The Meaningful Roles Intervention: An Evolutionary Approach to Reducing Bullying and Increasing Prosocial Behavior

Bruce J. Ellis
University of Arizona

Anthony A. Volk
Brock University

Jose-Michael Gonzalez
University of Arizona

Dennis D. Embry
Paxis Institute

Bullying is a problem that affects adolescents worldwide. Efforts to prevent bullying have been moderately successful at best, or iatrogenic at worst. We offer an explanation for this limited success by employing an evolutionary-psychological perspective to analyze antibullying interventions. We argue that bullying is a goal-directed behavior that is sensitive to benefits as well as costs, and that interventions must address these benefits. This perspective led us to develop a novel antibullying intervention, *Meaningful Roles*, which offers bullies prosocial alternatives—meaningful roles and responsibilities implemented through a school jobs program and reinforced through peer-to-peer praise notes—that effectively meet the same status goals as bullying behavior. We describe this new intervention and how its theoretical evolutionary roots may be applicable to other intervention programs.

Theory and research in evolutionary psychology focus on the functional basis of social behavior—on what behavior is *for* in terms of adaptively relevant goals and motives. This functional perspective calls attention to the instrumentality of both prosocial and antisocial strategies. Social and material goals can be achieved in groups through antisocial means such as theft, bullying, trickery, or threatening harm, or by prosocial means such as participating in friendly relationship-building cooperation and reciprocation (Ellis et al., 2012; Hawley, 1999). This duality of antisocial and prosocial strategies is especially relevant in human groups, where other individuals are our main sources of both protection and danger.

Bullying is an antisocial strategy for obtaining social and material goals; it is a unique form of aggression that predicts unique outcomes when compared to general aggression (Ybarra, Espelage, & Mitchell, 2014). Bullying has been defined by evolutionary psychologists as aggressive goal-directed behavior that causes harm to another individual within the context of a power imbalance (Volk, Dane, & Marini, 2014). This emphasis on goals and motives underscores the equifinality of

different social strategies: Goals attained through bullying can potentially be achieved through prosocial means as well. Most importantly, the efficacy and frequency of antisocial versus prosocial strategies are sensitive to environmental contingencies and consequences (Biglan, Flay, Embry, & Sandler, 2012; Wilson, Hayes, Biglan, & Embry, 2014).

In this article, we build on and present an application of the recent evolutionary theory of bullying proposed by Volk and colleagues (Ellis et al., 2012; Volk, Camilleri, Dane, & Marini, 2012a, 2012b; Volk et al., 2014). We argue that this approach can be useful for improving intervention outcomes. The theory proposes that bullying is based on evolved psychological mechanisms that motivate some individuals to engage in aggressive goal-driven behavior that is guided by favorable cost-benefit ratios in their social environment. By highlighting (1) the importance of adaptive goals and motives and (2) the variables affecting cost-benefit ratios linked to these goals and motives, an evolutionary analysis affords novel predictions about the content and efficacy of bullying interventions. Contextual or environmental strategies that reduce payoffs for bullying and increase positive consequences for reciprocal, prosocial behaviors should reduce the prevalence and intensity of bullying in social systems.

We begin with a theoretical review of bullying from an evolutionary perspective, followed by a discussion of how these theoretical principles can be applied to antibullying interventions. As a demonstration project, we then present a new evolutionarily informed school intervention, *Meaningful Roles*, which involves implementing a school-wide jobs program. This project was carried out in an American junior high school, to capture the developmental period when bullying is most prevalent (e.g., Nolle, Guerino, & Dinkes, 2007), and when traditional antibullying interventions programs have struggled to reduce bullying prevalence rates (e.g., Yeager, Fong, Lee, & Espelage, 2015). What distinguishes Meaningful Roles from other antibullying efforts is that it is designed to work within the goal structures of bullies to substitute bullying behaviors with positive, prosocial activities (meaningful roles and responsibilities implemented through the jobs program and reinforced through peer-to-peer praise notes) that yield outcomes and incentives comparable to those achieved through bullying.

THE PROBLEM OF BULLYING

Bullying is a serious problem that directly affects millions of children and adolescents worldwide each year (e.g., Due et al., 2005). In the United States, roughly 50% of young adolescents report being directly involved with at least one form of bullying, as either a bully or a victim, within a 2-month period at school (Wang, Iannotti, & Nansel, 2009). This amounts to recent, direct experience with bullying among millions of American adolescents.

For those who are perpetrators of bullying, this experience is related to a significant risk of increased antisocial behavior, drug/alcohol use, and future criminal behavior (e.g., Nansel, Overpeck, Pilla, Simons-Morton, & Scheidt, 2001; Wolke & Lereya, 2015). For those who are victims of bullying, their unwilling involvement is associated with a host of risk factors that include physical and mental health problems (Nansel et al., 2001) and poor school performance (Juvonen, Wang, & Espinoza, 2011). These problems can persist for decades after the victimization has ended, resulting in an increased risk of poor adult mental health (Copeland, Wolke, Angold, & Costello, 2013) and physical health (Copeland et al., 2014). Taken together, these risks make it clear why the U.S. Centers for Disease Control treat bullying as a violence that threatens young people's well-being.

BULLYING BEHAVIOR IN EVOLUTIONARY PERSPECTIVE

Much research across diverse contexts and species has examined repeated aggression directed toward a significantly weaker individual (which is a common definition of bullying [Olweus, 1993], but is not always labeled as such). According to this definition, bullying occurs almost equally across socioeconomic strata (Tippett & Wolke, 2014) and is widespread across time and place. It has been documented in all modern cultures surveyed (Due et al., 2005), by anthropologists studying modern hunter–gatherers (Briggs, 1970; Turnbull, 1972), and by historians documenting past cultures (Cunningham, 2005). Bullying is also common among social animals, from fish to chickens to chimpanzees, where it promotes access to physical, social, and sexual resources (reviewed in Ellis et al., 2012). This pervasiveness of bullying—in comparative, cross-cultural, socioeconomic, and historical perspective—challenges false stereotypes about the social incompetence or cognitive deficits of bullies.

Unlike victims (Hawker & Boulton, 2000) or bully-victims (Mynard & Joseph, 1997), there is evidence that adolescent bullies do not appear to suffer many adverse effects from bullying beyond a heightened propensity to engage in antisocial behaviors (e.g., Wolke & Lereya, 2015). Bullies appear to be quite similar (or sometimes even better off) than average adolescents with regard to mental health (e.g., Copeland et al., 2013; Juvonen, Graham, & Schuster, 2003; Koh & Wong, 2015), physical health (Copeland et al., 2014; Wolke, Woods, Bloomfield, & Karstadt, 2001), and social skills that include theory of mind, cognitive empathy, leadership, social competence, and self-efficacy (e.g., Caravita, Di Blasio, & Salmivalli, 2009; Sutton, Smith, & Swettenham, 1999; Vaillancourt, Hymel, & McDougall, 2003). Although there are some dissenting findings (particularly for health; e.g., Sourander et al., 2007; Srabstein, McCarter, Shao, & Huang, 2006), the most reliable risks associated with bullying appear to be antisocial outcomes as opposed to health or social skills.

Such normative outcomes for bullies, together with the ubiquity of bullying across a wide range of human societies, is consistent with the hypothesis that bullying, at least in part, is a context-sensitive social adaptation (Ellis et al., 2012). The functions of bullying in animals (noted above) apply to humans as well (Ellis et al., 2012; Koh & Wong, 2015; Kolbert & Crothers, 2003; Volk et al.,

2012a). Indeed, human bullying is associated with a number of adaptive goals and outcomes, including control of resources, sexual access, and reputation (sometimes referred to as social status or social dominance; Volk et al., 2014). Bullies appear to be adept at obtaining a variety of resources (i.e., nonsocial benefits), ranging from food (Turnbull, 1972) to academic tenure (Frazier, 2011). With regard to sexual access, bullying appears to be functional, as bullies experience earlier ages of dating and first sexual intercourse, report greater dating/mating opportunities, are more likely to be in a dating relationship, and report a significantly greater number of sexual partners (Connolly, Pepler, Craig, & Taradash, 2000; Faris & Femlee, 2011). Most intriguing from an evolutionary perspective, these links persist in both younger and older adolescents, independent of age, sex/gender, victimization, and self-reports of attractiveness and popularity (Volk, Dane, Marini, & Vaillancourt, 2015). In total, there is good evidence that bullying is effective in obtaining resources and access to mates.

