase the tendency to be helpful to others, decrease pain, and reduce subjective and physiological measures of anxiety and stress (Fried & Berkowitz, 1979; Knight & Rickard, 2001; Labbé, Schmidt, & Babin, 2007; North, Tarrant, & Hargreaves, 2006; Roy, Peretz, & Rainville, 2008; Watkins, 1997).

In children, music has been shown to calm and reduce preoperative anxiety and pain in clinical procedures (Barrera, Rykov, & Doyle, 2002; Kain, Wang, Mayes, Krivutza, & Teague, 2001; Klassen, Liang, Tjosvold, Klassen, & Hartling, 2008), to be helpful in working with children who suffer from psychopathology (Gold, Voracek, & Wigram, 2004), and to influence the lateralization of brain activity in depressive adolescents (Field et al., 1998). The effect of music on arousal and mood are clear, both on a subjective level and by measuring physiological changes, and are evident both in children and in adults (Kain et al., 2001; Kemper & Danhauer, 2005; Schellenberg, Nakata, Hunter, & Tomato, 2007). Specific musical features such as rhythm and mode can affect arousal and mood; for example, fast tempo music can lead to increased arousal as compared with music played at a slower tempo, and music played in a major mode can improve mood as compared with music played in a minor mode, or in no discernable mode (Husain, Thompson, & Schellenberg, 2002; Koelsch, Offermanns, & Franzke, 2010). Beyond these universal musical components, personal musical preferences can play an important role in determining the influence of music on levels of arousal, mood, anxiety, and pain (Cassity, Henley, & Markley, 2007; Cooke, Chaboyer, Schulte, & Hiratos, 2005; Potthoulaki et al., 2008).
Despite the well-documented, positive effects of music on human behavior, the potential influence of music on aggressive behavior in school-age children has not been extensively studied. Previous studies have successfully proven that dance therapy can be used to reduce aggressive behavior in elementary school children (Koshland, Wilson, & Wittaker, 2004). Furthermore, one study showed that classical background music played in the classroom, either at the beginning of the school day or after the lunch break, reduced the amount of time required to engage in on-task learning behaviors in third-grade students (Cluphf & MacDonald, 2003). However, the effect of background music on bullying has not been studied.

As bullying in primary schools occurs more frequently on the playground during recess, when supervision is less strict (Craig, Pepler, & Atlas, 2000; Isernhagen & Harris, 2004; Vaillancourt et al., 2010), the aim of the present pilot study was to examine whether calming background music played during the long school recess would influence bullying behavior or arousal levels of the children. We hypothesized that the calming music would reduce bullying behavior and overall arousal levels, and lead to more enjoyment of recess.

**METHOD**

**Participants**
The participants consisted of 59 students in grade 6, who attend a local elementary school in the north of Israel. The school belongs to the national education system, and the students who attend the school come from an average socioeconomic background. Of the original sample, two students did not participate because of parental refusal, and one student expressed his unwillingness to participate. Only students who were present for each phase of the study and who completed all of the questionnaires were included in the sample. Thus, the final sample consisted of 56 students, and of those, 24 were girls and 32 were boys, ranging in age from 11 to 12 years ($M = 11.72, SD = .38$).

**Materials**

**Bullying Questionnaire.** The questionnaire, designed by Rolider, Lapidot, and Levi (2000), includes 13 questions regarding bullying situations. The participant is also asked to mark whether or not the situation occurred during the recess. Questions 1, 2, 3, 4, 6, 7, 8, 9, and 11 refer to direct bullying (for example: “I was made fun of,” “I was insulted,” or “I was hit”). Questions 5, 10, and 12 refer to indirect bullying (for example: “I was prevented from playing,” “Children gossiped about me”). The final question asked the participant to rate the degree to which the recess was pleasant (not at all / so-so / very pleasant).

**Arousal Questionnaire.** An additional three-item questionnaire was also designed for the study. Participants were asked to rate on a scale from 1 (a little) to 3 (very much) the degree to which they felt tension, anxiety or fear, and stress.

