

Multiple Facets of Self-Control in Arab Adolescents: Parallel Pathways to Greater Happiness and Less Physical Aggression

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Abstract

Adolescence is a period of dramatic change that necessitates using skills and strengths to reduce physical aggression and increase happiness. This study examined the multiple facets of self-control skills in achieving both goals simultaneously, in a sample of 248 Arab adolescents in Israel. We conceptualized and tested a new multi-mediator model that posited two parallel paths. Structural equation modeling with bootstrap analysis supported the hypothesized model where self-control linked with subjective happiness directly, and indirectly through positive emotions and social support. In addition, self-control linked directly to physical aggression, and indirectly through hostility and anger. The findings provide new theoretical conceptualizations for further research and suggest possible mechanisms for prevention and intervention programs.

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As they mature, adolescents experience rapid changes in their physiological, cognitive, emotional, and social lives (Carrigan, 2007; Steinberg, 2007) that at times are associated with low levels of happiness (Keyes, 2006). An empirically based social neuroscience perspective on adolescents has underscored their high susceptibility to age-related stress and the changes occurring in the brain that only gradually enable them to exert self-control (Steinberg, 2013). A lack of self-control has been related to physical aggression (Ronen & Rosenbaum, 2010), defined as a bodily assault against someone else with the aim of causing pain (Buss, 1961). Physical aggression has become a major social problem (Hoffman, Knox, & Cohen, 2011; World Health Organization, 2012) and is one of the most common reasons for adolescents' referrals to therapy in general (Kazdin & Weisz, 2010) and in Israel in particular, in both Jewish and Arab adolescents (Khoury-Kassabri, Astor, & Benbenishty, 2009; Ronen, Abuelaish, Rosenbaum, Agbaria, & Hamama, 2013; Ronen & Rosenbaum, 2010).

Most studies have investigated a single aspect of self-control during adolescence: either the role of self-control skills in reducing aggressive behavior (Ronen & Rosenbaum, 2010) or the role of self-control skills in increasing well-being (Orkibi & Ronen, 2015; Orkibi, Ronen, & Assoulin, 2014). In contrast, the current study contributes to the literature by focusing on these links *simultaneously* and in a non-Western sample of adolescents. Specifically, we examined a new multi-mediator model with two parallel paths: one path posits an association between self-control skills and subjective happiness through positive emotions and perceived social support, whereas the second posits an association between self-control skills and physical aggression through hostility and anger.

Self-Control Skills

Rosenbaum (1980, 1990) conceptualized self-control as a set of goal-directed skills that help people overcome stressful situations, pain, and disturbing emotions. Using this set of skills—which encompasses cognitive restructuring, self-instruction, problem-solving strategies, delaying of immediate gratification, and personal efficacy beliefs—people control their emotions, thoughts, and behaviors (Rosenbaum & Ronen, 2013). Numerous studies have validated Rosenbaum's (1980) self-control theory and scale in relation to adults' health

behavior (e.g., Zauszniewski & Chung, 2001) and adolescent aggression (Ronen et al., 2013). Most studies on adolescents' self-control skills have dealt with overcoming difficulties, including fear under threat of war (Ronen & Seeman, 2007), aggressive behavior (Ronen & Rosenbaum, 2010), and parental divorce (Hamama & Ronen-Shenhav, 2012). Self-control skills have been identified as protecting against and reducing aggression in youth (Ronen et al., 2013; Ronen & Rosenbaum, 2010). However, the mechanism underlying the association between self-control skills and physical aggression remains unclear. The current study suggests two parallel pathways: the first examines a possible *adaptive* path with a multi-mediator mechanism through which self-control skills link positively to adolescent happiness directly, as well as indirectly through positive emotions and perceived social support. The second suggests that adolescents' hostile thoughts and anger are possible factors that may account for a maladaptive association between self-control skills and the inclination to engage in physical aggression.

Linking Self-Control to Happiness Through Positive Emotions and Social Support

This study adopted a relatively new approach, simultaneously querying whether self-control skills are only effective in decreasing negative outcomes, as found empirically in recent work, or whether these skills also contribute to adolescents' development of positive outcomes. The components associated with adolescents' happiness are of particular interest, in light of the dramatic changes experienced during adolescence (Steinberg, 2007, 2013). Happiness is typically viewed as a major life goal that is considered important for the optimal flourishing and functioning of people, groups, and institutions (Carr, 2004; Fredrickson, 2013; Gable & Haidt, 2005). Studies have found positive associations between self-control skills, happiness, optimism, positive thinking, and positive emotions (Csikszentmihalyi, 1999; Gilbert, 2005; Hamama, Ronen, Shachar, & Rosenbaum, 2013; Orkibi et al., 2014).