Bullying is also effective in obtaining a powerful social reputation that not only deters others from aggressing against an individual, but also enhances resource-holding potential (Hawley, 1999), as a powerful reputation can be translated into obtaining more direct or concrete goals such as wealth, privilege, and/or sexual access (Pellegrini, 2001; Volk et al., 2012a). Accordingly, reputation is the most commonly cited benefit of bullying, particularly as it relates to the ability to negotiate dominance hierarchies (Kolbert & Crothers, 2003; Pellegrini, 2001; Salmivalli, 2010). Consistent with this viewpoint, bullies have been found not only to have particularly strong status goals (Sijtsema, Veenstra, Lindenberg, & Salmivalli, 2009), but also to achieve powerful social reputations as indicated by higher levels of peer-reported dominance, social centrality, and perceived popularity, despite having lower ratings of likeability (e.g., Caravita et al., 2009; Faris & Femlee, 2011; Juvonen et al., 2003; Sentse, Kiuru, Veenstra, & Salmivalli, 2014; Sijtsema et al., 2009; Veenstra et al., 2005). Social dominance is thus an important goal that many bullies not only seek, but achieve, presumably due to their reputation for being willing and able to use power aggressively (e.g., Estell, Farmer, & Cairns, 2007; Vaillancourt et al., 2003; Volk et al., 2014). Longitudinal data further reveal that the intensity of bullying is positively associated with gains in dominance (Reijntjes et al., 2013).

This conceptualization of bullying as an adaptive, goal-driven strategy offers a new theoretical vantage point from which to examine antibullying interventions. In particular, it suggests that interventions must be conscious of what goals they are targeting, and what goals they are not (e.g., a focus on social reputations might not influence private, within-partner sexual bullying). It also suggests that interventions should consider the importance of the goal for the bully, and to what lengths they will go to obtain it. Theoretically, this is referred to as the cost-benefit ratio of bullying (Volk et al., 2012b) and it plays a central role in reducing bullying by decreasing the net gain from the behavior. Cost-benefit models of aggression have been widely used to explain evolutionary causes of aggression, such as kin-related infanticide (Daly & Wilson, 1988) and resource-inequality driven homicide (Daly, Wilson, & Vasdev, 2001).

Evolutionarily inspired research has shown that bullying is best predicted by low levels of the HEXACO personality trait of Honesty–Humility (Book, Volk, & Hosker, 2012; Farrell, Della Cioppa, Volk, & Book, 2014). Low Honesty–Humility is at the core of the dark triad of personality traits: psychopathy, narcissism, and Machiavellianism. It reflects a willingness to exploit others for one's own benefit (in contrast to HEXACO Agreeableness, which reflects a willingness to be exploited/forgiveness; Ashton, Lee, & de Vries, 2014). Bullies' low scores on Honesty–Humility reinforce the view of bullying as a largely proactive, goal-driven behavior that is influenced by individual traits.

A willingness to exploit others further explains why bullies tend to be low on affective versus cognitive empathy (Ciucci & Baroncelli, 2014; van Noorden, Haselager, Cillessen, & Bukowski, 2015). Much as with psychopaths, it is not so much that bullies are unaware of the harm that they are causing (Sutton et al., 1999). Rather, it is a case of *callous empathy* where they are aware of, but do not care about, that harm. This lack of guilt is driven not by an inability to care for others; it is driven by a desire for personal success (Ashton et al., 2014; Gini, Pozzoli, & Hauser, 2011). Thus, interventions that focus on altering the empathy of bullies are not only facing a real challenge in trying to change a basic personality trait, but also may be attempting to alter a trait that is not a good predictor of adolescent bullying (Rigby, 2012).

We propose that an important limitation of extant antibullying interventions is that they have not been designed to influence, or do not specifically consider how they influence, the salient

benefits of bullying, as well as its costs, in ways that work with adolescent goals and motives to reduce bullying behaviors. In this context, we examine the features of existing interventions and how well they address bullying from an evolutionary perspective.

BULLYING INTERVENTIONS IN EVOLUTIONARY PERSPECTIVE

An initial analysis of antibullying programs revealed that they generally did not lead to a reduction in bullying (Merrell, Gueldner, Ross, & Isava, 2008; Smith, Schneider, Smith, & Ananiadou, 2004). In particular, the majority of antibullying programs were zero-tolerance or empathy training programs that mostly did not work (Merrell et al., 2008). This ineffectiveness is not surprising from an evolutionary perspective, given the complete lack of attention in such programs to important goals achieved through bullying (Ellis et al., 2012; Volk et al., 2012b). There is very little reason for adolescents to give up a successful social strategy in return for nothing, and the data suggest that this is exactly what happens—nothing—when schools implement a zero-tolerance policy (American Psychological Association Zero Tolerance Task Force, 2008). And while some empathy training programs report positive success (e.g., Schonert-Reichl, Smith, Zaidman-Zait, & Hertzman, 2012), a more general review of the intervention literature suggests that they are only effective for younger children who might not understand the consequences of their actions (Yeager et al., 2015).

A recent meta-analysis (Ttofi & Farrington, 2011) reported an average reduction of 20%–23% in bullying and 17%–20% in victimization rates across 44 different intervention studies. Although this progress is encouraging, several issues remain. Most of the successful programs were from Scandinavia (e.g., Olweus program in Norway, KiVa in Finland; Olweus, 2005; Salmivalli, Kärnä, & Poskiparta, 2010), with far lower success rates reported in North America. Specifically, the 14 intervention studies conducted in the United States or Canada yielded a weighted mean odds ratio of 1.06, indicating a nonsignificant effect of these programs on bullying (Ttofi & Farrington, 2011). This ineffectiveness suggests that bullying may be sensitive to different socio-cultural or ecological factors (Espelage, 2013; Hong & Espelage, 2012) and/or that countries differ in their commitment, capacity, and knowledge to address bullying.

Among successful programs, key factors included intensity and duration of the intervention (i.e., a positive dose response), firm discipline, and parent training (e.g., Olweus Bullying Prevention Program—OBPP; Olweus, 2005). From an evolutionary perspective, these factors make sense as they all relate to increasing the costs of bullying. Because bullying can be conceptualized as a facultative response to the right environmental conditions, increasing costs is a reasonable way to decrease bullying (Ellis et al., 2012; Volk et al., 2012b). However, the issue of addressing the benefits of bullying was not raised in any of the intervention studies reviewed by Ttofi and Farrington (2011). For example, adults at an OBPP school are taught to show warmth and positive interest in their students; set firm limits to unacceptable behavior; use consistent nonphysical, nonhostile negative consequences when rules are broken; and function as authorities and positive role models. Thus, the OBPP focuses largely on empathy and discipline (costs) while ignoring the goals (benefits) of the bully. By default, this cuts in half the potential influence of the OBPP on bullying because it ignores half of the bullying cost-*benefit* ratio, despite earlier references to the importance of recognizing potential benefits of bullying (Olweus, 1993).

We argue that this lack of attention to beneficial goals and motives results in missing an important factor that could help interventions achieve a greater reduction in bullying than the current 20%–23% average (achieved mainly in Europe). Although this rate of reduction is significant and important, there is still much room for improvement. Further, recent data from Norway suggest that OBPP requires constant and intensive investment to be successful. When government investment in OBPP waned, bullying rates in Norway quickly returned to pre-intervention levels (Roland, 2011). Thus, the OBPP represents a very expensive program that ironically ignores the important cost-benefit ratio that underlies bullying behavior. From an evolutionary perspective, the pure focus of the OBPP on increasing the costs of bullying is likely the reason why such high investment is needed to maintain it.

The other major European antibullying intervention is the KiVa program from Finland, which relies primarily on peer behavior to reduce bullying (Salmivalli et al., 2010). KiVa has demonstrated 20%–60% reductions in bullying (depending on the form of bullying measured) in Finland (Salmivalli, Poskiparta, Ahtola, & Haataja, 2013). KiVa encourages peers to intervene against bullying and to devalue bullying as a means of obtaining popularity (Salmivalli et al., 2010). Thus, at an implicit level, KiVa attempts to reduce the benefits of

bullying by discouraging peers from granting reputational benefits to bullies. It also is implicitly adaptive in that it focuses its intervention efforts on bystanders, for whom a change in behavior is not necessarily accompanied by a loss of important goals (as it would be for bullies). However, an analysis of KiVa program results through an evolutionary lens indicates that it is only effective against low- or middle-popularity bullies (Garandeau, Lee, & Salmivalli, 2014). It appears that high-popularity bullies are resistant to peer efforts to alter social goals (benefits) or impose social sanctions (costs). This represents an important limitation of peer-initiated efforts, as peers appear (not surprisingly) to be unable to alter the behavior of the more powerful among themselves, who are, in fact, best suited to bully due to their power. This is reminiscent of the finding that antibullying programs that encourage bully–victim dialogue as a solution are in fact iatrogenic (Ttofi & Farrington, 2011).