**Music.** The music chosen for the study was relaxing music from The Spirit of Yoga (Leinbach, 2003), a yoga relaxation disc. The selected songs were “Khumjung” (duration 15:31), “Horizon of Gold” (duration: 13:07), and “Mother’s Wingspan” (duration: 18:53). The music can be characterized as world music, with a strong Indian influence. Each of these four tracks is based on a drone, accompanied by sparse melodies and sound effects. In each recess period, 20 minutes of music were played.

**Procedure**

Initially, the researcher explained to the students that the study was designed to observe the effect of music on bullying behavior and the different feelings students may have during recess. One of the researchers read the questionnaire to the children and verified that they understood all the questions and terms used. Letters—explaining the nature of the study—were also sent home so that parents could decide if they wanted their child to participate.

During the first week, one of the researchers entered the classes on three consecutive days, after the longest recess and asked participants to complete the questionnaires regarding that recess period. The big recess is a 20-minute recess in the middle of the school day, common to all school children. During recess, the children can stay in the classroom or go to the school playground, where they can run or play. The three selected days were ordinary school days that fell in the middle of the week, so that neither the first school day, nor the final school day of the week, was included. Completing both questionnaires took about 10 minutes each day. These questionnaires were administered in order to obtain a baseline measure of bullying behavior. In order to keep the questionnaires
anonymous, each student received a number, and all of his or her questionnaires were gathered according to this number. The researcher had the initial list containing the names and numbers of each student. After data collection was finished, the list was destroyed, leaving the pack of questionnaires for each student devoid of any personal information about him or her.

During the second week of the study, the calming music was played over the school sound system during the big recess on three consecutive days (the same days as in week 1). The music was played at a volume of 80 to 90 dB throughout the school for the entirety of the recess. The participants spent the recess, as they normally would, alongside their fellow schoolmates. Although no systematic observation of their behavior took place, the researcher’s impression was that behavior was calmer than usual. After each big recess, the researcher entered the two classes involved in the study and asked the participants to complete the two questionnaires.

During the third week, questionnaires were completed on the same three consecutive days of the week, after the big recess, but without the background music. This stage of the research was conducted in order to examine whether bullying behaviors or children’s feelings changed or returned to baseline levels after the music intervention. In total, there were nine questionnaires for each student (three for each week of the study).

**RESULTS**

**Bullying Questionnaire**

Reliability analyses were conducted on the bullying scale for the first week. Cronbach’s alpha varied between .72 to .73. Sum ratings for each questionnaire on direct and indirect items of bullying were computed. No significant differences were found between boys and girls on any of the scales. Means for each of the three questionnaires, corresponding to each week of the study were then calculated and presented in Table 1.

Repeated measures analysis of variance (ANOVA) were conducted for total bullying scores and separately for direct and indirect bullying on weekly means. A significant difference in total scores was found \( F(2, 108) = 41.55, p < .001, \) partial \( \eta^2 = .435 \). Paired-sample tests showed a significant difference between week 1 (baseline) and week 2 (music), \( t = 8.19, p < .001 \); a significant difference between week 2 (music) and week 3 (no music), \( t = 3.15, p = .003 \); and a significant difference between week 1 (baseline) and week 3 (no music), \( t = -8.42, p < .001 \).

A significant difference for direct bullying was found \( F(2, 108) = 40.19, p < .001, \) partial \( \eta^2 = .427 \). Paired-sample tests showed a significant difference between week 1 (baseline) and week 2 (music), \( t = 8.28, p < .001 \); a significant difference between week 2 (music) and week 3 (no music), \( t = -8.62, p < .001 \); and a significant difference between week 1 (baseline) and week 3 (no music), \( t = 2.18, p = .033 \).

The repeated measures ANOVA for indirect bullying showed a significant effect \( F(2, 108) = 18.23, p < .001, \) partial \( \eta^2 = .249 \). Paired-sample tests showed a significant difference between week 1 (baseline) and week 2 (music), \( t = 5.75, p < .001 \); and a significant difference between week 2 (music) and week 3 (no music), \( t = -5.48, p < .001 \).

