

## Identifying and Distinguishing Value Profiles in American and Israeli Adolescents

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Although research has examined how values are correlated with behavior, little has examined how the system of values predicts behavior. In a cross-cultural sample of American (109 European American; 216 African American) and Israeli (318 Arab Israeli; 216 Jewish Israeli) adolescents, the present study used latent profile analysis to identify groups which reflected the theoretical structure of values across both cultures. Four profiles were found: self-focused, anxiety-free, other-focused, and undifferentiated. Results indicated that Self-Focused adolescents were the most aggressive and viewed as leaders by their peers compared to the other groups. Self-Focused and anxiety-free youth reported more delinquency than their peers. Few differences between cultural groups emerged, suggesting that this approach is a promising avenue for understanding heterogeneity in behavior.

Values describe what is important to us. They are abstract concepts and ideas that guide the selection and evaluation of behavior and underlie attitudes and the way we perceive ourselves and others. We refer to our values for guidance when making decisions and we tend to act in ways that promote our values (Bardi & Schwartz, 2003). Schwartz's (1992) theory conceives of values as a universally recognized construct that form an organized system of priorities, characterizing groups and individuals according to their hierarchy of values. Research has demonstrated that values are associated with a wide range of behaviors (e.g., Bardi & Schwartz, 2003; Benish-Weisman & McDonald, 2015; Knafo, Daniel, & Houry-Kassabri, 2008) but, except for a few studies with adults (e.g., Lee, Soutar, Daly, & Louviere, 2011; Nonis & Swift, 2001), has ignored how the entire system of values, or how a person's value profile, predicts behavior. The current study seeks to address this gap in the literature by first identifying value profiles and subsequently examining their behavioral correlates in a cross-cultural sample of American and Israeli adolescents. We argue that compared to the traditional method of examining bivariate relationships between values and behavior, considering the full range of values simultaneously may yield a more nuanced or

accurate portrayal of adolescents' values and the motivations underlying their behavior.

### Theory of Values

Schwartz's (1992) value theory (see Figure 1) defines 10 distinct values that are clustered into four higher order groups. The 10 values are organized around a circular continuum of related motivations alongside two dimensions reflecting the relative congruence and conflict between those motivations. The structure has a theoretical meaning; values that are closer to each other in the structure are more similar in their motivations and values that oppose each other are more conflicting (Schwartz, 2014; Schwartz & Butenko, 2014). The first dimension contrasts values that are self-focused with those that are other-focused. The second dimension contrasts values that are anxiety-free with those that are anxiety-based.

Self-enhancement values are self-focused and anxiety-based. These values include power and achievement values and reflect a desire for social superiority, esteem, and dominance over others. Self-transcendence values are other-focused and anxiety-free. They include universalism and benevolence values and reflect enhancement of others over self-interests. Openness-to-change values are self-focused and anxiety-free and are comprised of hedonism, stimulation, and self-direction. Openness-to-change values emphasize a desire for arousal,

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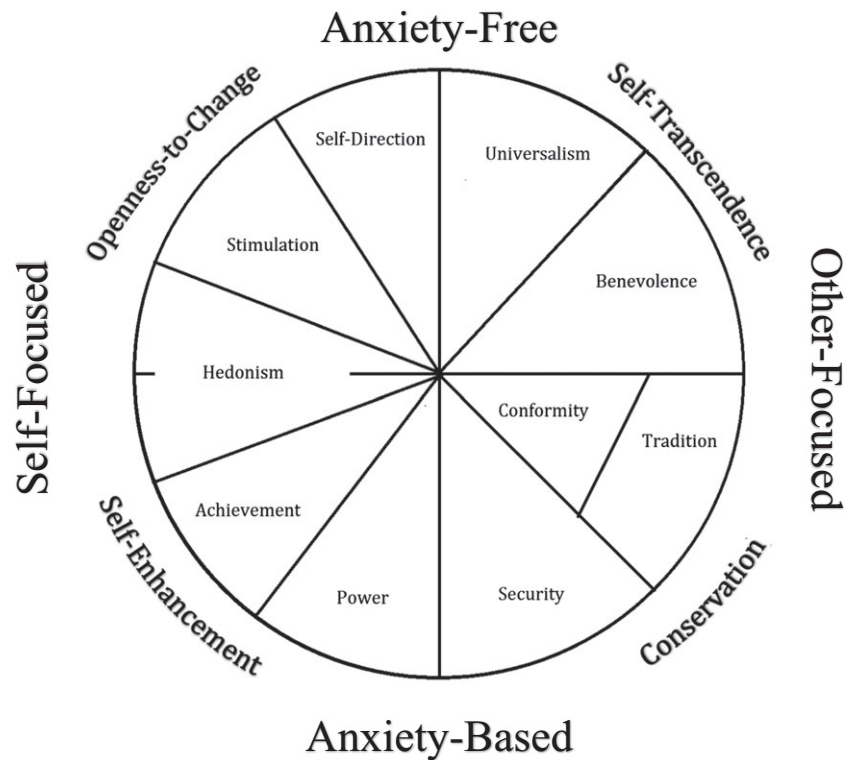