Specifically, better social relationships (Keyes, 2006) and good relationships with peers (Lyubomirsky & Lepper, 1999) are related to greater happiness. This can be construed through Fredrickson's (2013) Broaden and Build theory, according to which experiencing positive emotions (e.g., excitement, pleasure, pride, and joy) broadens thought–action repertoires, which results in a higher likelihood of pursuing a wider range of thoughts and actions as the individual can see more adaptive possibilities. This theory also refers to positive emotions as a resource that builds resilience over time and not only as an antidote to negative emotions. Fredrickson (2009) noted that people thrive when the ratio of positive to negative emotions is high. In other words, although

negative emotions are integral part of life, as long as people have more positive emotions than negative ones, they can thrive and develop. Accumulating evidence indicates that experiences of positive emotions are associated with better functioning and in the long run with enhanced physical, intellectual, and social resources (Fredrickson, 2013; Johnson, Waugh, & Fredrickson, 2010; Lyubomirsky, King, & Diener, 2005).

Positive social psychology scholars have highlighted the importance of the social context and specifically the importance of relationships, which have consistently been found to be the most important contextual factor affecting individual well-being (Helliwell & Putnam, 2004; Lomas, 2015). Relatedly, perceived social support is a coping resource comprised of personal, social, and familial relationships that enable the individual to cope better with stressful life events (Cohen & Wills, 1985; Dumont & Provost, 1999; Sarason, Sarason, & Pierce, 1990) and is the most crucial element in helping people live a healthy life (Vohs & Finkel, 2011). It is an important resource during the processes of change and crises that serves as a protective factor against adolescent physical aggression (Hamama & Ronen-Shenhav, 2012).

Linking Self-Control to Physical Aggression Through Hostility and Anger

As mentioned above, self-control skills have been identified as a protective factor against aggression. This study examined the mechanism of this path by focusing on the mediating role of hostile thoughts and anger. Hostility is a cognitive component referring to a negative, fixed view of situations in the environment, and a perception that the world is an unfair place where nobody can be trusted because everybody acts out of selfish motives. This may prompt adolescents to view themselves as needing to be protected from the world (Buss & Perry, 1992). Although hostility is a cognitive response unlike anger, which is an emotional one, the two are similar in that both relate to the accusatory nature of inflicting harm. Anger is an emotional response to frustration, provocation, or, occasionally, anxiety. Generally, negative emotions heighten sensitivity to frustrating situations or obstacles, trigger combative thoughts, and may intensify or incite action against the perceived source of threat (Cicchetti, Ackerman, & Izard, 1995). Although adolescent aggression is typically described as an outcome of the links between hostility and anger (Buss & Perry, 1992; Ronen et al., 2013), studies have shown that anger also plays a mediating role in the association between hostility and physical aggression (Bryant & Smith, 2001; Buss & Perry, 1992).

Given these findings, we examined the possible *maladaptive* multi-mediator mechanism through which a lack of self-control skills may be associated with physical aggression. Given the central role of the self-control skills in overcoming disturbing thoughts, negative emotions, and detrimental temptations as well as in modifying behaviors, we expected adolescents who possess high self-control skills to be able to alter their hostile thinking and negative feelings that can prompt them to engage in physical aggression.

Model and Hypotheses

This study was conducted on a sample of Arab adolescents in northern Israel. Previous studies on the links between self-control skills and physical aggression have focused mainly on Western populations. The Arab–Israeli population is an understudied traditional society (Sagy, Orr, Bar-On, & Awwad, 2001), which, in the face of persistent exposure to the Western Jewish Israeli society, is undergoing a steady process of change. Studies have indicated that Arab–Israeli youth are involved in violent behavior (Harel-Fisch, Abdeen, Walsh, Radwan, & Fogel-Grinvald, 2012; Khoury-Kassabri et al., 2009; Knafo, Daniel, & Khoury-Kassabri, 2008; Ronen et al., 2013). A national representative study of 16,604 Jewish and Arab adolescents (7th–11th grades), which probed adolescents’ own acts of violence toward both peers and teachers, revealed that 27.72% of Arabs students had kicked or pushed another student (vs. 20.93% among Jewish students), and 23.22% (vs. 20.83% among Jewish students) had threatened to hurt or hit another student (Khoury-Kassabri et al., 2009).