Means for question 13 (How pleasant was the recess?) were computed for each questionnaire and for each experimental condition. Means and standard deviations are presented in Table 1.

A repeated measures ANOVA was conducted on this item. A significant effect was found \( F(2, 110) = 57.19, p < .001, \) partial \( \eta^2 = .51 \). Paired-sample tests showed a significant difference between week 1 (baseline) and week 2 (music), \( t = -7.91, p < .001 \); a significant difference between week 2 (music) and week 3 (no music), \( t = 10.42, p < .001 \); and a significant difference between week 1 (baseline) and week 3 (no music), \( t = 2.04, p = .046 \).

One-way ANOVAs were run between levels of pleasantness ratings and means of bullying. In all nine questionnaires, a significant effect was found at \( p < .05 \). As a result, it appears that the direct bullying significantly lowers the ratings of recess enjoyment.

**Table 1: Direct and Indirect Bullying, Enjoyment of Recess, and Arousal Level**

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Week 1-Baseline M (SD)</th>
<th>Week 2-Music M (SD)</th>
<th>Week 3-No Music M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct bullying</td>
<td>1.68 (1.41)</td>
<td>.29 (49)</td>
<td>1.27 (94)</td>
</tr>
<tr>
<td>Indirect bullying</td>
<td>.42 (.45)</td>
<td>.08 (17)</td>
<td>.32 (.35)</td>
</tr>
<tr>
<td>Total bullying</td>
<td>2.12 (1.73)</td>
<td>.38 (.57)</td>
<td>1.39 (.98)</td>
</tr>
<tr>
<td>Recess enjoyment</td>
<td>.95 (.6)</td>
<td>1.65 (.35)</td>
<td>.77 (.6)</td>
</tr>
<tr>
<td>Arousal scores</td>
<td>5.95 (1.86)</td>
<td>3.61 (.81)</td>
<td>5.97 (1.84)</td>
</tr>
</tbody>
</table>

**Volume 35, Number 2 April 2013**

86 Children & Schools
Arousal
Reliability analyses were conducted for the arousal scale for each recess. Cronbach’s alpha ranged between .79 to .94. Sums for the three items in each questionnaire were computed. No significant differences were found between boys and girls. Means for each week of the study on the arousal scale are presented in Table 1.

Repeated measures ANOVA was conducted on mean arousal ratings for each experimental condition. A significant effect was found \( F(2, 110) = 71.33, p < .001, \) partial \( \eta^2 = .565 \). Paired-sample t tests showed a significant difference between week 1 (baseline) and week 2 (music), \( t = 10.36, p < .001 \); and between week 2 and week 3 (no music), \( t = -10.32, p < .001 \).

One-way ANOVAs were conducted between levels of enjoyment of the recess and arousal levels. In all cases, a significant effect was found at \( p < .005 \). The more children enjoyed the recess, the lower their arousal levels were.

DISCUSSION
This study sought to examine whether calming background music played during recess could reduce children’s bullying behavior and general arousal levels. Results confirm the hypotheses. Occurrences of direct and indirect bullying were both significantly reduced during the three days when calming background music was played at the school. Furthermore, the participants reported lower levels of arousal and anxiety during recess and enjoyed the recess more with background music. After the music was removed, bullying frequency increased, and enjoyment of the recess decreased. However, it remained higher than the baseline level of recess enjoyment. Arousal levels, however, returned to baseline level when music was removed.

The findings of this article are in line with the findings of previous studies that show music can have a calming effect, reduce anxiety, improve mood, and influence arousal levels (Kain et al., 2001; Knight & Rickard, 2001; Watkins, 1997). Therefore, the link between a higher level of enjoyment of the recess and reduced bullying rates when music was played is also in line with previous studies that show a relationship between a negative school environment and bullying (Cook et al., 2010).

To our knowledge, this pilot study is the first of its kind to examine the effect of background music on bullying behavior in natural settings. The findings are very encouraging. Whereas, in no way do they imply that background music is the solution to bullying behavior in schools—the results do suggest that music may be another tool to be used in certain contexts to create a calmer, more positive atmosphere, and influence children’s behavior and feelings to reduce aggressive behavior.

