

The Interplay Between Values and Aggression in Adolescence: A Longitudinal Study

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Values, or the guiding standards of adolescents' lives, influence which behaviors are considered more justified than others. The relationship between values and social behavior has been established across many studies including the relationship of values and aggression. But only a few studies have examined these relationships among youth. Moreover, a question that remains open is the direction of these relationships. The present study examined the concurrent and longitudinal relations between values and peer nominated aggression in 3 time points with a 1-year interval (8th grade–10th grade) in a sample of 678 Israeli adolescents (51.2% girls). Students completed the Portrait Values Questionnaire (PVQ; Schwartz et al., 2001) and 6 items of peer nominations of aggression. As hypothesized, I found positive associations between aggression and self-enhancement and openness to change values concurrently. Similarly, I obtained negative associations between aggression and self-transcendence and conservation values. Moreover, crossed-lagged models revealed that self-enhancement values were positively associated with aggression 1 year later. The association between aggression and future self-enhancement values, however, was not significant. Finally, I found mutual associations between self-transcendence values and aggression across time.

Keywords: values, values development, aggression, adolescence

Values offer a system to understand the basic motivations in people's lives, including how adolescents behave and act (Feather, 1995). A relationship between values and social behavior (e.g., aggression) has been established across many studies (for a review see Roccas & Sagiv, 2010). However, only a few studies have examined these relationships among youth (e.g., Benish-Weisman & McDonald, 2015; Knafo, Daniel, & Khoury-Kassabri, 2008). Equally unresolved is the directivity of these relations among adolescents. Theory suggests that values motivate behavior (Schwartz, 1992; Schwartz & Butenko, in press), an assumption that has inspired many educational programs to attempt to change adolescents' values to modify their behavior (Arieli, Grant, & Sagiv, 2014; Rokeach, 1973), especially undesirable behaviors such as aggression. More recently, however, researchers have suggested the reverse may be true as well: value change might result from behavior change (Bardi & Goodwin, 2011). When life events or social pressures cause behavioral changes, the resulting value-behavior mismatches may motivate adolescents to change their values in order to avoid dissonance and maintain self-consistency.

Aggression has psychological and social longitudinal effects on both victims and aggressors, including internalizing and externalizing symptoms (Parker, Rubin, Erath, Wojslawowicz, & Buskirk, 2006), loneliness (Schinka, van Dulmen, Mata, Bossarte, & Swahn, 2013), and even suicidal behavior (Gvion & Apter, 2011), making it crucial to identify the factors contributing to the development of this behavior concurrently and across time. Values have been found to be important explanatory factors of aggression (Knafo et al., 2008). As broad basic motivations that focus on enhancing personal goals or, alternatively, social goals, values serve as a promising entry point to such study.

In the study reported here, I examined the relationships between values and aggression in a sample of 678 Israeli adolescents in the 8th, 9th, and 10th grades. I looked at these relationships concurrently and longitudinally, testing two alternative hypotheses: first, values predict aggression, that is, the broad goals of adolescents would influence aggressive behavior and second, aggression predicts values so that adolescents' aggressive behavior would shape their broad goals.

What Are Values?

Values are abstract concepts that guide behavior and the evaluation of the self and the other, and they vary in relative importance across individuals (Schwartz, 1992). Schwartz (1992) has described 10 value types, organized in a circular structure in which adjacent values share similar underlying motivations and opposing values may be contradictory (see Figure 1). This structure has been replicated and validated in over 65 countries (e.g., Schwartz & Rubel, 2005; Schwartz & Rubel-Lifschitz, 2009). Each value represents a broad motivational goal: *self-direction* (independence of thought and action), *stimulation* (excitement, challenge, and nov-

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Figure 1. Theoretical model of the structure of relations among 10 values. Adapted from Schwartz, S. H. (2010). Basic values: How they motivate and inhibit pro-social behavior. In M. Mikulincer & P. R. Shaver (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 221–241). Washington, DC: American Psychological Association. Copyright © by the American Psychological Association.

elty), *hedonism* (pleasure or sensuous gratification), *achievement* (personal success according to social standards), *power* (social status, dominance over people and resources), *benevolence* (preserving and enhancing the welfare of people to whom one is close), *universalism* (understanding, tolerance, and concern for the welfare of all people and nature), *conformity* (restraint of actions that may harm others or violate social expectations), *tradition* (respect for and commitment to cultural or religious customs and ideas), and *security* (safety and stability of society, relationships, and self).

As seen in Figure 1, the 10 values can be arranged in four higher order groups, organized by two orthogonal bipolar dimensions, where each oppositional pole reflects opposing motivations (Schwartz & Boehnke, 2004). Dimension one focuses on the conflict between self-enhancement and self-transcendence. *Self-enhancement values* (power and achievement) focus on reaching personal goals through excelling and by controlling others. *Self-transcendence values* (universalism and benevolence) stress concern for the well-being and interests of others. Dimension two considers the conflict between openness to change and conservation values. *Openness to change values* (stimulation, self-direction, and hedonism) stress the pursuit of change through new ideas, experiences, and actions. *Conservation values* (conformity, tradition, and security) emphasize the importance of the status quo to preserve the self and the society.

Relationship Between Values and Aggression in Adolescence

The relationship between values and behavior (Bardi & Schwartz, 2003) has been validated across many behavioral out-

comes (for a review see Roccas & Sagiv, 2010): political orientation and voting (Caprara, Schwartz, Capanna, Vecchione, & Barbaranelli, 2006), prosocial behavior (Lönnqvist, Verkasalo, Wichardt, & Walkowitz, 2013) such as monetary contributions (Sagiv, Sverdlik, & Schwarz, 2011), and self-oriented and other oriented behaviors (Buchanan & Bardi, 2014). Only a handful of studies has examined the relationship between values and behavior in youth, such as risky sexual behavior (Goodwin et al., 2002), investment in school activities (Hofer, Schmid, Fries, Zivkovic, & Dietz, 2009), attempts at suicide (Eskin, 2013), and self-reported aggression (Knafo et al., 2008).