Violence in school has been generally related to a poor socio-familial environment characterized by low socioeconomic status both in the United States (Attar, Guerra, & Tolan, 1994; Guerra, Huesmann, Tolan, Van Acker, & Eron, 1995) and in Israel (Benbenishty & Astor, 2005; Khoury-Kassabri et al., 2009). The Israeli Annual Poverty Report indicated that in 2013, about 47.4% of all Arab families in Israel were living below the poverty line (National Insurance Institute of Israel, 2014), a factor that might explain the relatively higher percentages of violent behavior among Arab adolescents. Thus, it appears particularly important to study this non-Western group and its unique characteristics to develop treatment and educational prevention programs.

Overall, drawing on previous studies, our conceptual model posited that (a) on the adaptive pathway, self-control skills should link directly to happiness and indirectly through positive emotions and perceived social support, and (b) on the maladaptive pathway, self-control skills should link directly to physical aggression and indirectly through hostility and anger.

Method

Sample and Procedure

The sample consisted of 248 adolescents (93 males, 151 females, 4 unreported), aged 14 to 17 years ($M = 15.16$ years, $SD = 1.20$ years), from two junior high and high schools serving Muslim Palestinian Arabs living in small homogeneous Arab villages in Israel's Northern Triangle region. After receiving formal approval from the Chief Scientist of the Ministry of Education and from the university's institutional review board, letters with information about the aims of the study were sent to parents, giving them the opportunity to refuse to let their children participate. No one refused. Questionnaires were administered during school hours in the presence of the homeroom teachers. Participants were assured of complete anonymity and confidentiality, and they were told that only the researchers would see their reports, especially regarding their physical aggression. Students were also told that they were free to stop at any time if they felt uncomfortable with the questions. They were given the name of the school's educational counselor should they feel the need to talk to someone confidentially after completing the questionnaire.

Measures

The adolescents completed self-report scales and a demographic questionnaire, all in Arabic. The scales had already been translated into Arabic and used in previous studies on the Arab population in Israel and Gaza (e.g., Ronen et al., 2013).

Adolescent Self-Control Scale. This 32-item scale by Rosenbaum and Ronen (1991) is an adaption to adolescents of Rosenbaum's (1980) original self-control scale. Respondents rated their ability to negate disturbing thoughts or emotions, delay gratification, overcome pain, and use self-direction and planning on a scale ranging from -3 (*very unlike me*) to $+3$ (*very much like me*), with a total possible score of -96 (lower skills) to $+96$ (higher skills). The scale reliability (Cronbach's α) was .81 in Ronen and Rosenbaum (2010) and .82 in this study.

Positive emotions. To measure positive emotions, we used the 15-item positive emotions subscale of the Positive and Negative Affect Schedule for Children (Laurent et al., 1999), which assesses the extent to which participants experience different positive emotions including feeling joyful, excited, active, and proud. Respondents rated the extent to which they experienced each emotion

in the previous 2 weeks, on a scale ranging from 1 (*very little*) to 5 (*a great deal*). The subscale's reliability (Cronbach's α) was .89 in the original English version (Laurent et al., 1999), whereas the Hebrew translation in a previous study was .84 (Ronen & Seeman, 2007) and in the present study was .82.

Interpersonal Support Evaluation List. This scale assessing perceived availability of potential social resources consists of three 4-item subscales: *Appraisal Support* (perceived availability of someone with whom to discuss issues of personal importance), *Belonging Support* (perceived availability of others with whom to interact socially), and *Tangible Support* (perceived availability of material aid; Peirce, Frone, Russell, & Cooper, 1996). Respondents rated (*definitely false*) to 4 (*definitely true*), with higher scores reflecting greater perceived support. The scale reliability (Cronbach's α) ranged from .75 to .90 in previous studies (Cohen, 2008; Merz et al., 2014) and was .78 in the present study.

Subjective Happiness Scale (SHS). Subjective happiness refers to a person's

Cronbach's α for the hostility subscale was .63, .76 for the anger subscale, and .77 for the physical aggression subscale.