FIGURE 1 Schwartz's (1992) theory of values: relationships among the 10 values and four groups.

interest in novelty and mastery, and reliance on one's own judgment. In contrast, conservation values are other-focused and anxiety-based. They comprise security, conformity, and tradition values and emphasize the need for maintaining the status quo, respecting elders, and maintaining safety and security. Both the content and structure of values has been validated in more than 200 samples and 70 countries (Schwartz & Boehnke, 2004).

The present study examines values during adolescence, an important but understudied time period. Values are particularly important to study during adolescence for several reasons. First, research that has examined value endorsement across the life span has noted important differences between adolescents and other generations (e.g., Bardi, Buchanan, Goodwin, Slabu, & Robinson, 2014; Gouveia, Vione, Milfont, & Fischer, 2015). For example, adolescents have rated openness-to-change and self-enhancement values higher than adults and older adults (Gouveia et al., 2015). Although the transmission of values does occur through cultural and societal influences, values can also be formed as a result of deliberate, introspective thinking (Bardi & Goodwin, 2011). As adolescents begin to gain more autonomy in their personal choices and goals (Zimmer-Gembeck &

Collins, 2003), they may begin to think more critically about what values are important to them (Meeus, 2011). Advances in abstract thinking and self-evaluation may also allow adolescents to reflect on and think about their values and what is important to them (Benish-Weisman & McDonald, 2015). These changes may be related to identity exploration and formation, an important milestone of adolescence (Erikson, 1968; Meeus, 2011). Finally, during adolescence, youth become more focused on peers' opinions and approval and concerns for status among peers peak (LaFontana & Cillessen, 2010). This concern about peers and status may be reflected in adolescents' values.

### Value Profiles

The link between values and behavior is of central importance, but the traditional approach of examining bivariate associations between values and behavior has ignored the structure of values as a hierarchical and dynamic system. Although this research has shed light on the influence of values, there are both theoretical and practical reasons for studying the system as a whole, rather than one value at a time. First, central to Schwartz's (1992) theory are the premises that: (1) values are ordered

by importance relative to one another, resulting in an ordered system of value priorities; and (2) values do not exist in isolation and our behavior is guided by the consideration and trade-off among relevant and competing values. By ignoring the structure of values in favor of one-dimensional relationships, researchers are not accurately reflecting the theory as it was conceptualized. For example, the actions of an adolescent who prioritizes self-enhancement may be affected based on the degree to which he or she concurrently values conservation or openness-to-change values. An adolescent high in self-enhancement and openness-to-change values may partake in more aggression and risk-taking behaviors, whereas an adolescent high on self-enhancement and conservation values may be more focused on excelling through traditional ways such as getting good grades at school, following school rules, and obeying parents.

In addition to the theoretical reasons, there is also a logical rationale. In everyday life, our decisions are not made based on of a single factor. Rather, behaviors are influenced by a range of motivations and potential consequences. Dodge, Asher, and Parkhurst (1989) argued that children must learn to coordinate numerous goals in a single situation and that part of social life is coordinating and managing competing goals. Thus, we argue that coordinating multiple values is commonplace even though researchers have treated them as mutually exclusive. By focusing on how the system of values influences behavior, we are able to capture the reality of the processes underlying adolescents' behavior.