According to the value theory, if pursuing two values ends in the same behavior, these values can be considered compatible. However, values leading to opposite behaviors reflect conflicting motivations. Therefore, value discrepancy is visualized by situating values on the opposite side of the circular model (see Figure 1; Schwartz & Butenko, in press). Arguably, value-aggression relationships create a sinusoid shaped pattern (Bardi & Schwartz, 2003). Behaviors such as aggression that associate positively with values on one side of the circle will show a weak relationship with the adjacent values, and a negative association with the opposing values in the circle. For example, self-enhancement values focus on promoting the self, controlling, and excelling over others. I hypothesized that their relationship with aggression would be positive and strong, decreasing in strength around the circle to a positive yet weak relationship with openness to change values. Meanwhile, on the other side of the circle, aggression would have a strong negative relationship with self-transcendence values (supporting and caring for others) and a weak negative relationship with conservation values (Schwartz, 2005).

This model is supported by previous findings. Adolescents high in self-enhancement values, especially power, were found to be more involved in self-reported violent behavior (Knafo, 2003; Knafo et al., 2008), traditional bullying, and cyberbullying (Menesini, Nocentini, & Camodeca, 2013). Adolescents high in self-transcendence values, such as universalism, however, showed less aggressive behavior (Knafo et al., 2008; Menesini et al., 2013). Following this line of thought, in this study, I hypothesized that self-enhancement values would be positively related to aggression, and self-transcendence values would be negatively related to aggression.

Although theory predicts a very weak relationship between aggression and openness to change and conservation values, there is some evidence of a consistent relationship between them. Those with openness to change values seek adventure, stimulation, and new ideas and experiences. During adolescence, when aggressive behavior may increase (Moffitt, 1993), these motivations could translate more easily into aggressive behavior (Menesini et al., 2013). Therefore, in this study, I hypothesized that openness to change values would relate positively to aggression. I further hypothesized that conservation values may lead an adolescent to exercise more restraint to meet social expectations, suggesting that these values relate negatively to aggression (Knafo et al., 2008).

The Longitudinal Relationship Between Values and Aggression

The previous section established the relationship between values and aggression among youth. To determine the direction of this

relationship and explain value-behavior causality, the study tested two alternative theories; the first suggesting that values affect aggression and the second claiming behavior shapes values.

Influence of Values on Behavior

Values reflect adolescents' motivations and guide the way they operate in the world (Schwartz & Butenko, *in press*). Studies using experimental designs within undergraduate students have supported this idea. For example, studies found the priming of achievement values increased competition behavior and decreased prosocial behaviors with the opposite behavioral outcomes for the priming of benevolence values (Maio, Pakizeh, Cheung, & Rees, 2009). Similarly, exercises aiming to boost the importance of students' benevolence values resulted in increasing pro-social behavior (Arieli et al., 2014). Nevertheless, it is not clear to what extent these studies can be generalized to adolescents in real life or to adolescents' aggressive behavior in particular.

Two mechanisms, one direct and the other indirect, may explain how values affect behavior in real life (Bardi & Schwartz, 2003; Roccas & Sagiv, 2010). First, values accentuate the relevance of one behavior over another, inducing adolescents to act in a certain way. Endorsing specific values enhances adolescents' belief in their ability to achieve the valued aim and increases their persistence in overcoming any difficulties standing in the way (Schwartz, 2005). In addition, acting in accordance with their personal values is inherently rewarding; more specifically, simply by pursuing those values, adolescents are more likely to achieve their goals (Bardi & Schwartz, 2003). This mechanism also tends to conserve itself, as behaving according to one's own values contributes to self-consistency (Bardi & Goodwin, 2011; Rokeach, 1973). For example, adolescents who endorse self-enhancement values will act in a controlling or even aggressive way toward others to preserve their influential and powerful self-image. The indirect mechanism, meanwhile, stresses the blueprint structure of values and their ability to help organize and build the perception and understanding of the world. Value can be considered cognitive schemes central to adolescents' identity (Bardi & Goodwin, 2011). Their values lead adolescents to observe the world in a specific way (Rohan, 2000) by two main processes. In the first, values *attract attention* to specific information cues (Crick & Dodge, 1994; Verplanken & Holland, 2002). Events and situations that accord with adolescents' values will be more visible, as will situations that might risk their fulfillment (Schwartz, Sagiv, & Boehnke, 2000). As a result, adolescents will act in ways that promote their values and remove threats to their fulfillment. For example, adolescents who endorse self-enhancement values will pay more attention to signs of their social status (e.g., how many peers congratulate them on their birthday) and may act aggressively when someone seems to dismiss their importance (e.g., isolating a friend who forgets to call).

The second process in the indirect path between values as influential on behavior concerns how people *interpret reality* (Verplanken & Holland, 2002). As cognitive schemes, values affect how adolescents understand events around them and how they behave as a result. For example, consider a case where two adolescents witness two students in a fight in the school yard. The one who endorses security values (i.e., conservation values) will interpret the situation as dangerous and will try to avoid it. The one

who stresses stimulation values (i.e., open to change values) may interpret the event as exciting and appealing and actually join in the fight. Put otherwise, the same event may result in two opposite behavioral outcomes in terms of aggression.