Data Analysis

We computed correlational analyses to explore the interrelations among all the study variables, followed by a set of *t*-tests for independent samples to assess differences between boys and girls on the study variables. No effects were found between age and the dependent variables: happiness ($p = .606$) and physical aggression ($p = .397$). Using the AMOS 21 structural equation modeling (SEM) program, we tested the study's multi-mediator model. For the mediation analysis, we used the robust bootstrap testing indirect effect method with the confidence level set at 0.95 and bootstrap bias-corrected samples set at 5,000. Drawing on a recommended procedure for the analysis of multi-path mediational models (Taylor, MacKinnon, & Tein, 2008), we calculated a separate *z*-score for each mediation effect in the model. Gender was included in the model to control for its potential effect on physical aggression, and covariance was assumed (Byrne, 2010) in cases where gender differences were detected. The fit of the model with the data was evaluated using the traditional tests of model fit: non-significant chi-square test, $\chi^2/df < 3$, comparative fit index (CFI) $> .95$, Tucker–Lewis index (TLI) $> .90$, and root mean square error of approximation (RMSEA) $< .80$.

Results

Descriptive Data and Correlations

Table 1 presents the intercorrelations among the study variables. As shown, self-control skills were significantly negatively correlated with hostile thoughts, anger, and physical aggression. Self-control skills were significantly positively correlated with positive emotions, social support, and happiness. Regarding gender differences, as can be seen in Table 2, girls scored significantly higher than boys on self-control skills and social support, whereas boys scored significantly higher than girls on physical aggression.

Model Fit

The mediation model depicted in Figure 1 provided a good fit for the observed data on the following fit indices, $\chi^2/df = 1.14$, $p = .321$, CFI = .997, TLI = .992, and RMSEA = .024 (95% confidence interval [CI] = [.000, .073]). As seen in this figure, gender was included in the model to control for its potential effect

Table 1. Means, Standard Deviations, and Correlations between Study Variables (*N* = 248).

	1	2	3	4	5	6	7
1. Self-control	—						
2. Hostile thoughts	-.22**	—					
3. Negative affect	-.46**	.47**	—				
4. Physical aggression	-.37**	.31**	.32**	—			
5. Positive affect	.52**	-.11*	-.26**	-.15**	—		
6. Social support	.47**	-.22**	-.39**	-.27**	.39**	—	
7. Happiness	.43*	-.33**	-.37*	-.19*	.39**	.46**	—
<i>M</i>	21.72	22.57	24.57	22.86	36.43	36.58	19.33
<i>SD</i>	25.55	7.45	7.32	7.45	7.61	6.38	4.39

p* ≤ .05. *p* ≤ .001.

Table 2. Descriptive Statistics by Gender and *t*-Test Results (*N* = 244).

	Girls (<i>n</i> = 151)		Boys (<i>n</i> = 93)		<i>t</i> (242)	Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Self-control skills	26.44	25.36	15.44	21.63	-3.478**	0.47
Social support	37.83	6.30	34.65	5.42	-4.030**	0.54
Positive affect	36.98	7.62	36.08	6.91	-0.927	—
Negative affect	24.69	7.49	24.09	6.38	-0.649	—
Happiness	19.44	4.51	19.15	4.29	-0.492	—
Hostile thoughts	22.52	5.67	22.48	4.14	-0.057	—
Physical aggression	20.01	6.78	27.23	5.54	9.070**	1.17

Note. Four respondents did not specify their gender.

p* ≤ .05. *p* ≤ .001.

on physical aggression ($\beta = -.45, p < .001$; the effect of gender on happiness was not significant, and therefore, the path was removed from the model). In addition, covariance was assumed between gender and self-control skills ($r = .22, p < .001$) and between gender and social support ($r = .20, p < .001$), because of detected gender differences in these variables (Byrne, 2010). Covariance was also assumed between hostility and happiness ($r = -.21, p < .001$) and between hostility and social support ($r = -.21, p < .001$), based on the reasoning that these variables are negatively linked.

Given the cross-sectional nature of the data, we followed the recommendation of examining alternative models (Hayes, 2013). However, because