In order to address this gap in the literature, the primary goal of this study was to identify groups of adolescents who share common value profiles based on the relative endorsement of the four dimensions of values using latent profile analysis (LPA). The traditional approach of utilizing variable-centered analyses, like multiple regression, assumes that a single set of averaged parameters can be estimated for all individuals within a sample. Unlike person-centered methods, variable-centered methods do not take into account that the sample may actually reflect subpopulations characterized by different distributions of a set of variables (Meyer & Morin, 2016), as is suggested with values in Schwartz's (1992) theory. In addition, the use of variable-centered methods becomes increasingly complicated as the number of independent variables increases. For example, a regression model predicting behavior from the four value dimensions would need to consider the four-,

three-, and two-way interactions in addition to the main effects. Accurate estimation of the parameters and detection of interactions would require a very large sample size and interpretation of the interactions would be difficult and complicated (Meyer & Morin, 2016).

LPA is a person-centered finite mixture model that identifies the probability that an individual would belong to a subgroup, or profile, of individuals who differ from one another based on a series of continuous indicators. LPA offers several advantages over other methods of grouping individuals, such as cluster analysis. Although both have the same goal, the most notable difference is that LPA is a model-based analysis which allows the specification and comparison of different models using several reliable indices of model fit in addition to theoretical considerations, rather than relying solely on the subjective judgment of the researcher (Meyer & Morin, 2016). LPA is typically an exploratory method in which the number of profiles is not determined a priori and must be determined by comparing fit statistics across models with a varying number of profiles. Pastor and colleagues have demonstrated the advantages of utilizing mixture models over multiple regression and cluster analyses with analyses involving multiple continuous predictors (Pastor, Barron, Miller, & Davis, 2007).

Based on Schwartz's (1992) organization of the value structure, which hypothesizes that some values will co-occur with adjacent values but not with opposing values (see Figure 1), it was hypothesized that four profiles would emerge: A *self-focused* profile high in self-enhancement and openness-to-change values; an *anxiety-free* profile high in openness-to-change and self-transcendence values; an *other-focused* profile high in self-transcendence and conservation values; and an *anxiety-based* profile high in conservation and self-enhancement values. Following the identification of value profiles, the second goal of the study was to distinguish the value profiles by examining their behavioral correlates. Hypotheses about value profiles groups were drawn from research on the bivariate relationships between values and behavior and the theoretical motivations underlying the value dimensions.

### Values and Behavior

According to Schwartz (1992), values correspond with behavior by motivating us to act in characteristic ways. Indeed, research has demonstrated

associations between values and a wide range of behaviors (e.g., Bardi & Schwartz, 2003; Benish-Weisman, 2015; Buchanan & Bardi, 2015; Pozzebon & Ashton, 2009; Schwartz & Butenko, 2014). Such studies have supported the theoretical structure of values, finding that motivationally congruent values (e.g., self-enhancement and openness-to-change) are related to similar behaviors and motivationally opposing values (e.g., self-enhancement and self-transcendence) are negatively related to the same behaviors. Although correlations between values and their corresponding behaviors tend to be small in magnitude, the pattern of relations among values and corresponding behaviors is systematic (Bardi & Schwartz, 2003; Schwartz & Butenko, 2014). The second goal of the study was to demonstrate support for the value profiles by examining how they were related to a range of behaviors. The behaviors, including aggression, prosocial behavior, leadership, and delinquency, were selected due to previous empirical support for distinguishing values and because these behaviors reflect a wide range of underlying motivations that should, in theory, reflect the spectrum of values and logically differentiate the value profiles.

**Aggression and prosocial behavior.** Most research examining the behavioral correlates of values have been conducted in adult samples using self-reports of behavior (e.g., Roccas & Sagiv, 2010) but comparatively less is known about values and behavior in adolescence. The research that has been done with adolescents has found that self-enhancement and openness-to-change values are positively associated with self- and peer-reported aggressive behavior. In contrast, self-transcendence values are negatively associated with aggressive behavior but positively associated with prosocial behavior (Benish-Weisman, 2015; Benish-Weisman & McDonald, 2015; Knafo et al., 2008; McDonald, Benish-Weisman, O'Brien, & Ungvary, 2015; Sagiv, Sverdlik, & Schwarz, 2011). Similarly, research that has examined social goals as broad trait-like motivations has found that agentic (self-focused) goals are positively related to aggression and communal (relationship-focused) goals are positively related to prosocial behavior (Caravita & Cillessen, 2012; Dawes & Xie, 2014; Ojanen, Grönroos, & Salmivalli, 2005). Others who have studied social goals with situation-based assessments, typically within conflict situations, also find that self-focused goals are related to aggressive behavior and relationship-focused goals are related to prosocial responses (e.g., Erdley & Asher, 1999; Rose & Asher, 1999).