An evolutionary approach to bullying identifies both the salient costs and benefits of bullying, thereby allowing for targeted, meaningful intervention strategies that are tailored to individual bullies' motives and goals (Ellis et al., 2012; Volk et al., 2012a). If the methods for obtaining a goal can be altered so that it becomes prosocial rather than antisocial, then bullies should prefer using prosocial behaviors to obtain that goal (so long as the cost-benefit ratios are favorable). Few, if any, current antibullying programs explicitly recognize the goal-driven nature of bullying by attempting to teach or offer bullies prosocial alternative strategies for achieving adaptively relevant goals. What many interventionists perceive as the "right thing to do" (i.e., a focus on punishment) may turn out to be ineffective, costly, and even iatrogenic (see Anderson & Kincaid, 2005; Ellis et al., 2012). We propose that the remedy for many of these issues is to adopt an adaptive, goal-directed approach that recognizes the strengths and motives of adolescents who bully in an attempt to divert their behavior toward more prosocial activities. *Meaningful Roles* is our attempt to develop such an antibullying intervention.

THE ROOTS OF THE MEANINGFUL ROLES INTERVENTION

Meaningful Roles builds on and integrates components from two previous school-based programs. These components fit well within the current evolutionary approach and thus provided important cornerstones for the development of Meaningful Roles.

Pupil Responsibilities

The first was an examination of the effects of *pupil responsibilities* in a longitudinal study of 12 London schools in a socioeconomically disadvantaged borough of South London (Rutter, Maughan, Mortimore, & Ouston, 1979). Cross-culturally, adolescence is a period when youth obtain more adult-like roles that confer status among peers and the larger community (Schlegel & Barry, 1991). Interventions can potentially work with this normative change by providing meaningful roles for adolescents that afford responsibility and status.

Consistent with this approach, Rutter et al. (1979) followed a cohort of approximately 2,000 students from primary school until their third year of secondary school. The study spanned a 9-year period. Because the 12 schools were all in the same education authority, they had similar levels of staffing and resources and utilized a standard curriculum. Despite these similarities, the goal of the study was to determine whether differences between schools (i.e., *school effects*) influenced differences between individual students in academic and behavioral outcomes. The study thus (1) measured and controlled for the family background and academic skills of the students at intake (e.g., ethnicity, socioeconomic status, reading, and verbal reasoning), (2) carefully studied processes internal to each school that constituted the school's working environment (e.g., setting of homework, disciplinary practices, student participation in school lessons, opportunities for students to take responsibilities in running the school), and (3) calculated correlations between these internal school processes and four outcomes: attendance, academic attainment as measured by standardized testing, delinquency (based on police records), and behavior/environment (e.g., uniform violations, observed school fighting, tardiness, graffiti).

The 12 schools showed wide variation in terms of these social and academic outcomes, even after controlling for variation in student characteristics at intake. A number of factors (e.g., praising and encouraging students' work, students' direct involvement in lessons, higher teacher expectations) correlated significantly with better outcomes. Among these factors, there was clear evidence that providing students with meaningful roles and responsibilities was an important predictor of

success. Student positions of responsibility (i.e., the proportion of students who had ever held an important "job" such as form captain, homework monitor, or a similar position in their class) varied across schools from 7% to 50% and correlated significantly with desirable student behavior/environment and academic attainment. Likewise, students caring for their own resources during academic lessons (i.e., the proportion of students who were responsible for bringing and taking away their books, folders, and writing materials) varied across schools from 3% to 79% and correlated significantly with attendance, desirable behavior/environment, and reduced delinquency rates. Importantly, the schools that provided more opportunities for pupil responsibility were not more disadvantaged in terms of initial student intake. Although correlation does not equal causation, these data strongly suggest that schools that provide students with more opportunities for meaningful roles and responsibilities have positive impacts on students' social and academic outcomes (Rutter et al., 1979).

PeaceBuilders' Praise Notes

The second component was the use of praise notes as developed in the PeaceBuilders intervention (a school-wide, universal violence prevention program that attempts to change antecedents that trigger aggressive behavior, reward prosocial behavior, and provide strategies to avoid reinforcing negative behavior; Embry, Flannery, Vazsonyi, Powell, & Atha, 1996). Praise notes—signed or anonymous written praise statements about a person who is identified and recognized for exhibiting prosocial or achievement-related behaviors—are a mechanism of positive reinforcement designed to increase the frequency or duration of prosocial behaviors. As developed in PeaceBuilders, praise notes promote a culture in which young people publicly praise one another for doing good things. Students write praise notes to each other or to adults and adults write them to students. Praise notes are publicly posted in classrooms and hallways and read on the public address system. Having peers write and post public recognitions for each other's positive behavior is a powerful, developmentally informed intervention, appealing directly to the preference of maturing children and youth for positive peer attention.

PeaceBuilders was evaluated in a randomized trial of eight matched schools ($N > 4,000$ students in Grades K–5) that were assigned to either immediate post-baseline intervention (PBI) or to a delayed intervention 1 year later (PBD) (Flannery et al., 2003). In Year 1, significant gains in teacher-rated social competence for students in Grades K–2, in child self-reported peace-building behavior in Grades K–5, and reductions in aggressive behavior in Grades 3–5 were found for PBI but not PBD schools. Most effects were maintained in Year 2 for PBI schools, including increases in child prosocial behavior in Grades K–2. Further, rates of visits to the school nurse decreased by 12.6% in PBI schools but did not change in PBD schools (based on a comparison of nurses' logs in the year prior to the intervention vs. Year 1) (Krug, Brener, Dahlberg, Ryan, & Powell, 1997). Whereas the PBI schools showed a 7.6% decrease in confirmed fighting-related injuries, the PBD schools showed a 56% increase in such injuries (Krug et al., 1997). In total, the PeaceBuilders program improved social competence and prosocial behavior and reduced aggression and injuries due to violence.

THE MEANINGFUL ROLES INTERVENTION: PUPIL RESPONSIBILITIES + PRAISE NOTES

The Meaningful Roles intervention attempts to change the adolescent social–ecological landscape through both universal (school-wide) and targeted strategies. The universal strategy focuses on improving school climate. It integrates a student jobs program, inspired by Rutter et al.'s (1979) work on pupil responsibilities, with the Peace-Builders' praise notes system. Meaningful Roles provides virtually all students in a school with jobs (pupil responsibilities) that are embedded in the context of frequent verbal and written recognition for prosocial behavior (praise notes from peers and adults). The job roles have four core related purposes: (1) increase academic achievement, (2) build social competencies, (3) facilitate and reinforce self-regulation, and (4) future skill building for college and career. Inherent in Meaningful Roles is a shift away from students as recipients in a school run by adults toward students as vital resources in their school community. This provides abundant opportunities for every student to participate and engage in the school community, with each role important to the overall success of the school.

As a universal strategy, Meaningful Roles is designed to produce more opportunities for prosocial behavior (the jobs program), reduce opportunities for antisocial behaviors (e.g., by placing bullies in jobs that prevent them being present at times and places when bullying typically occurs), and promote a school culture in which prosocial

behavior is richly reinforced. School disciplinary policies often operate on the assumption that reprimanding or punishing students for problematic behaviors (including bullying) will reduce these behaviors. In most cases, however, precisely the opposite occurs because the observed student–adult interactions recruit unintentional reinforcement from other students (such as laughing, pointing, and copying the actions of the offender; e.g., Dishion, Spracklen, Andrews, & Patterson, 1996). Because the jobs program creates *novel prosocial opportunities*, such as being an information technology specialist in charge of setting up laptops or a math tutor for younger students, Meaningful Roles expands opportunities for students to use prosocial strategies to achieve social goals while, concomitantly, reducing contexts and reinforcement for antisocial strategies. This conceptualization of using structured roles to reduce problematic behaviors dates back to early studies in the 1960s, showing how school ecological structures (including meaningful student roles) influence rates of prosocial and antisocial behavior among high school students (Barker & Gump, 1964).