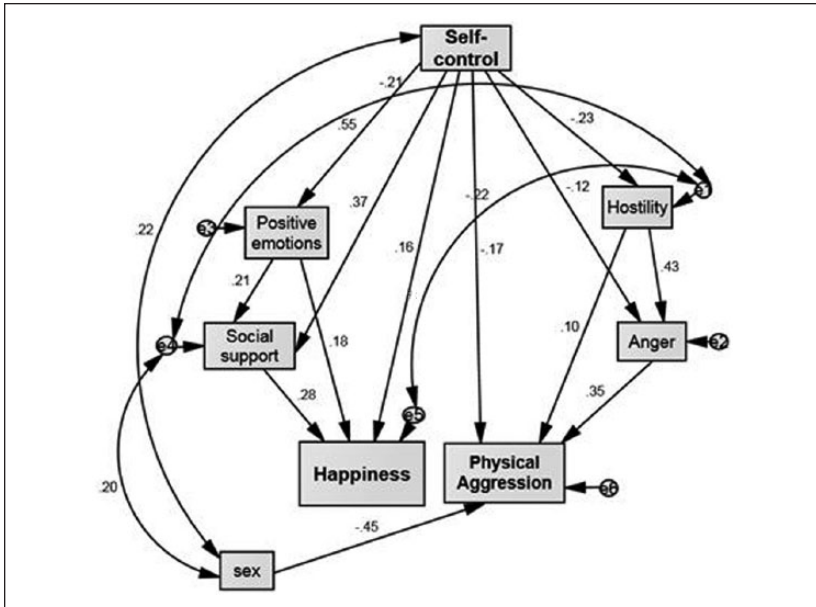


Figure 1. Structural equation model analysis for self-control's links with both physical aggression and happiness.

previous studies have established the indirect effect of hostility on physical aggression through anger (the maladaptive path), we tested alternative models with alternative orderings of variables solely on the adaptive path (i.e., positive emotions, social support, and happiness). As can be seen in Table 3, the fit indices of the model we postulated (Model 1) were superior to those of the five alternative models tested (the model diagrams are available from the corresponding author).

Indirect Effects

With respect to mediation, the bias-corrected bootstrap analysis of indirect effects confirmed Hypothesis 1 and indicated a significant indirect association between self-control skills and happiness, through positive emotions and then social support (95% CI = [.146, .343], $p < .001$). Again, as the interval did not include zero, the null hypothesis of no mediation was rejected. The direct path between self-control skills and happiness was also significant ($p < .05$). The analysis also confirmed Hypothesis 2, indicating a significant indirect association between self-control skills and physical aggression, through hostility and

Table 3. Goodness-of-Fit Indices for the Six Models ($N = 248$).

Model	χ^2	df	χ^2/df	p	CFI	TLI	RMSEA
Model 1	12.59	11	1.14	.321	.997	.992	.024
Model 2	29.95	11	2.72	.002	.962	.902	.084
Model 3	39.44	11	3.58	.000	.942	.853	.102
Model 4	22.81	11	2.07	.019	.976	.939	.066
Model 5	29.30	11	2.66	.002	.963	.906	.082
Model 6	28.157	11	2.56	.003	.965	.911	.079

Note. Hypothesized model in bold. df = degrees of freedom; CFI = comparative fit index; TLI = Tucker–Lewis index; RMSEA = root mean square error of approximation.

then anger (95% CI = $[-.156, -.051]$, $p < .001$). As the interval did not include zero, the null hypothesis of no mediation was rejected. The direct path between self-control skills and physical aggression was also significant ($p < .01$).

In addition, we calculated a separate z -score for each specific mediation effect (Taylor et al., 2008). In the adaptive path, the analysis revealed a significant indirect association between self-control and social support, through positive emotions ($z = 3.23$, $p < .001$) and a significant indirect association between positive emotions and happiness, through social support ($z = 2.71$, $p < .001$). In the maladaptive path, the analysis revealed a significant indirect association between self-control and anger through hostility ($z = -3.24$, $p < .001$) and a significant indirect association between hostility and physical aggression through anger ($z = 4.96$, $p < .001$).

Discussion

This study examined a new multi-mediator model to pinpoint possible mechanisms through which higher self-control may be simultaneously associated with greater happiness—through more positive emotions and perceived social support—as well as with less physical aggression—through lower hostility and anger. Although the role of adolescents' self-control skills in overcoming difficulties has been studied (Hamama et al., 2013; Ronen et al., 2013; Ronen & Seeman, 2007), the parallel role of self-control skills in enhancing happiness has been neglected. Therefore, our findings regarding the direct and indirect links between self-control skills and happiness are of particular importance. Specifically, given our conceptualization of self-control as a set of skills that help people overcome stress and disturbing emotions (Rosenbaum, 1990), the current findings suggest that self-control skills are positively associated with positive emotions. Based on Fredrickson's (2004) Broaden and Build hypothesis, whereby positive emotions

are posited to expand cognitive and behavioral repertoires, experiencing more positive emotions may be linked to better social functioning (e.g., Liew, 2012) and with greater perceived availability of social support, which may in turn be associated with greater happiness. The current findings are congruent with research that has pointed to the role of self-control skills in increasing positive emotions (Gilbert, 2005; Ronen & Seeman, 2007) and the role of positive emotions in increasing happiness (Fredrickson & Joiner, 2002; Lyubomirsky, 2007; Lyubomirsky & Lepper, 1999), but to the best of our knowledge, no previous empirical study has examined the entire multi-mediated sequence from self-control skills to happiness, through positive emotions and social support. Thus, the current findings provide a new theoretical conceptualization as well as directions for further research and intervention.