It is important to note that these two processes are related. According to the SIP (social information processing) model (Crick & Dodge, 1994), attention to specific information cues and reality interpretation are sequential steps, with the first influencing the second. Therefore, if adolescents are particularly attentive to a specific (aggressive) cue, they are more likely to interpret a situation as threatening and hostile.

Influence of Behavior on Values

Although theory and research support the notion that values influence behavior, in some cases behavior is not value-driven. Rather, a change in behavior may result in a change in values (Bardi & Goodwin, 2011). This process has been hypothesized to occur in two steps. First, an environmental influence causes a behavioral change. For example, peer influence has a critical effect in adolescence (Prinstein & Dodge, 2008) and may cause adolescents to behave in ways that are antithetical to their original values. Other environmental influences on behavior relate to the transition to a new environment (Bardi & Goodwin, 2011). The encounter with new norms, rules, and behaviors (i.e., new environmental cues) could cause adolescents to change their behavior in order to adapt.

Second, a change in behavior may create a discrepancy between the initial values and the new behavior (Rokeach, 1968). As people are driven to keep a consistent image of themselves, they will act to reduce any cognitive dissonance between their values and behavior (Festinger, 1957). One way to achieve this goal is to change values to fit the new behavior. Accordingly, self-perception theory (Bem, 1967) suggests that when adolescents observe their own behavior they attribute this behavior to their values. As a result, new behaviors might lead to value change (Bardi & Goodwin, 2011). It is important to note that I suggest values are probably more stable than beliefs or attitudes; therefore, behavior is likely to affect values as part of an ongoing and evolutionary process; value change will not be the result of a single episode.

The Current Study

The aim of this study was to examine the relationship between values and aggression using a longitudinal design on a large sample of Israeli adolescents. In addition to looking at the broader picture by focusing on the four higher order values, I also tested the longitudinal relation of specific values with aggression. These five values are more clearly related to aggression in theory and, in fact have been found to be good indicators of aggression in previous studies (Knafo, 2003; Knafo et al., 2008). Power, the need to dominate other people, control recourses, and achieve social status, may drive some adolescents to behave more aggressively. In contrast, adolescents who endorse universalism values will reject militarism (Cohrs, Moschner, Maes, & Kielmann, 2005) and emphasize equality and tolerance; accordingly, they will react less aggressively. In addition, benevolence, the motivation to preserve and promote the well-being of those in one's close social

surroundings (i.e., friends and family) is hypothesized to relate negatively to aggression (Knafo et al., 2008). Finally, I argue that both conformity and security values will relate negatively to aggression. In many societies, some forms of aggression are judged as nonlegitimate (Turiel, 2014). Therefore, adolescents who endorse conformity values will behave less aggressively. Similarly, I hypothesize that security values relate negatively to aggression. Adolescents who care about their health and wish to preserve social norms will act less aggressively (Knafo, 2003).

Although this study built on former research, it broke new ground in two ways. First, previous studies of adolescents used self-report questionnaires to assess both values and behavior, but this may inflate the relationship because of shared-method variance (Kristof, 1996; Pozzebon & Ashton, 2009). In addition, self-reports of aggression could be biased due to social desirability (Paulhus, 1991). This study overcame this limitation by measuring aggression using peer reports. Second, the study tested the stability of these relationships by examining them at three time points, using a longitudinal design; this allowed us to examine the direction of the relationships between values and aggression over time.

I hypothesized the following: (a1) self-enhancement (specifically power) values would be positively related to aggression, and (a2) self-transcendence (specifically universalism and benevolence) values would be negatively related to aggression. Further, (b1) openness to change values would relate positively to aggression, (b2) conservation (specifically conformity and security) values would relate negatively to aggression, and (c) these relationships would be stable across time.

In addition, the longitudinal design allowed us to test the longitudinal relations between values and aggression. Here, I hypothesized: (d1) self-enhancement (specifically power) values would relate positively to aggression 1 year later and (d2) self-transcendence (specifically universalism and benevolence) values would relate negatively to aggression 1 year later. As mentioned, based on the sinusoid shaped pattern of the value-behavior relation theory, I expected a weaker concurrent relationship between openness to change and conservation values, and aggression (compared with that between self-enhancement and self-transcendence values and aggression). Therefore, (d3) I did not expect to find longitudinal relationships for these values across time. Finally, because the hypothesis was novel, with no previous studies on the topic, (e) I tested the effect of aggression on values with no specific prediction on the nature of the relations (positive or negative).

Method

Participants

The study included 678 adolescents (51.2% girls) from public schools in the north of Israel. They belonged to two main cultures: Jewish (41.5%) and Arab citizens of Israel. The students were approached through their schools in T1 in the 8th grade ($N = 678$, $M_{\text{age}} = 13.78$, $SD = .73$), in T2 in the 9th grade ($N = 540$, $M_{\text{age}} = 14.61$, $SD = .92$), and in T3 in the 10th grade ($N = 461$, $M_{\text{age}} = 15.68$, $SD = .55$).

I conducted an analysis of sample attrition in terms of demographic variables (i.e., gender, ethnicity, and parents' level of education) and main study variables (i.e., values and aggression). The adolescents of the sample at T1 who participated at T3 were

contrasted with the adolescents who did not participate. For the sociodemographic variables, the parents of T3 nonresponders were less educated, $t(496) = 2.81$, $p < .01$, and more boys did not respond in T3, $\chi^2(1) = 13.9$, $p < .001$. No difference was found in term of ethnicity, $\chi^2(1) = .36$, $p = .55$. In addition, the T3 nonresponders displayed lower levels of aggression, $t(574) = -2.02$, $p = .04$.

Participants reported their parents' highest degree of education. Only elementary education was completed by 4.7% of the mothers and 7.3% of the fathers; 39.71% of the mothers and 43.98% of the fathers completed high school; 28.13% of the mothers and 29.36% of the fathers graduated from university. There were missing values for 17.4% of the mothers' degree of education and 19.34% of the fathers' degree of education.