Meaningful Roles is based philosophically on a core principle of adolescent development: the increasing importance of meaningful roles and clearly visible contributions to the group as a basis for social status (Schlegel & Barry, 1991). Consistent with this principle, providing positive, contributing roles for youth behavior is clearly an evidence-based practice (e.g., Allen, Philliber, Herrling, & Kuperminc, 1997; Rutter et al., 1979; Schreier, Schonert-Reichl, & Chen, 2013). For example, Allen et al. (1997) targeted meaningful roles for youth in the form of volunteer community service opportunities; participation in this program (Teen Outreach) resulted in substantial reductions in teenage pregnancy, course failure, and school suspension in a randomized intervention trial (see also the meta-analysis by Celio, Durlak, & Dyminicki, 2011, which demonstrated significant positive effects of service-learning programs such as Teen Outreach). Likewise, engaging students in "meaningful work"—classroom and/or school-based jobs to promote responsibility and autonomy—can improve students' feelings of school connectedness (Blum, 2005), which is itself protective against bullying.

The targeted component of Meaningful Roles focuses on implementing jobs that are designed and allocated to provide bullies with an alternative, prosocial way to obtain status, resources, and recognition—key goals of bullying behavior. These jobs offer students who are motivated to gain social centrality and status the opportunity to do so using prosocial methods that are at least as effective (in conferring benefits) as antisocial methods while avoiding the risks (e.g., punishment, retaliation, lower likeability) associated with antisocial strategies. The targeted strategy works by (1) identifying youth (through teacher or peer nominations) who are perceived to be bullies, and then (2) rotating them through high-status jobs that enable them to obtain social centrality, recognition, and respect through prosocial means. The relatively large effects of bullying on obtaining social centrality and a strong reputation led us to design Meaningful Roles to target these social factors as a means of altering goal-directed bullying behaviors motivated by individual valuation of social status.

Identified bullies are purposely paired with identified highly competent students (socially adept students who are neither bullies nor victims) for modeling and guidance in their jobs. A key element of Meaningful Roles is that everyone participates (the universal component), and the identified bullies do not even know that they have been identified and targeted in the intervention. All students are expected to write praise notes for observed, specific prosocial actions and post them on a board. This public and positive reinforcement is an important feature of success, as it appeals to the immodest (e.g., low Honesty–Humility) desire for a strong, positive, and public peer-based reputation that motivates many children who engage in bullying.

Well run student jobs programs have the additional benefit of helping to make the school day more successful by reducing transition time, increasing time on task, and providing a means to eliminate extraneous activity that does not contribute to teaching and learning. When students take on meaningful roles and responsibilities in the classroom/school, they can help increase available time for teachers and other staff members, as "workers" take on jobs such as such as attendance, lunch count, collecting homework, and passing out papers—jobs that teachers and staff normally perform. Improved classroom climate also occurs when students feel a sense of belonging and solidarity in their classroom, which ultimately leads to less absenteeism and greater work completion (Blum, 2005). A key assumption of Meaningful Roles is that, when everybody is helping the school, it improves overall school conditions for learning.

Certain positions carry high reinforcing value from adults, increased peer attention, or improvement in

the student's status. These jobs can be assigned as rewards for effort, good deeds, improvements, or accomplishments, or by nomination. Embedded in these assignments is the hidden strategy of pairing known bullies with socially competent students in the context of high-status jobs—*to set the stage for bullies to experience positive reinforcement for prosocial behavior, which also increases their status*. For example, a targeted high-status job for this pairing is that of door greeter. A few minutes before class change, the pair is released early, allowed to use the restroom, and move to the next class where they are were normally scheduled. Upon the class bell, they slip into the next class, and act as greeters to the students coming in, shaking hands and saying things like: "Welcome to 5th period biology class with Mr. Smith."

Relational and physical aggression (including bullying) happen extensively in schools in the hallways, restrooms, and other places that adults tend not to frequent. A principle in behavioral theory, called *differential reinforcement of incompatible behavior* (DRI; Mayer, Sulzer-Azaroff, & Wallace, 2012), is a theoretically useful strategy to reduce such behaviors. A DRI means that the desired behavior cannot easily be carried out at the same time as the unwanted behavior. Identified bullies are specifically given DRI jobs that allow them very little opportunity to engage in aggression against of others in the school day. The door-greeter job, for example, is specifically designed as a DRI. More generally, giving bullies and other students at risk for physical or relational aggression the job of noticing the positive actions of their peers, and recording those actions in publicly posted praise notes, changes contingencies of reinforcement so that these at-risk students are now noticed by their peers for doing the opposite of what they normally do—which is drawing attention to themselves and controlling resources in antisocial ways.

The Meaningful Roles intervention is run by a *human resources team* (HRT) with student, staff, and community members who set up and administer the school-wide jobs program. The HRT is chaired by a teacher or school administrator, who receives information about which students have been nominated as bullies. This information is never shared with students. The HRT chair uses this information to guide identified bullies into appropriate meaningful roles. Virtually every student is appointed to have a "school job" from a list of 300 job roles (see Appendix S1), which they get to put into a "résumé" for the future. Given that all middle school students (in the United States) normally have

English and social studies courses, the teachers for these classes do a lesson on résumé writing and include producing a résumé as an assignment. The electronic résumé enables students to keep a record of their different jobs and how each position applies to academic and career goals/skills. Students can apply for special positions by completing a job application, listing their job qualifications, references, and other information that would appear on a résumé. In our experience implementing Meaningful Roles (Appendix S3), a large number of students completed applications for the special positions. Because the bullies were motivated to obtain these good jobs as well, they also completed applications.

Selection of students for various jobs is guided not only by the students' interests, but also by their needs (e.g., students who need peer attention may be good candidates for jobs that involve working with peers; students who enjoy adult attention may be good candidates for jobs that involve working with adults). Some positions require that all students experience them; planned rotation addresses any complaints of fairness. When students change positions, it is useful to review the expectations of those jobs. Student members of the HRT can be in charge of reviewing general expectations. Like any employment position in the real world, each position has general and specific expectations (Appendix S2). As in the workplace, it is necessary to revise and expand those expectations as a school gains experience with specific job roles.

Key elements of the jobs program involve reviewing job descriptions with students, having students sign the contract for behavioral expectations, explicitly training students in the requirements of the job, and evaluating the students' performance. A powerful way for students to buy in to performing meaningful work on campus is to have them participate in setting the general and specific expectations for the various jobs and incorporating these ideas in the actual job description sheets (Appendix S2). The goal is to have jobs that meet individual needs and personalities; adults (teachers, counselors) can recruit students to particular jobs that they think will be beneficial to them. Regular evaluation should indicate whether students are successful in their jobs. Some students may not be performing well in the job assigned to them. Rather than immediately removing a student from a job, an effort is made to determine why the student is not succeeding. A student can be furloughed or fired from a job for nonperformance. However, significant adults need to make sure that

a student has the necessary skills and training to complete his or her job. As part of helping to run the jobs program, students can train other students to do their jobs, which enhances the status of the student in the teaching role as well.

Praise notes are the chief public mechanism for recognizing students for their jobs. People work better when they are recognized for their good efforts, contributions, and other accomplishments. To facilitate recognition and praise for fulfilling job roles, everyone is taught to write praise notes. The process for training students to write praise notes is described in Skinner, Cashwell, and Skinner (2000). Students are encouraged to write them to each other. All staff are asked to write at least two per week: one for a student who has been steady and another for a student who made an improvement. Copies of praise notes both go home with students and are posted on bulletin boards. Praise notes are employed at a school-wide level to increase positive reinforcement for good effort, job performance, and other prosocial behaviors and not single out any one person. The public posting of praise notes causes other people to either imitate the praised behavior or praise the recipient secondarily. For example, when students take the notes home, they typically show them to adult family members to recruit further positive reinforcement. Internal, rotating teams of students and teachers learn to assess the quality of praise notes to a standard metric, and cull or return ones that are incomplete, ineffective, or tainted.

Meaningful Roles was implemented as a demonstration project in a junior high school (seventh and eighth graders) in the Midwestern region of the United States. The details of the demonstration project and school-level data on bullying-related outcomes before and after the intervention are presented in Appendix S3.

DISCUSSION

The current Meaningful Roles intervention was guided by the evolutionarily inspired hypothesis that bullying could be reduced if perpetrators were offered prosocial alternatives that effectively met the same goals as their original antisocial aggression. Jobs in Meaningful Roles are carefully designed and allocated to provide students with an alternative, prosocial way to obtain status, resources, and recognition—key goals of bullying behavior (Reijntjes et al., 2013; Salmivalli, 2010; Vaillancourt et al., 2003; Veenstra, Lindenberg, Munniksma, & Dijkstra, 2010; Volk et al., 2014).