With regard to the maladaptive path, the findings corroborate previous studies showing that self-control skills are directly and negatively associated with aggression and violence (Buss & Perry, 1992; Hamama & Ronen-Shenhav, 2012; Ronen & Rosenbaum, 2010). In addition, the analysis yielded indirect associations between stronger self-control skills and less physical aggression, through hostility and anger. These findings are consistent with previous research showing that negative emotions can act as a mediator between hostile thoughts and physical aggression (Buss & Perry, 1992). Theoretically, the chain of links highlighted by the current findings—between self-control skills, hostile thoughts, and negative emotions—contributes to a better understanding of the possible mechanisms underlying how youngsters may develop physical aggression. Practically, the current outcomes provide important possible directions for prevention as well as treatment programs. Given that low self-control skills, increased hostile thoughts, and greater anger are all related to violent behavior in adolescence, it seems reasonable that these links could be altered by imparting adolescents with appropriate skills for cognitive, emotional, and behavioral self-regulation. More studies are needed to further explore how maladaptive trajectories can be prevented and whether these links are stable over the adolescent period.

Finally, although not the main focus of this study, the differences detected between male and female adolescents in relation to self-control skills, social support, and physical aggression should be acknowledged. Inasmuch as self-control is a basic skill set that starts at birth (Gilbert, 2005), female adolescents, who mature faster than male adolescents (Kail & Cavanaugh, 2007), may report higher self-control skills than male adolescents. As for social support, the literature generally demonstrates that girls are more likely than boys to utilize social support when coping with hardships, whereas boys are more likely to use avoidance or physical recreation as a coping strategy (Eschenbeck, Kohlmann, & Lohaus, 2007; Mackinnon, 2012). In terms of aggression, previous studies have

shown that generally, boys report higher levels of aggression (Walters, Ronen, & Rosenbaum, 2010). Overall, the gender differences we found highlight the importance of conducting separate analyses for male and female adolescents for accurate cross-study comparisons and the need for future research to study how gender differences may influence the links between adolescents' self-control skills and their aggressive behavior and happiness.

Limitations

Several limitations of this study should be considered. First, the cross-sectional methodology in this study calls for future research to better probe the developmental trajectories for how self-control skills may associate with both reduced engagement in aggressive behaviors and increased happiness, as well as the effects of interventions on such trajectories. Another limitation is the use of a convenience sample of Israeli–Arab youth; therefore, caution should be exercised in extrapolating these findings to other populations. In addition, data were collected through self-report questionnaires without cross-referencing other information sources, although self-control skills, hostile thoughts, emotions, and happiness are subjective internal components that can be assessed only by individual self-reporting. To validate the current findings, future research could incorporate ratings of actual aggressive behaviors, self-control, and social support from peers, parents, and teachers.

Conclusions and Further Directions

This study contributes to work on the possible mechanisms underlying the associations between adolescents' self-control skills and their well-being, with particular implications for the role played by positive and negative emotions. From a theoretical standpoint, this study lends weight to both Fredrickson's Broaden and Build Theory and Positive Social Psychology Theory, and emphasizes the need for further studies on the interplay between personal and social positive resources.

The study's practical implications underscore the need to identify adolescents with low self-control skills and help them to become happier and less aggressive. Imparting adolescents with self-control skills may increase their levels of positive emotions and happiness. Similarly, with regard to the association between negative cognitive and emotional responses found in this study, imparting adolescents with self-control skills may also help them overcome their hostile thoughts and angry emotions that lead to physical aggression. It is nevertheless important to consider traditional and cultural elements within an intervention approach to both Israeli–Arab adolescents and those

from other countries who have grown up in traditional societies but are exposed to Western values as well. More studies should be conducted on youth from other Western and non-Western cultures to further validate this theoretical model.

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Authors' Note

The authors contributed equally to this work.

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