Procedure

Eight schools in the north of Israel were approached by telephone; five agreed to participate. Consent forms were sent to parents of all adolescents in the target grade level; only those adolescents whose parents gave consent for their children to participate (over 95%) completed the questionnaires. Questionnaires were distributed by trained research assistants during a class session that lasted about 45 min. The experimenters explained the questionnaires' instructions and answered any questions the students had while completing the questionnaires. For their participation, students received small, attractive incentives (novelty pens or pencils). The study was conducted in accordance with the requirements of the ethical review board of the Ministry of Education and of the University of Haifa.

Measures

Value. Students' values were assessed using the Portrait Values Questionnaire (PVQ; Schwartz et al., 2001). The PVQ has been shown to be suitable for use with children and adolescents (Bubeck & Bilsky, 2004; Knafo et al., 2008; Schwartz et al., 2001). It includes short verbal portraits of 40 people (matched to the respondent's gender), which describe the person's goals, aspirations, or wishes, implicitly indicating the importance of a single broad value. The numbers of items (verbal portraits) for each value varied between 3 and 6. For each portrait, participants are asked to rate, on a 6-point Likert scale (1 = *not like me at all* to 6 = *very much like me*), how much they are similar to the person described. Thus, respondents' own values are inferred from their self-reported similarity to people who are described in terms of particular values. As a standard procedure when using the PVQ, I controlled for response tendency by centering each individual's responses on his or her average response to all questions on the scale (Schwartz, 1992). This procedure is highly recommended (Parks-Leduc, Feldman, & Bardi, 2015), especially when measuring the relations of values with other variables. The following subscale scores were computed after this adjustment.

In this study, the items were aggregated to four value groups based on Schwartz's (1994) theory. The number of items for each broad value varied between 7 and 13. The first, self-enhancement values, highlighted the goal of individualistic dominance and self-success. A sample item from this value group is "It is important to her to be in charge and tell others what to do. She wants people to

do what she says" (T1 $\alpha = .70$, T2 $\alpha = .74$, T3 $\alpha = .76$). The second, self-transcendence values, emphasize concern with the welfare and rights of others. A sample item is "It's very important to her to help the people around her. She wants to care for their well-being" (T1 $\alpha = .81$, T2 $\alpha = .84$, T3 $\alpha = .82$). The third is openness to change values; these stress change through new ideas, experiences, and actions, and a sample is "Thinking up new ideas and being creative is important to her. She likes to do things in her own original way" (T1 $\alpha = .80$, T2 $\alpha = .83$, T3 $\alpha = .84$). Conservation values (conformity, tradition, and security) emphasize the importance of the status quo to preserve the self and the society, for example, "She believes that people should do what they're told. She thinks people should follow rules at all times, even when no-one is watching" (T1 $\alpha = .83$, T2 $\alpha = .83$, T3 $\alpha = .84$).

Aggression. Peer nominations (Asher & McDonald, 2009; Cillessen, 2009) were used to assess aggression. Children were given a roster listing the names of their classmates and were asked to circle the names of classmates who fit each criterion. Six items assessed aggression ("starts fights," "says mean things," "hits and pushes," "talks about kids behind their back," "gossips or spreads rumors," and "tries to keep certain kids from being in their group"). Only the names of classmates who had permission to participate in the study were listed on this measure. A child's score for each behavior item was computed as the number of nominations for that item the child received divided by the total number of classmates who could have nominated him/her for that item. The final scores for each item were standardized within the class and averaged to create one score for aggression (T1 $\alpha = .85$, T2 $\alpha = .82$, T3 $\alpha = .87$).

Control variables. Socioeconomic status (SES) was based on student reports of an aggregated score of parents' level of education. Ethnicity and gender were based on participants' reports.

Treatment of Missing Data and Plan for Analysis

First, I examined the raw correlations between values and aggression in three time points; then, I turned to examine these relations in one developmental model. The percentage of missing data ranged between 1% and 15% at T1, 7% and 26% at T2, and 27% and 47% at T3. Little's missing completely at random test was significant, $\chi^2(183) = 1,580.5$, $p < .001$, indicating that the variables were not missing completely at random. The analyses utilized the Full Information Maximum Likelihood method to account for missing data (Muthén & Muthén, 2010). To examine the hypotheses, I performed two cross-lagged panel path analyses (Kenny, 1975). The cross-lagged panel analysis allows examination of causality in longitudinal data with three time points (Gershoff, Aber, & Clements, 2009). Four models were obtained for the relationship of each value (self-enhancement, self-transcendence, open to change, conservation) with aggression in T1 to T3, and five models were obtained for the relationship of each specific value (power, universalism, benevolence, conformity, and security) with aggression in T1 to T3 (see Figure 2). Three types of paths were examined. The first looked at *autoregressive* association values and the same values 1 year later. Similar autoregressive associations were examined for aggression. The second included *crossed-lagged* paths between values and aggression 1 year later, and between aggression and values 1 year

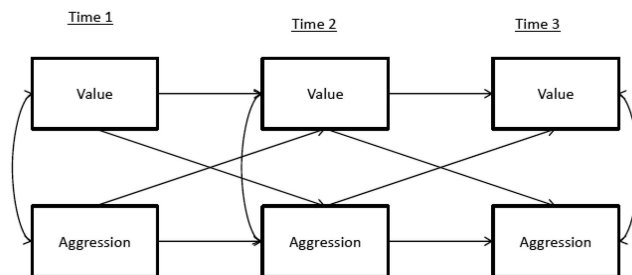


Figure 2. Cross-lagged analysis panel models linking values and aggression at T1–T3.

later. The third included correlations between the two variables or their residuals (values and aggression) at all time points. The models controlled for participants' SES, ethnicity, and gender at all time points.