Thus, Meaningful Roles should be effective even with popular students who leverage social status and centrality through bullying. This is important because highly popular bullies have proven resistant to antibullying interventions such as KiVa (Garandeau et al., 2014).

To our knowledge, Meaningful Roles is the first antibullying (or aggression) intervention to take the approach of working with, instead of against, the goals and motives that underlie much bullying behavior. At the same time, Meaningful Roles is more than just an antibullying intervention. The use of praise notes to positively reinforce prosocial behavior and reduce violence in schools is a well-established, evidence-based practice (e.g., Cihak, Kirk, & Boon, 2009; Flannery et al., 2003; Krug et al., 1997; Skinner et al., 2000; Wheatley et al., 2009). Likewise, schools that provide students with more opportunities for meaningful roles and responsibilities have positive impacts on students' social and academic outcomes (Allen et al., 1997; Celio et al., 2011; Rutter et al., 1979) and enhance school connectedness (Blum, 2005). Meaningful Roles has the further benefit of helping students to build job skills and develop working résumés. In total, the Meaningful Roles intervention should have myriad positive effects (see Appendix S3 for preliminary results), especially in relation to improving school climate.

As reviewed above, the majority of antibullying interventions functionally employ various punishments as the primary mechanism of change. Most common are rules and regulations that describe unacceptable bullying behaviors and prescribe punishments for students who engage in these behaviors. Although this appears to be effective in large doses (e.g., Olweus, 2005), it requires significant expenditure of resources that do nothing to address the positive incentives for bullying behavior. Other programs have relied more on indirect attempts to alter positive incentives via peer attitudes (e.g., Salmivalli et al., 2013); however, peers have a limited ability to sanction each other's behavior, especially when perpetrators are socially powerful (Garandeau et al., 2014). In contrast, Meaningful Roles avoids punishment and recruits peers as a positive agent for encouraging prosocial behavior.

The basic methods of Meaningful Roles converge with those of the Good Behavior Game (Barrish, Saunders, & Wolf, 1969); both attempt to alter school climate in ways that actively reduce rates of reinforcement for antisocial or disruptive behaviors, increase the density of reinforcement for more

prosocial behaviors, and create environments that are conducive to learning. The long-term effectiveness of the Good Behavior Game in preventing and reducing antisocial behavior and alcohol/drug use has been established in a number of randomized intervention trials (e.g., Ialongo, Poduska, Werthamer, & Kellam, 2001; Kellam et al., 2014). The basic methods and logic of the Good Behavior Game, like that of Meaningful Roles, concurs with a larger body of research showing that the efficacy and frequency of antisocial versus prosocial strategies are sensitive to environmental contingencies and consequences (Biglan et al., 2012; Wilson et al., 2014).

The development of Meaningful Roles was guided by the hypothesis that bullying (and other forms of proactive aggression) is ultimately used to achieve adaptive goals (Ellis et al., 2012; Hawley, 1999; Volk et al., 2014). Bullies may value aggression as a means of achieving goals because they have learned, through past experiences, that antisocial strategies are effective (Dodge, Price, Coie, & Christopoulos, 1990; Veenstra et al., 2007). Meaningful Roles attempts to turn this around by placing bullies into jobs that—through changes in their ongoing experiences—induce an understanding that prosocial strategies can be as (or more) effective for achieving goals. These changes include rituals and practices that intentionally increase the frequency of public peer-to-peer reinforcements for normative or positive behaviors. We hypothesize that individuals who are rewarded for prosocial behaviors will be motivated to alter their personality toward the more prosocial side of their natural predispositions, reducing inclinations toward bullying. This makes good sense if bullying is indeed the result of a cost-benefit analysis. When adolescents can attain a goal through prosocial behaviors without risk of punishment or retaliation, then it becomes less desirable to use more risky bullying behaviors to achieve that goal. This focus on goal-directed, prosocial activities concurs with past research suggesting that the best way to alter the expression of an undesirable personality trait (such as low Honest–Humility) is "to increase engagement in goal-directed activities that are considered important, enjoyable, and in accordance with individual values across numerous domains of one's life" (Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2014, p. 1448).

Another important factor that may contribute to the success of Meaningful Roles is that it recognizes that adolescents are sensitive to not only the form of the reward, but how it is delivered. Research on adolescent bullying interventions suggests that, in contrast to younger children, adolescents may feel some degree of reactivity against adult-driven interventions. Such reactivity reduces intervention efficacy (Yeager et al., 2015). Indeed, adolescents may resent or reject adult attempts to redefine what is important for popularity or status. Further, adolescents overtly targeted by interventions may feel stigmatized or singled out. By subtly manipulating the social opportunities available to the entire school (i.e., the social ecology of the school; Hong & Espelage, 2012), Meaningful Roles avoids these potential problems; it does not single out students, and it does not ask adolescents to give up their autonomy, engage in unpopular behaviors, and/or model unpopular adults. In the absence of a heavy-handed approach, adolescents are more able to follow their individual personalities to freely choose whether or not they need to continue with their aggressive and/or antisocial behaviors to obtain their goals. In this way, as suggested by Garandeau et al. (2014), adults may be able to effectively reduce the level of hierarchical social inequality while providing a prosocial alternative to perpetrators.

LIMITATIONS AND FUTURE DIRECTIONS

Like all school-based bullying interventions, Meaningful Roles is limited in the scope of problems it can address. It does not directly target private, dyadic bullying, bullying for nonsocial resources, and/or bullying for sexually related goals (although it may reduce these forms of bullying through shifts in personality toward more prosocial strategies). Such important issues as bullying in the context of competition for mates will need to be dealt with in later developments of the intervention. Meaningful Roles may also not work well for individuals whose bullying behavior is primarily motivated by a sadistic desire to hurt others. These individuals may not be motivated by status-related goals and thus would be less interested in, and affected by, prosocial job substitutions for their bullying behavior. Fortunately, sadism is not a common goal or trait of bullies (Book et al., 2012; Rigby, 2012).

Additionally, if adolescents perceive the job system as deliberate adult manipulation of their social structure, they may form a reactive opposition to the intervention (see Yeager et al., 2015). An important consideration is how obvious the job pairings are to the student body. If only the most popular and/or aggressive students regularly receive certain positions, the efficacy of the program is likely to decrease. The strategy of paring bullies with

prosocial adolescents is critically important, therefore, as it reduces the likelihood that these positions will be seen as rewards for bullying. A certain degree of randomness in job rotations also helps to preserve the fairness and integrity of the job allocations. Although this random assignment may dilute the efficacy of the program by sometimes placing bullies in jobs that do not advance their goals prosocially, this short-term loss in efficacy is a necessary sacrifice to preserve the long-term, sustained efficacy of the program. The specific degree of randomness needed is a question that requires empirical investigation, but we suggest that at least a modest (30%) degree of random assignments is likely to allay fears of both rewarding bullies and tipping off adolescents to the subtle goals of the program.

Furthermore, caution must be exercised to ensure (especially early on) that bullies are not put into jobs that they can use to further exploit weaker individuals. For example, the role of door greeter could be abused by denying students access to a room, overly firm handshakes, and/or derogatory remarks delivered upon entrance. This is where the pairing of a prosocial peer becomes paramount, as they can serve to both report and offset potential abuses of the jobs. The planned review of jobs during rotations offers a further opportunity to mitigate any potential abuses. We expect that, over time, empirical research will yield a better picture of the degree of risk and reward associated with various jobs.

Another issue is that, through strategic job allocations, raising the status of individuals who bully could heighten existing power imbalances, thus resulting in more bullying. Certainly this possibility needs to be closely monitored when implementing Meaningful Roles, including evaluations of job performance to avoid iatrogenic placements. However, we believe that this possibility is unlikely because both meaningful student roles and praise notes have been shown, in school-wide studies, to increase prosocial behavior and reduce violence. As universal components of the intervention, meaningful student roles and praise notes should function as DRIs in relation to bullying behavior (i.e., they should reduce time, opportunities, and reinforcement from other students for bullying). We expect Meaningful Roles to reduce association with antisocial peers, reduce peer pressures and rewards for bullying behaviors, and, therefore, reduce the peer visibility of bullying, modeling of bullying, and modeling of accepting and assisting in bullying. Consistent with this hypothesis, the

archival data reported in Appendix S3 suggest that Meaningful Roles reduces indicators of both covert and overt forms of aggression (e.g., fewer absences, less fighting and injuries).