Although openness-to-change values have been associated with aggression (e.g., Benish-Weisman & McDonald, 2015; Knafo et al., 2008), it is feasible that these associations are due to shared variance with self-enhancement values, as both of these values are focused on the self. Identifying profiles of values will allow the investigation of whether adolescents who are high in openness-to-change values, but are not high in self-enhancement values, are similarly aggressive as youth who are high in both self-enhancement and openness-to-change values. We hypothesized that adolescents with a self-focused profile (high in self-enhancement and openness-to-change values) would be high in aggression but low in prosocial behavior. In contrast, an anxiety-free group, that endorses openness-to-change values and self-transcendence values highly, was not expected to be high on aggressive behavior but may be high on prosocial behavior. An other-focused profile (high in self-transcendence and conservation) was expected to be low on aggressive behavior and high on prosocial behavior. Finally, we expected that an anxiety-based group may have the tendency to be aggressive because of their self-enhancement values, but that their conservation values may discount this tendency. Therefore, we hypothesized that an anxiety-based group would be neither highly aggressive nor highly prosocial. Finally, although we did not hypothesize that patterns would differ based on the form of aggression, hypotheses were explored using both direct and indirect aggression.

**Leadership.** To date, research has not investigated how values may be related to leadership behaviors in adolescence. Research about influential adolescents in the peer group suggests that there is a heterogeneity in the characteristics of adolescent leaders (Miller-Johnson et al., 2003; Rodkin, Farmer, Pearl, & Van Acker, 2000). Some influential youth are characterized by athleticism, strong academic performance, social competence, and prosocial behavior, while others are characterized as antisocial and "tough." These leaders are athletic, aggressive, disruptive, and have moderate academic performance (Rodkin et al., 2000). Thus, based on the literature about leadership in adolescence, we hypothesized that multiple value profile groups may be identified as leaders. Self-focused adolescents may fit the description of a "tough" leader due to their values associated with social dominance and openness to new experiences. A need for excitement combined with self-direction values, which emphasizes autonomy, control, and



independence may make adolescents attractive to have in charge and perceived as leaders by their peers. It is also feasible that the anxiety-free adolescents will be viewed as leaders by peers due to values that prioritize both the well-being of others and self-direction (self-transcendence and openness-to-change values).

**Delinquency.** Finally, we also hypothesized that self-focused adolescents may be the group who would partake in the most delinquent behavior. Based on research indicating that adolescent-limited delinquency is quite common in adolescence and is motivated by desires for status, power, and privilege (Moffitt, 1993), we hypothesized that adolescents who value power and self-direction, such as adolescents with the self-focused profile, would partake in the most delinquent behaviors. In addition, adolescents who value stimulation, making their own decisions, and enjoy pleasurable experiences (values reflected through openness-to-change) may also participate in delinquent behaviors. Thus, anxiety-free adolescents may also be on high delinquent behaviors.

### Culture and Gender

A third goal of the study was to explore how profiles predicted behaviors cross-culturally. Although the meaning of each value is uniform across cultures and contexts (Schwartz & Bardi, 2001), the manner in which values are expressed varies according to the cultural context and expectations regarding appropriate behavior (Roccas, 2005; Roccas & Sagiv, 2010). When a social context affords a greater range of possible behavioral responses due to loose norms or expectations, individual characteristics such as values may have a larger influence on behavior compared to a social context with more restrictive norms (de Kwaadsteniet, van Dijk, Wit, & de Cremer, 2006). As a result, the degree to which certain values relate to behavior may vary based on differences in the constraints on behavior across gender or cultural groups (Roccas, Schwartz, & Amit, 2010). For example, when there are greater constraints on aggression, as there are for females compared to males, there may be weaker associations between values and aggressive behavior. Similarly, individualistic cultures which emphasize competition and independence may have stronger associations between values and aggression compared with collectivistic cultures which constrain aggression with a greater emphasis on relationships with others and group cohesion (Oishi,

Schimmack, Diener, & Suh, 1998). Thus, gender and cultural/ethnic groups were explored as moderators of the relations between value profiles and behavior.