Three fit indices were used to establish the adequacy of the model fit: the comparative fit index (CFI; Bentler, 1990), root mean square error of approximation (RMSEA; Kline, 2011), and the standardized root-mean-square residuals (SRMR; Hu & Bentler, 1999). Kline (2011) has proposed that excellent model fit is achieved by $CFI \geq .95$, $RMSEA \leq .06$, and $SRMR \leq .06$, with models resulting in $CFI > .90$, $RMSEA < .08$, and $SRMR < .09$ considered to reach adequate fit. Because χ^2 is influenced by the sample size, it was not used to assess the models' fit (Marsh, Balla, & McDonald, 1988).

Results

Concurrent Associations Between Values and Aggression at Three Time Points

Table 1 presents the mean scores of the study variables. As hypothesized, self-enhancement values related concurrently and positively to aggression, $r_{T1} = .21$, $p < .001$; $r_{T2} = .20$, $p < .001$; $r_{T3} = .21$, $p < .001$. Similarly, openness to change values related positively to aggression at T1 and T2, $r_{T1} = .13$, $p < .001$; $r_{T2} = .09$, $p < .05$, but I found no significant association at T3, $r_{T3} = .13$, $p = .48$. In addition, as hypothesized, there were negative associations between self-transcendence values and aggression, $r_{T1} = -.22$, $p < .001$; $r_{T2} = -.19$, $p < .001$, but I found no significant associations in T3, $r_{T3} = -.08$, $p = .09$. Conservation values were negatively correlated with aggression for T2, $r_{T2} = -.10$, $p < .05$, but I found no significant associations in T1 and T3, $r_{T1} = -.08$, $p = .08$; $r_{T3} = -.09$, $p = .06$.

To have a more precise understanding of these associations, I examined the concurrent relations between specific values (power, benevolence, universalism, conformity, and security) and aggression. As hypothesized, power values (part of self-enhancement values) related positively to aggression, $r_{T1} = .26$, $p < .001$; $r_{T2} = .20$, $p < .001$; $r_{T3} = .20$, $p < .001$. In addition, the hypotheses regarding the negative relationship of aggression with universalism values (part of self-transcendence values), $r_{T1} = -.20$, $p < .001$; $r_{T2} = -.10$, $p < .05$; $r_{T3} = -.11$, $p < .05$ and benevolence values in T1 and T2, $r_{T1} = -.12$, $p < .01$; $r_{T2} = -.16$, $p < .001$, were confirmed but not in T3 of benevolence values, $r_{T3} = -.05$, $p = .27$. Similarly, conformity values (part of conservation values,

Table 1
Means and SDs of the Main Study Variables

Variable	<i>M</i>	<i>SD</i>
Self-enhancement values		
T1	3.49	0.71
T2	3.50	0.71
T3	3.56	0.71
Self-transcendence values		
T1	4.19	0.44
T2	4.18	0.44
T3	4.16	0.44
Openness to change values		
T1	4.27	0.51
T2	4.28	0.51
T3	4.30	0.51
Conservation values		
T1	3.86	0.46
T2	3.86	0.44
T3	3.82	0.47
Aggression		
T1	0.00	0.78
T2	0.00	0.75
T3	0.00	0.78

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3.

$r_{T1} = -.18, p < .001$; $r_{T2} = -.15, p < .001$; $r_{T3} = -.11, p < .05$) were found to relate negatively to aggression. I also found a negative association with security values (part of conservation values) in T1, $r_{T1} = -.09, p < .05$, but not in T2, $r_{T2} = -.06, p = .16$, or T3, $r_{T3} = -.07, p = .09$.

Associations Between Values and Aggression Across Time

Using the χ^2 difference test, models constrained to equality across time were compared with models in which the relations were allowed to vary freely across time. When the models were

significantly different, the source of the differences was examined using partially constrained models (Kline, 2011). Six paths were found to differ over time: the autoregressive relation of values in the self-enhancement values model; the concurrent associations between values and aggression in the self-transcendence model; the paths between values and aggression 1 year later and also the concurrent associations between values and aggression in the openness to change model; finally, the path between aggression and values 1 year later and also the concurrent associations between values and aggression in the conservation values model. The paths found to be significantly different across time were allowed to vary freely, while all others were constrained to equality across time (Kline, 2011).

The final models reached excellent fit, CFI = .96, RMSEA = .04, SRMR = .03 for self-enhancement values; CFI = .97, RMSEA = .04, SRMR = .03 for self-transcendence values; CFI = .95, RMSEA = .06, SRMR = .06 for conservation values; and adequate fit for openness to change values, CFI = .92, RMSEA = .06, SRMR = .04.

Table 2 presents the results for the path models of the longitudinal associations between values and aggression. As the table indicates, I found moderate stability for aggression and for all values. There were positive concurrent associations between self-enhancement values and aggression at T1–T3 and between openness to change values and aggression at T1–T2. Finally, I found negative concurrent relations at T1–T2 between self-transcendence and conservation values and aggression.