Because meaningful roles and praise notes amplify peer reinforcement of prosocial, nonaggressive behaviors throughout the school, without risk of punishment or retaliation, we predict that students who obtain greater overall social status through jobs will invest further in prosocial strategies (see discussion above regarding the role of environmental contingencies in altering personality traits). Adopting a prosocial approach may allow bullies to build a broader base of social support that is contingent upon them not engaging in further antisocial activities. The same logic applies to bullies who were already socially powerful prior to the intervention. This hypothesis concurs with theory and research indicating that prosocial dominants are the most popular (Hawley, 1999). Nevertheless, the effect of Meaningful Roles on popular or high-status bullies is a key empirical question for determining the added value of the intervention.

In total, although we believe that Meaningful Roles has significant potential as an antibullying intervention, there are important empirical questions that need to be addressed as the intervention is further developed and evaluated. Thus far, Meaningful Roles has only been implemented in a demonstration project (Appendix S3), the results of which are encouraging. Research is needed to assess which jobs are best suited to which students —popular bullies, assistants of the bullies, victims, and so forth—including analysis of the effects of different jobs on social status, centrality, and acceptance (both in terms of self-perceptions and peer reports). Studies can then be conducted to determine empirically the extent to which carrying out jobs that confer social status and acceptance through prosocial means reduce bullying behavior (as predicted by the theory).

Meaningful Roles ultimately needs to be evaluated in a randomized control trial (RCT) that includes precise measurement of bullying, as well as prosocial behavior, before and after the intervention. In addition, future intervention trials should compare the efficacy of programs that focus on punishment (costs) versus those that focus on alternative goal-driven behaviors (benefits) as well as how they would work together. Beyond specific measures of bullying and prosocial behavior, it would be valuable to assess the effects of Meaningful Roles on students' feelings of school connectedness

and school safety as well as delinquency and anti-social behavior more generally. All of these factors can in turn be used to help evaluate the mechanical aspects of the program such as the kinds of jobs offered, how they are rotated, and how they are monitored for any abuses. When backed by empirically derived methods, we argue that the combination of the jobs program, the praise notes system, and the hidden strategy of targeting identified bullies are likely to work synergistically to address diverse forms of bullying and their impact on students.

CONCLUSION

We present a novel antibullying intervention—Meaningful Roles—that is founded on the evolutionary view of bullying as an adaptive social strategy regulated by ecological cost-benefit decisions (Ellis et al., 2012; Volk et al., 2014). Meaningful Roles addresses the benefits of bullying and aggression by altering social roles and contingencies in the school environment. It does not require the adoption of a curriculum, and it increases available time for instruction (by having students do many jobs that are normally carried out by teachers). Although Meaningful Roles is not simple to implement (it requires a significant amount of tracking, training, and book-keeping), the burden on teachers and staff is not heavy because students, as part of the jobs program, assume responsibility for most aspects of the intervention. This is part of the culture change inherent in Meaningful Roles toward students becoming active participants in the school community and its functioning.

The results of our demonstration project (Appendix S3) suggest that school fighting and other related outcomes may be substantially reduced following the Meaningful Roles intervention, which offers and reinforces prosocial alternatives for obtaining desired social status goals. While one must remain vigilant of the ethical implications of tampering with adolescent social hierarchies, it may be that, through helping to structure adolescents' social opportunities at school, we can enhance prosocial behaviors by offering adolescents adaptive solutions that satisfy their status-related goals. In this sense, Meaningful Roles fits squarely in the tradition of interventions that promote *positive youth development* (e.g., Allen et al., 1997; Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004). Future research is needed to evaluate this positive, evolutionary approach to reducing bullying and aggression, including systematic studies that capture the larger ecological spectrum —forms, functions, and forums—of bullying behaviors.

REFERENCES

Allen, J. P., Philliber, S., Herrling, S., & Kuperminc, G. P. (1997). Preventing teen pregnancy and academic failure: Experimental evaluation of a developmentally based approach. *Child Development*, *68*, 729–742. doi:10.1111/j.1467-8624.1997.tb04233.x

American Psychological Association Zero Tolerance Task Force. (2008). Are zero tolerance policies effective in the schools? An evidentiary review and recommendations. *American Psychologist*, *63*, 852–862. doi:10.1037/0003-066X.63.9.852

Anderson, C. M., & Kincaid, D. (2005). Applying behavior analysis to school violence and discipline problems: Schoolwide positive behavior support. *The Behavior Analyst*, *28*, 49–63. PMCID:PMC2755344

Ashton, M. C., Lee, K., & de Vries, R. E. (2014). The HEXACO Honesty-Humility, Agreeableness, and Emotionality Factors: A review of research and theory. *Personality and Social Psychology Review*, *18*, 139–152. doi:10.1177/1088868314523838

Barker, R. G., & Gump, P. V. (1964). *Big school, small school: High school size and student behavior*. Palo Alto, CA: Stanford University Press.

Barrish, H. H., Saunders, M., & Wolf, M. M. (1969). Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom. *Journal of Applied Behavior Analysis*, *2*, 119–124. doi:10.1901/jaba.1969.2-119

Biglan, A., Flay, B. R., Embry, D. D., & Sandler, I. N. (2012). The critical role of nurturing environments for promoting human well-being. *American Psychologist*, *67*, 257–271. doi:10.1037/a0026796

Blum, R. (2005). *School connectedness: Improving students' lives*. Baltimore, MD: Johns Hopkins Bloomberg School of Public Health.

Book, A. S., Volk, A. A., & Hosker, A. (2012). Adolescent bullying and personality: An adaptive approach. *Personality and Individual Differences*, *52*, 218–223. doi:10.1016/j.paid.2011.10.028

Briggs, J. L. (1970). *Never in anger*. Cambridge, MA: Harvard University Press.

Caravita, S. C. S., Di Blasio, P., & Salmivalli, C. (2009). Unique and interactive effects of empathy and social status on involvement in bullying. *Social Development*, *18*, 140–163. doi:10.1111/j.1467-9507.2008.00465.x

Catalano, R. F., Berglund, M. L., Ryan, J. A., Lonczak, H. S., & Hawkins, J. D. (2004). Positive youth development in the United States: Research findings on evaluations of positive youth development programs. *The Annals of the American Academy of Political and Social Science*, *591*, 98–124. doi:10.1037/1522-3736.5.1.515a

Celio, C. I., Durlak, J. A., & Dyminicki, A. (2011). Helping others and helping oneself: A meta-analysis of

service-learning programs. *Journal of Experiential Learning*, *3*, 164–181.

Cihak, D. F., Kirk, E. R., & Boon, R. T. (2009). Effects of classwide positive peer "tootling" to reduce the disruptive classroom behaviors of elementary students with and without disabilities. *Journal of Behavioral Education*, *18*, 267–278. doi:10.1007/s10864-009-9091-8

Ciucci, E., & Baroncelli, A. (2014). The emotional core of bullying: Further evidence of the role of callous–unemotional traits and empathy. *Personality and Individual Differences*, *67*, 69–74. doi:10.1016/j.paid.2013.09.033

Connolly, J., Pepler, D., Craig, W., & Taradash, A. (2000). Dating experiences of bullies in early adolescence. *Child Maltreatment*, *5*, 299–310. doi:10.1177/1077559500005004002

Copeland, W. E., Wolke, D., Angold, A., & Costello, E. J. (2013). Adult psychiatric outcomes of bullying and being bullied by peers in childhood and adolescence. *JAMA Psychiatry*, *70*, 419–426. doi:10.1001/jamapsychiatry.2013.504

Copeland, W. E., Wolke, D., Lereya, S. T., Shanahan, L., Worthman, C., & Costello, E. J. (2014). Childhood bullying involvement predicts low-grade systemic inflammation into adulthood. *Proceedings of the National Academy of Sciences of the United States of America*, *111*, 7570–7575. doi:10.1073/pnas.1323641111

Craig, W. M., & Pepler, D. J. (1998). Observations of bullying and victimization in the school yard. *Canadian Journal of School Psychology*, *13*, 41–59.

Cunningham, H. (2005). *Children and childhood in Western society since 1500* (2nd ed.). Abingdon, UK: Routledge.

Daly, M., & Wilson, M. (1988). *Homicide*. Mahwah, NJ: Aldine Transaction.

Daly, M., Wilson, M., & Vasdev, S. (2001). Income inequality and homicide rates in Canada and the United States. *Canadian Journal of Criminology*, *43*, 219–236.