The existence of several limitations in this study underscore the need for further research to establish the degree to which these findings may be generalized. First, as the children in the present study were aware of the aim of the study, it is possible that the reduced rates of bullying and arousal when music was played are partly attributable to a Hawthorne effect. However, bullying and arousal rates did not return to baseline after the removal of the music. Moreover, although the reliability levels of the scales used in this study were acceptable, actual bullying behavior was not measured, so the data collected represent subjective perceptions from the children. In light of this, measuring specific bullying behavior with means other than subjective reports is recommended. Subjective reports that come from children may be limited by a child’s inability to comprehend complex interactions between bullies and victims (Craig, Pepler, & Atlas, 2000). Other measures, such as observation of actual behavior, may be advisable to ascertain the validity of the scales and whether bullying behavior is in fact reduced when calming music is played.

Second, because certain aspects of musical perception and preferences differ between age groups and cultural groups, repeating the study using a larger sample of participants, from a wider range of ages and cultural backgrounds, is necessary in order to validate the effect of music on a child’s behavior (Brittin, 2000; Hargreaves, Comber, & Colley, 1995; Nawrot, 2003; North & Hargreaves, 2007).

Third, it would be helpful to conduct a similar study over a longer period of time to determine whether habituation to the music would occur and how that might alter the findings. Although, in the present study, bullying rates in the third week (removal of music) were significantly lower than baseline levels (first week); suggesting that the effect of music may be long term, they were higher than bullying rates when music was played. This could potentially indicate a tendency to return to baseline level. Previous studies suggest that simple stimuli become boring after repeated exposure,
whereas a desire for more complex stimuli increases with time (Berlyne, 1970; Cox & Cox, 2002). It is possible that the music used in the present study could lose its effectiveness after a certain period of time, which in turn, could lead to the opposite effect than the one found in this study. Moreover, because arousal levels have been linked to bullying profiles, with the victims of bullying expressing higher general arousal levels than neutral parties, and bullies expressing lower levels of arousal, it would be interesting to see the specific effect of calming music on these two different types of children (Woods & White, 2005).

Another direction for possible future research would be to investigate how individual and cultural differences alter the effects of music on bullying behavior and on the multiple medical and psychological problems related to this negative behavior. In adolescents, musical taste has been found to be related to personality and reflect the various developmental issues with which they deal (Dillman Carpentier, Knobloch, & Zillman, 2003; Mulder, Bogt, Raaijmakers, & Vollebergh, 2007; Schwartz & Fouts, 2003). Furthermore, personal musical preferences can influence the overall effect of music on arousal levels and mood (Cassity, Henley, & Makley, 2007). Therefore, further research is needed to determine whether calming music would have the same effect on the behavior of children with different musical preferences and personality characteristics.

If the findings of this pilot study are replicated and can be generalized, they point to a very simple, inexpensive means of reducing aggressive behavior and suggest that combining music with other intervention methods may foster a calmer, more positive school atmosphere and thereby reduce bullying.

REFERENCES


Naomi Ziv, PhD, is senior lecturer, College of Management–Academic Studies, 7, Rabin Street, Rishon Le-Zion, Israel 75490; e-mail: naomiziv@013.net. Eina Dolev, MS, received her master's degree in educational counseling from the Max Stern Academic College of Emeq Yizre'el.

Original manuscript received August 14, 2011
Final revision received September 13, 2011
Accepted October 18, 2011
Advance Access Publication April 19, 2013

As a social worker in the field of child welfare, current information on trends and policy issues affecting practice and service delivery is a must. NASW’s Child Welfare Specialty Practice Section (SAPS) links you with the key information, resources, and expertise you need to stay at the forefront of your practice specialty:

- Specialized newsletters
- Practice updates
- Opportunity for FREE CE credits by reading *InterSections in Practice*, the SAPS annual bulletin
- Members-only Web-based products designed to enhance your professional development within the child welfare community

JOIN TODAY!

Go to www.socialworkers.org/sections or call 202.408.8600 ext. 476.

*You must be a current NASW member to join a Specialty Practice Section.*