The examination of the directionality of the paths between values and aggression revealed that self-enhancement values predicted future aggression. There were no reciprocal associations between aggression in T1 and self-enhancement in T2, nor for aggression in T2 and self-enhancement in T3. Another interesting finding was reciprocal relations between self-transcendence and aggression across time. That is, self-transcendence in T1 predicted aggression in T2, and aggression in T1 predicted self-transcendence in T2. (The same relations were obtained for the

Table 2
Model Results Linking Values to Aggression Across Times 1, 2, and 3

	Self-enhancement values (Model 1)		Self-transcendence values (Model 2)		Openness to change values (Model 3)		Conservation values (Model 4)	
	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>	β	<i>SE</i>
Auto-regressive paths								
Values T1 → Values T2	.49**	.04	.42**	.04	.45**	.04	.54**	.03
Values T2 → Values T3	.60**	.03	.43**	.05	.47**	.04	.53**	.04
Aggression T1 → Aggression T2	.49**	.04	.49**	.04	.51**	.04	.50**	.04
Aggression T2 → Aggression T3	.46**	.05	.46**	.05	.47**	.05	.47**	.05
Cross-lagged relations								
Values T1 → Aggression T2	.09**	.03	-.08**	.03	.01	.03	-.02	.03
Values T2 → Aggression T3	.09**	.02	-.08**	.03	.01	.03	-.02	.03
Aggression T1 → Values T2	.04	.03	-.07*	.03	.01	.05	-.02	.04
Aggression T2 → Values T3	.04	.03	-.07*	.03	-.03	.05	-.04	.04
Concurrent relations								
Values T1 ↔ Aggression T1	0.10**	.02	-.20**	.04	.14**	.04	-.08*	.04
Values T2 ↔ Aggression T2	0.13**	.03	-.07*	.04	.09*	.05	-.12**	.04
Values T3 ↔ Aggression T3	0.13**	.03	-.03	.05	-.06	.05	-.10	.05

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3.
* $p < .05$. ** $p < .01$.

relations between T2 and T3.) As hypothesized, there were no associations between openness to change and conservation values and aggression across time.

The procedure described above was conducted for selected five values. Using the χ^2 difference test, models constrained to equality across time were compared with models in which the relations were allowed to vary freely across time (Kline, 2011). Two paths were found to differ over time: the concurrent associations between power and aggression and between universalism and aggression.

The final models reached excellent fit, CFI = .96, RMSEA = .05, SRMR = .03 for power values; CFI = .95, RMSEA = .05, SRMR = .03 for universalism values; CFI = .94, RMSEA = .04, SRMR = .03 for benevolence values; CFI = .95, RMSEA = .05, SRMR = .03 for conformity values; and CFI = .94, RMSEA = .05, SRMR = .04 for security values.

Table 3 presents the results for the path models of the longitudinal associations between values and aggression. As the table indicates, I found moderate stability for aggression and for all values. There were positive concurrent associations between power values and aggression at T1 and T3 (marginally significant in T2). Finally, I found negative concurrent relations at T1–T3 between conformity values and aggression, and between benevolence values and aggression, at T1–T2 between security values and aggression, and at T1 between universalism values and aggression.

The examination of the directionality of the paths between values and aggression revealed reciprocal relations between power values and aggression, that is, higher levels of power values predict higher levels of aggression across time, but also higher levels of aggression predict higher levels of power values. Reciprocal relations were found also between universalism values and aggression; higher levels of universalism values predict lower levels of aggression across time, but also higher levels of aggression predict lower levels of universalism values. I found also marginally significant negative relations between benevolence and aggression, that is, higher levels of benevolence values predict lower levels of aggression across time. In addition I found that the

path between aggression and conformity values to be negatively correlated across time.

Discussion

Concurrent Associations Between Values and Aggression

This study supports previous research and existing theory on the relevance of values to behavior (Bardi & Schwartz, 2003; Knafo et al., 2008). The significant associations between values and aggression over time, when controlling for gender, ethnicity, and SES contribute to the robustness of the finding. Additionally, the results accord with Schwartz's (1992) theory that values standing for conflicting motivations relate in a contradictory way to aggression. In my study, self-transcendence values were negatively associated with aggression; that is, adolescents' endorsement of values such as the need to take care of others or be concerned with their needs was related to lower levels of aggressive behavior toward their classmates. Conversely, adolescents' motivations to promote their own interests and advance themselves (self-enhancement values) were related to more aggressive behavior toward their peers. In adolescence, a primary concern is to achieve social status (LaFontana & Cillessen, 2010). I suggest that for adolescents who value self-enhancement values, or more specifically, who wish to control and dominate their peers, aggression might be the most available way to achieve social status (Salmivalli, 2010). Future studies should examine the mediating role of social status on the relationship between values and aggression.

Being open to new experiences and seeking stimulation (openness to change values) was concurrently related to adolescents' aggressive activities. These relationships were significant for 8th and 9th graders. At this age, the desire to maximize pleasure and the need for excitement seemed to translate into higher levels of aggression (Howard, 2011). In contrast, adolescents who restrained their actions to avoid breaking social norms and to keep traditions were less likely to be aggressive.

Table 3
Model Results Linking Specific Values to Aggression Across Times 1, 2, and 3

	Power values		Benevolence values		Universalism values		Conformity values		Security values	
	β	SE	β	SE	β	SE	β	SE	β	SE
Auto-regressive paths										
Values T1 \rightarrow Values T2	.49**	.03	.30**	.04	.42**	.05	.35**	.04	.44**	.04
Values T2 \rightarrow Values T3	.46**	.05	.26**	.04	.45**	.04	.34**	.05	.44**	.05
Aggression T1 \rightarrow Aggression T2	.49**	.04	.50**	.04	.50**	.03	.50**	.04	.50**	.04
Aggression T2 \rightarrow Aggression T3	.46**	.05	.47**	.05	.47**	.03	.47**	.05	.48**	.05
Cross-lagged relations										
Values T1 \rightarrow Aggression T2	.07**	.03	-.05 [†]	.03	-.07*	.03	-.01	.03	-.003	.03
Values T2 \rightarrow Aggression T3	.07**	.03	-.05 [†]	.02	-.07*	.03	-.01	.03	-.003	.03
Aggression T1 \rightarrow Values T2	.07**	.03	-.05	.04	-.08*	.03	-.08**	.03	-.02	.03
Aggression T2 \rightarrow Values T3	.08**	.03	-.05	.03	-.08*	.03	-.08**	.03	-.02	.03
Concurrent relations										
Values T1 \leftrightarrow Aggression T1	.18**	.04	-.05*	.02	-.08*	.02	-.15**	.04	.05*	.02
Values T2 \leftrightarrow Aggression T2	.08 [†]	.04	-.07*	.03	-.007	.02	-.13*	.04	-.06**	.03
Values T3 \leftrightarrow Aggression T3	.11*	.05	-.06*	.02	-.01	.02	-.10*	.05	-.06	.03