Dishion, T. J., Spracklen, K. M., Andrews, D. W., & Patterson, G. R. (1996). Deviancy training in male adolescent friendships. *Behavior Therapy*, *27*, 373–390. doi:10.1016/S0005-7894(96)80023-2

Dodge, K. A., Price, J. M., Coie, J. D., & Christopoulos, C. (1990). On the development of aggressive dyadic relationships in boys' peer groups. *Human Development*, *33*, 260–270. doi:10.1159/000276523

Due, P., Holstein, B. E., Lynch, J., Diderichesen, F., Gabhain, S. N., Scheidt, P., & Currie, C. (2005). Bullying and symptoms among school-aged children: International comparative cross sectional study in 28 countries. *European Journal of Public Health*, *15*, 128–132. doi:10.1093/eurpub/cki105

Ellis, B. J., Del Giudice, M., Dishion, T. J., Figueredo, A. J., Gray, P., Griskevicius, V., ... Wilson, D. S. (2012). The evolutionary basis of risky adolescent behavior: Implications for science, policy, and practice. *Developmental Psychology*, *48*, 598–623. doi:10.1037/a0026220

Embry, D. D., Flannery, D. J., Vazsonyi, A. T., Powell, K. E., & Atha, H. (1996). PeaceBuilders: A theoretically driven, school-based model for early violence prevention. *American Journal of Preventive Medicine*, *12*, 91–100.

Espelage, D. L. (2013). Why are bully prevention programs failing in U.S. schools? *Journal of Curriculum and Pedagogy*, *10*, 121–124. doi:10.1080/15505170.2013.849629

Estell, D. B., Farmer, T. W., & Cairns, B. D. (2007). Bullies and victims in rural African American youth: Behavioral characteristics and social network placement. *Aggressive Behavior*, *33*, 145–159. doi:10.1002/ab.20176

Faris, R., & Felmlee, D. (2011). Status struggles: Network centrality and gender segregation in same-and cross-gender aggression. *American Sociological Review*, *76*, 48–73. doi:10.1177/0003122410396196.

Farrell, A. H., Della Cioppa, V., Volk, A. A., & Book, A. S. (2014). Predicting bullying heterogeneity with the HEXACO Model of personality. *International Journal of Advances in Psychology*, *3*, 30–39. doi:10.14355/ijap.2014.0302.02

Flannery, D. J., Vazsonyi, A. T., Liau, A. K., Guo, S., Powell, K. E., Atha, H., Vesterdal, W., & Embry, D. (2003). Initial behavior outcomes for the PeaceBuilders universal school-based violence prevention program. *Developmental Psychology*, *39*, 292–308. doi:10.1037/0012-1649.39.2.292

Frazier, K. N. (2011). Academic bullying: A barrier to tenure and promotion for African-American faculty. *Florida Journal of Educational Administration and Policy*, *5*, 1–13.

Garandeau, C. F., Lee, I. A., & Salmivalli, C. (2014). Differential effects of the KiVa anti-bullying program on popular and unpopular bullies. *Journal of Applied Developmental Psychology*, *35*, 44–50. doi:10.1016/j.appdev.2013.10.004

Gini, G., Pozzoli, T., & Hauser, M. (2011). Bullies have enhanced moral competence to judge relative to victims, but lack moral compassion. *Personality and Individual Differences*, *50*, 603–608. doi:10.1016/j.paid.2010.12.002

Hawker, D. S., & Boulton, M. J. (2000). Twenty years research on peer victimization and psychosocial maladjustment: A meta-analytical view of cross-sectional studies. *The Journal of Child Psychology and Psychiatry*, *41*, 441–455. doi:10.1111/1469-7610.00629

Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review*, *19*, 97–132. doi:10.1006/drev.1998.0470

Hong, J. S., & Espelage, D. L. (2012). A review of research on bullying and peer victimization in school: An ecological systems analysis. *Aggression and*

Violent Behavior, *17*, 311–322. doi:10.1016/j.avb.2012. 03.003

Ialongo, N., Poduska, J., Werthamer, L., & Kellam, S. (2001). The distal impact of two-first-grade preventive interventions on conduct problems and disorder in early adolescence. *Journal of Emotional and Behavioral Disorders*, *9*, 146–160. doi:10.1177/106342660100900301

Juvonen, J., Graham, S., & Schuster, M. A. (2003). Bullying among young adolescents: The strong, the weak, and the troubled. *Pediatrics*, *112*, 1231–1237. doi:10.1542/peds.112.6.1231

Juvonen, J., Wang, Y., & Espinoza, G. (2011). Bullying experiences and compromised academic performance across middle school grades. *The Journal of Early Adolescence*, *31*, 152–173. doi:10.1177/0272431610379415

Kellam, S. G., Wang, W., Mackenzie, A. C., Brown, C. H., Ompad, D. C., Or, F., ... Windham, A. (2014). The impact of the Good Behavior Game, a universal classroom-based preventive intervention in first and second grades, on high-risk sexual behaviors and drug abuse and dependence disorders into young adulthood. *Prevention Science*, *15*, 6–18. doi:10.1007/s11121-012-0296-z

Koh, J.-B., & Wong, J. S. (2015). Survival of the fittest and sexiest: Evolutionary origins of adolescent bullying. *Journal of Interpersonal Violence*. Advance online publication. doi:10.1177/0886260515593546

Kolbert, J. B., & Crothers, L. (2003). Bullying and evolutionary psychology: The dominance hierarchy among students and implications for school personnel. *Journal of School Violence*, *2*, 73–91. doi:10.1300/J202 v02n03_05

Krug, E. G., Brener, N. D., Dahlberg, L. L., Ryan, G. W., & Powell, K. E. (1997). The impact of an elementary school-based violence prevention program on visits to the school nurse. *American Journal of Preventive Medicine*, *13*, 459–463. PMID:9415793

Lee, C. H. (2011). An ecological systems approach to bullying behaviors among middle school students in the United States. *Journal of Interpersonal Violence*, *26*, 1664–1693.

Lewis, G. J., & Bates, T. C. (2014). How genes influence personality: Evidence from multi-facet twin analyses of the HEXACO dimensions. *Journal of Research in Personality*, *51*, 9–17.

Magidson, J. F., Roberts, B. W., Collado-Rodriguez, A., & Lejuez, C. W. (2014). Theory-driven intervention for changing personality: Expectancy value theory, behavioral activation, and conscientiousness. *Developmental Psychology*, *50*, 1442–1450. doi:10.1037/a0030583

Mayer, G. R., Sulzer-Azaroff, B., & Wallace, M. (2012). *Behavior analysis for lasting change* (2nd ed.). Corwnall-on-Hudson, NY: Sloan.

Merrell, K. W., Gueldner, B. A., Ross, S. W., & Isava, D. M. (2008). How effective are school bullying intervention programs? A meta-analysis of intervention research. *School Psychology Quarterly*, *23*, 26–42. doi:10.1037/1045-3830.23.1.26

Mynard, H., & Joseph, S. (1997). Bully/victim problems and their association with Eysenck's personality dimensions in 8 to 13 year-olds. *British Journal of Educational Psychology*, *67*, 51–54. doi:10.1111/j.2044-8279. 1997.tb01226.x

Nansel, T., Overpeck, M., Pilla, R. S., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Journal of the American Medical Association*, *285*, 2094–2100. doi:10.1001/jama.285. 16.2094

Nolle, K. L., Guerino, P., & Dinkes, R. (2007). *Crime, violence, discipline, and safety in U.S. Public schools: Findings from the School Survey on Crime and Safety: 2005–06 (NCES 2007–361)*. Washington, DC: National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education.

van Noorden, T. H., Haselager, G. J., Cillessen, A. H., & Bukowski, W. M. (2015). Empathy and involvement in bullying in children and adolescents: A systematic review. *Journal of Youth and Adolescence*, *44*, 637–657. doi:10.1007/s10964-014-0135-6

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Oxford, UK: Blackwell.

Olweus, D. (2005). A useful evaluation design, and effects of the Olweus Bullying Prevention Program. *Psychology, Crime and Law*, *11*, 389–402. doi:10.1080/ 10683160500255471

Pellegrini, A. D. (2001). The roles of dominance and bullying in the development of early heterosexual relationships. *Journal of Emotional Abuse*, *2*, 63–73. doi:10.1300/J135v02n02_05

Reijntjes, A., Vermande, M., Olthof, T., Goossens, F. A., van de Schoot, R., Aleva, L., & van der Meulen, M. (2013). Costs and benefits of bullying in the context of the peer group: A three wave longitudinal analysis. *Journal of Abnormal Child Psychology*, *41*, 1217–1229. doi:10.1007/s10802-013-9759-3

Rigby, K. (2012). Bullying in schools: Addressing desires, not only behaviours. *Educational Psychology Review*, *24*, 339–348. doi:10.1007/s10648-012-9196-9

Roland, E. (2011). The broken curve: Effects of the Norwegian manifesto against bullying. *International Journal of Behavioral Development*, *35*, 383–388. doi:10.1177/ 0165025411407454

Rutter, M., Maughan, B., Mortimore, P., & Ouston, J. (1979). *Fifteen thousand hours: Secondary schools and their effects on children*. London, UK: Open Books.