Note. T1 = Time 1; T2 = Time 2; T3 = Time 3.

[†] $p < .1$. * $p < .05$. ** $p < .01$.

I assumed the concurrent relations between values and behavior will be stable across time. However, comparison of the free to vary model and the constrained model in which the relations across time were constrained to equality revealed that the concurrent relations between values and aggression change across time for self-transcendence, openness to change, and conservation values. Specifically, the associations between these values and aggression were not significant in T3, but they were significant at younger ages. This effect could be explained by the transition to high school that occurs in Israel between the 9th and 10th grade. When adolescents face a new educational context, they may need to change their behavior due to peer pressure (Prinstein, Brechwald, & Cohen, 2011), to adapt to new norms and rules (Bardi & Goodwin, 2011). This behavior change due to situational pressure (Bardi & Schwartz, 2003) may lead to a mismatch between values and aggression. For example, a student who wishes to be liked might join classmates in teasing unpopular students, ignoring values of universalism that usually guide her or his life.

Another explanation could be that the transition to high school may be experienced as a stressor by some adolescents (Benner, 2011). When faced with a new and possibly intimidating environment, those who honor self-transcendence values might react in a way that does not match their benevolent values, that is, aggressively. Therefore, school transition might result in a temporary disparity between values and behavior. Future studies should follow values-aggression relations to test whether this disparity reconciles after adolescents are adjusted to the new place. It is important to note that examination of specific values indicated the mismatch between values and behavior might happen even earlier (in the 9th grade). More studies should be conducted to determine if this is the case.

Longitudinal Associations Between Values and Aggression

Influence of values on behavior. The study's design allowed us to test the directionality of the relations between values and aggression. The results support former experimental findings (Arieli et al., 2014; Maio et al., 2009), namely that values influence behavior. The motivations for promoting the self on the one hand and caring for others on the other may predict (positively and negatively, respectively) aggression. Values direct adolescents in achieving their goals. Moreover, by acting according to their values, adolescents maintain their self image and preserve their self worth (Bardi & Goodwin, 2011). These findings echo those of previous studies that suggest one of the most effective ways to promote children's nonaggressive behavior is to promote their self-image as caring and helping (Grusec, Chaparro, Johnston, & Sherman, 2013).

It has also been suggested that as cognitive schemes, values shape the way people perceive and interpret the world (Verplanken & Holland, 2002). As such, values direct the attention and guide the understanding of adolescents' social surroundings, leading to specific behavior. For example, as self-enhancement values (e.g., power values) may attract adolescents' attention to specific aggressive cues or direct them toward a hostile interpretation, adolescents who endorse these values may be more aggressive toward their peers. Future studies should examine the specific ways in which attention to and interpretations of cues moderate and medi-

ate the relationship between values and aggression. For example, the appropriate experimental design would allow testing whether holding high levels of self-enhancement or self-transcendence values elicit more or less attention (respectively) to hostile cues resulting in higher levels of aggression. In terms of interpretation, it could be interesting to examine whether higher levels of hostile attribution bias (Dodge, 2006) are found among adolescents with higher levels of self-enhancement values.

Influence of behavior on values. The study found reciprocal relations for self-transcendence values but also for power values. Regarding self-transcendence values, it seems observing their own peaceful behavior (Bem, 1967) may strengthen adolescents' positive self-perception as caring and attuned to peers' needs, strengthening their self-transcendence values. At this point, I wish to offer another explanation of why lower levels of aggression may be antecedent to higher levels of self-transcendence values. Of course, as the association was examined here for the first time, this explanation remains speculative. I suggest that the value of caring for others and acting in a less aggressive manner may be more normative than focusing on the self and acting aggressively. For example, there is some evidence that less aggressive youth are more accepted by their peers (Kawabata, Tseng, & Crick, 2014). Therefore, in some cases, self-transcendence values and nonviolent behavior may both be reinforced by society. Possibly, for some adolescents, self-transcendence-aggression relationships are both internally and externally motivated. Self-transcendence values may enhance less aggressive behavior, and less aggressive behavior may promote self-transcendence values, while both are strengthened by peers. Future studies should examine the role of peers in mediating the relationships between values and behavior.

It is interesting to note that among the self-transcendence values, universalism showed longitudinal negative relations with aggression when benevolence values showed only marginally significant associations. Possibly, some benevolent adolescents who take care of those in their close social surroundings behave aggressively over time toward their classmates, while behaving differently toward their close friends. Indeed, some adolescents show prosocial-aggressive behaviors (Hawley, 2003; McDonald, Benish-Weisman, O'Brien, & Ungvary, 2015). Future studies should use complex methods, such as social network analysis, to trace the relations between aggressor values and the target of the aggression. That is, do adolescents' values differentiate the victim they pick? For example, do some adolescents prefer values likely to trigger aggression toward marginalized students while others prioritize values that drive aggressive acts toward the "queen" or "king" of the class?

Power values showed reciprocal relations with aggression as well. Power values are related positively to future aggression, but aggression is also related positively to future power values. It seems there is a vicious circle; adolescents who endorse power values perceive and interpret reality as antagonistic, therefore reacting aggressively. Teachers' and parents' punishment of and peers' retaliation aggressive acts might reassure adolescents' beliefs that the world is a hostile place and reinforce power values.

As I hypothesized, there were no findings of similar relationships for openness to change and conservation values. That is, these values were not related to aggression across time (except for the exemption of conformity values). As shown in previous studies, the strength of value-behavior relationships is not similar

across values and behaviors (e.g., Bardi & Schwartz, 2003). I claim that while self-enhancement and self-transcendence values relate to a limited set of behaviors (self-enhancement to aggression and self-transcendence to nonaggression), openness to change and conservation values could be related to varied sets of behaviors. This difference can explain why we see longitudinal relations between values and aggression for only some of the values. I suggest a modification of Lönnqvist et al.'s (2013) terminology of value-expressive behaviors and value-ambivalent behaviors to explain differences in value-behavior strength across time. These particular researchers distinguished between behaviors driven by one main value (value-expressive behaviors), resulting in a strong value-behavior relationship, and behaviors driven by several values (value-ambivalent behaviors), resulting in a weak value-behavior relationship (Lönnqvist et al., 2013). I suggest adapting the original terms to behavior-specific values and behavior-ambivalent values to explain why self-enhancement and self-transcendence values were related to aggression across time and why openness to change and conservation values were not. Behavior-specific values guide a limited set of behaviors. Self-enhancement, in most cases, leads to behaviors, such as aggression, that promote the self at the expense of others. Similar to the value-behavior exclusiveness but contradicting self-enhancement motivation, self-transcendence values relate to prosocial and non-aggressive behavior across time.

In contrast, behavior-ambivalent values may have a less exclusive relationship with behavior such as aggression. For example, adolescents seeking excitement (openness to change values) might be involved in future aggressive behaviors such as fights, but they can meet this need, for example, by riding a bicycle in a challenging landscape. As a result, the relationship between openness to change and conservation values and aggression might change across time.

This study has offered a closer look at five specific values found by previous studies to relate to aggression (Knafo, 2003; Knafo et al., 2008). While these findings repeated findings for the four broad values, I found power values related positively to future aggression in reciprocal relations. As mentioned above, adolescents who endorse power values may be more attuned to aggressive cues that further direct them toward a hostile interpretation and, therefore, to more aggressive behavior, but I also found aggressive behavior is related to future power values. Possibly, aggressive adolescents observe their own behavior (Bem, 1967) and justify it by their motivation to dominate and control others.

Aggression was also negatively related to future conformity values, but conformity values were not found to be related to future aggression. Some adolescents may be pressured by their peers or teachers to behave less aggressively despite their initial tendencies. To avoid the internal conflict and stress that might result from a value-behavior mismatch (Bardi, Lee, Hofmann-Towfigh, & Soutar, 2009), these adolescents start valuing the inhibition of behaviors to fit social norms (conformity values). Although my pioneer finding of a longitudinal relationship between values and aggression should be replicated in future studies, these preliminary results emphasize the importance of testing the relationship of aggression with both specific values and broader values.

Strengths, Limitations, and Implications

The study was theoretically and methodologically novel. First, it examined the relationship between values and aggression using a relatively large-scale sample, concurrently and longitudinally across three time points, allowing us to measure the stability of these relationships. Its longitudinal design suggested some conclusions about the directionality of these relationships (Gershoff et al., 2009), but with the current nonexperimental design, these interpretations should be made with caution.

Second, the study measured adolescents' aggression using peer nominations, not self-reports as in previous studies. Self reports of aggression may be biased by social desirability (Paulhus, 1991), thus diminishing the levels of reported aggression. Moreover, relying on self-reported values and aggressive behavior may inflate relations due to shared-method variance (Kristof, 1996; Pozzebon & Ashton, 2009).

Some limitations are worth noting. The concurrent relations between values and aggression were not strong, but the results echoed findings of previous values-aggression studies (e.g., the correlation of self-enhancement and self-transcendence values and behavior ranged between .18 and .25 in Bardi & Schwartz, 2003). Moreover, as values are general motivations, we expect their relationship with specific behaviors will not be as strong as more specific motivations. Nevertheless, the examination of values has significance to studies of behavior, as values are relatively stable and represent constant constructs in adolescents' personalities (Schwartz, 2010).

The study was conducted in Israel, and findings may differ across cultures (Roccas & Sagiv, 2010). The transition to high school takes place at different ages in different cultures. In the United States, for example, the transition often takes place 1 year earlier (between the 8th and 9th grades), a time when adolescents are the most susceptible to peer influence (Steinberg & Monahan, 2007); this might prevent adolescents from acting according to their values, resulting in a longer period of value-behavior mismatch. In addition, different development stages might affect the relations between values and behavior (Schwartz, 2005). Finally, previous studies found that although there are certain cross-cultural consistencies, some attitudes toward aggression vary by culture (Ramirez, 2007). Therefore, the relationship between values and behavior (such as aggression) might change across cultures (Roccas & Sagiv, 2010). Future studies should expand the value-behavior examination to include other cultures.

Educational interventions aiming to reduce aggression could benefit from the study's findings. Former studies highlighted the importance of values and private self-consciousness in reducing aggression (Benish-Weisman & McDonald, 2015), but neglected the longitudinal effect of values in reducing aggression. Future interventions should work to enhance self-transcendence values and diminish self-enhancement values in youth involved in violent actions. They should also promote peaceful behaviors, as these will enhance self-transcendence values and reduce aggression.

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