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behavior*, *15*, 112–120. doi:10.1016/j.avb.2009.08.007

Salmivalli, C., Kärnä, A., & Poskiparta, E. (2010). From peer putdowns to peer support: A theoretical model and how it translated into a national anti-bullying program. In S. R. Jimerson, S. M. Swearer, & D. L. Espelage (Eds.), *Handbook of bullying in schools: An international perspective* (pp. 441–454). New York, NY: Routledge.

Salmivalli, C., Poskiparta, E., Ahtola, A., & Haataja, A. (2013). The implementation and effectiveness of the KiVa antibullying program in Finland. *European Psychologist*, *18*, 79–88. doi:10.1027/1016-9040/a000140

Schlegel, A., & Barry, H., III (1991). *Adolescence: An anthropological inquiry*. New York, NY: Free Press.

Schonert-Reichl, K. A., Smith, V., Zaidman-Zait, A., & Hertzman, C. (2012). Promoting children's prosocial behaviours in school: Impact of the "Roots of Empathy" program on the social and emotional competence of school-aged children. *School Mental Health*, *4*, 1–12. doi:10.1007/s12310-011-9064-7

Schreier, H. M., Schonert-Reichl, K. A., & Chen, E. (2013). Effect of volunteering on risk factors for cardiovascular disease in adolescents: A randomized controlled trial. *JAMA Pediatrics*, *167*, 327–332. doi:10.1001/jamapediatrics.2013.1100

Sentse, M., Kiuru, N., Veenstra, R., & Salmivalli, C. (2014). A social network approach to the interplay between adolescents' bullying and likeability over time. *Journal of Youth and Adolescence*, *43*, 1409–1420. doi:10.1007/s10964-014-0129-4

Sijtsema, J. J., Veenstra, R., Lindenberg, S., & Salmivalli, C. (2009). Empirical test of bullies' status goals: Assessing direct goals, aggression, and prestige. *Aggressive Behavior*, *35*, 57–67. doi:10.1002/ab.20282

Skinner, C. H., Cashwell, T. H., & Skinner, A. L. (2000). Increasing tootling: The effects of a peer-monitored group contingency program on students' reports of peers' prosocial behaviors. *Psychology in the Schools*, *37*, 263–270. doi:10.1002/(SICI)1520-6807(200005)37:3<263::AID-PITS6>3.0.CO;2-C

Smith, J. D., Schneider, B. H., Smith, P. K., & Ananiadou, K. (2004). The effectiveness of whole-school antibullying programs: A synthesis of evaluation research. *School Psychology Review*, *33*, 547–560.

Sourander, A., Jensen, P., Rönning, J. A., Niemelä, S., Helenius, H., Sillanmäki, L., . . . Almqvist, F. (2007). What is the early adulthood outcome of boys who bully or are bullied in childhood? The Finnish "From a Boy to a Man" study. *Pediatrics*, *120*, 397–404. doi:10.1542/peds.2006-2704

Srabstein, J. C., McCarter, R. J., Shao, C., & Huang, Z. J. (2006). Morbidities associated with bullying behaviors in adolescents: School based study of American adolescents. *International Journal of Adolescent Medicine and Health*, *18*, 587–596. doi:10.1515/IJAMH.2006.18.4.587

Sutton, J., Smith, P. K., & Swettenham, J. (1999). Bullying and theory of mind: A critique of the social skills deficit view of antisocial behavior. *Social Development*, *8*, 117–127. doi:10.1111/1467-9507.00083

Tippett, N., & Wolke, D. (2014). Socioeconomic status and bullying: A meta-analysis. *American Journal of Public Health*, *104*, e48–e59. doi:10.2105/AJPH.2014.301960

Ttofi, M. M., & Farrington, D. P. (2011). Effectiveness of school-based programs to reduce bullying: A systematic and meta-analytic review. *Journal of Experimental Criminology*, *7*, 27–56. doi:10.1007/s11292-010-9109-1

Turnbull, C. M. (1972). *The mountain people*. New York, NY: Simon and Schuster.

Vaillancourt, T., Hymel, S., & McDougall, P. (2003). Bullying is power: Implications for school-based intervention strategies. *Journal of Applied School Psychology*, *19*, 157–176. doi:10.1300/J008v19n02_10

Veenstra, R., Lindenberg, S., Munniksma, A., & Dijkstra, J. K. (2010). The complex relation between bullying, victimization, acceptance, and rejection: Giving special attention to status, affection, and sex differences. *Child Development*, *81*, 480–486. doi:10.1111/j.1467-8624.2009.01411.x

Veenstra, R., Lindenberg, S., Oldehinkel, A. J., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2005). Bullying and victimization in elementary schools: A comparison of bullies, victims, bully/victims, and uninvolved preadolescents. *Developmental Psychology*, *41*, 672–682. doi:10.1037/0012-1649.41.4.672

Veenstra, R., Lindenberg, S., Zijlstra, B. J. H., De Winter, A. F., Verhulst, F. C., & Ormel, J. (2007). The dyadic nature of bullying and victimization. *Child Development*, *78*, 1843–1854. doi:10.1111/j.1467-8624.2007.01102.x

Volk, A., Camilleri, J., Dane, A., & Marini, Z. (2012a). If, when, and why bullying is adaptive. In T. Shackelford, & V. Shackelford (Eds.), *Oxford handbook of evolutionary perspectives on violence, homicide, and war* (pp. 270–290). New York, NY: Oxford University Press.

Volk, A., Camilleri, J., Dane, A., & Marini, Z. (2012b). Is adolescent bullying an evolutionary adaptation? *Aggressive Behavior*, *38*, 222–238. doi:10.1002/ab.21418

Volk, A. A., Dane, A. V., & Marini, Z. A. (2014). What is bullying? A theoretical redefinition. *Developmental Review*, *34*, 327–343. doi:10.1016/j.dr.2014.09.001

Volk, A. A., Dane, A. V., Marini, Z. A., & Vaillancourt, T. (2015). Bullying, dating, and sexual behavior. *Evolutionary Psychology*. Advance online publication. doi:10.1177/1474704915613909

Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: Physical, verbal, relational, and cyber. *Journal of Adolescent Health*, *45*, 368–375. doi:10.1016/j.jadohealth.2009.03.021

Wheatley, R. K., West, R. P., Charlton, C. T., Sanders, R. B., Smith, T. G., & Taylor, M. J. (2009). Improving behavior through differential reinforcement: A praise note system for elementary school students. *Education and Treatment of Children*, *32*, 551–571. doi:10.1353/etc.0.0071

Wilson, D. S., Hayes, S. C., Biglan, A., & Embry, D. D. (2014). Evolving the future: Toward a science of intentional change. *The Behavioral and Brain Sciences*, *37*, 395–460. doi:10.1017/S0140525X13001593

Wolke, D., & Lereya, S. T. (2015). Long-term effects of bullying. *Archives of Disease in Childhood*, *100*, 879–885. doi:10.1136/archdischild-2014-306667

Wolke, D., Woods, S., Bloomfield, L., & Karstadt, L. (2001). Bullying involvement in primary school and

common health problems. *Archives of Disease in Childhood*, 85, 197–201. doi:10.1136/adc.85.3.197

Ybarra, M. L., Espelage, D. L., & Mitchell, K. J. (2014). Differentiating youth who are bullied from other victims of peer-aggression: The importance of differential power and repetition. *Journal of Adolescent Health*, 55, 293–300. doi:10.1016/j.jadohealth.2014.02.009

Yeager, D. S., Fong, C. J., Lee, H. Y., & Espelage, D. L. (2015). Declines in efficacy of anti-bullying programs among older adolescents: A developmental theory and a three level meta-analysis. *Journal of Applied Developmental Psychology*, 37, 36–51. doi:10.1016/j.appdev.2014.11.005

Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's website:

Appendix S1. List of jobs used in Meaningful Roles intervention.
Appendix S2. Job description forms.
Appendix S3. Demonstration Project Implementing the Meaningful Roles Intervention.