The study was conducted with four cultural/ethnic groups from two countries. From the southern United States, we sampled both European Americans and African Americans, and from Israel samples included Jewish (nonimmigrants) and Arab citizens of Israel. In the southern United States, the portion of the population that is African American ranges from 20% to 40% (U.S. Census Bureau, 2014) and approximately 86% of people in the South identify as Christian (Pew Research Center, 2015). Jewish Israelis comprise approximately 76% of the Israeli population (Israel Central Bureau of Statistics, 2009). Arab citizens of Israel, or Arab Israelis, are Palestinians whose families lived in what is now the State of Israel before its foundation. They comprise 20.2% of the Israeli population (Israel Central Bureau of Statistics, 2009) and a majority of them practice Islam (Horenczyk & Ben-Shalom, 2006). These four groups are interesting to consider because within each country the groups live in physical proximity but are relatively segregated in schooling and daily activities (Rabinowitz, 2001; Wright, Ellis, Holloway, & Wong, 2014).

## METHOD

### Participants

Participants included 884 eighth-grade adolescents from the United States and Israel. The sample consisted of 342 adolescents (111 European American, 231 African American; 48.92% male;  $M_{\text{age}} = 13.56$  years,  $SD = 0.65$ ) from the southern United States and 542 adolescents (322 Arab Israeli; 220 Jewish Israeli; 48.87% male;  $M_{\text{age}} = 13.78$  years,  $SD = 0.53$ ) living in urban and suburban areas of the north of Israel. The sample varied in socioeconomic status (SES). Approximately 80% of European American, 67% of Jewish Israeli, 49% of African American, and 31% of Arab Israeli adolescents reported that their mothers had college degrees. Regarding religious affiliation, 97% of the Arab Israeli adolescents reported being Muslim and 97% of the African American and 100% of the European American sample reported being Christian.

### Procedures

All procedures were approved by the institutional review boards at the authors' home institutions.

Consent forms were sent home to parents of eighth-grade students in participating schools. Over 78% of parents at each school gave consent for their child to participate. Over 95% of students whose parents consented to their participation also gave assent and completed all measures. For the most part, ethnic groups came from different schools. Jewish Israeli students were sampled from two schools and Arab Israeli students also came from two separate schools. European American students were recruited from one school and African American students attended a different school. Students whose parents consented to their children's participation (over 95%) completed surveys during group-administered data collection sessions under the supervision of research staff. In Israel, data were collected during one session, but in the United States data were collected during two sessions. For their participation, adolescents received small attractive incentives (novelty pens or pencils).

## Measures

**Values.** To assess values, participants completed the Portrait Values Questionnaire (PVQ; Schwartz et al., 2001). The PVQ has been used with children and adolescents (e.g., Knafo et al., 2008). The PVQ includes short verbal portraits of 40 people describing the person's goals, aspirations, or wishes, implicitly conveying the importance of a single value. For each portrait, participants are instructed to rate on a 6-point Likert scale (1 = *not like me at all* to 6 = *very much like me*) how similar the person depicted in the portrait is to them. Participants' values calculated as an average of items that fit each specific value. To control for response tendency, participants' responses were centered around their average response to all verbal portraits (Schwartz, 1992). The following subscale scores were calculated after this adjustment.

**Self-enhancement.** Self-enhancement values emphasize one's own interests, success, and dominance over others (e.g., "It is important for this person to be in charge and tell others what to do"; seven items,  $\alpha = .72$ ).

**Self-transcendence.** Self-transcendence values emphasize the concern for welfare and rights (e.g., "It is important for this person to help the people around him/her"; 10 items,  $\alpha = .80$ ).

**Openness-to-change.** Openness-to-change values emphasize stimulation and independence of thought, action, and feeling (e.g., "Thinking up new ideas and being creative is important to this

person. This person likes to do things in their own original way"; 10 items,  $\alpha = .78$ ).

**Conservation.** Conservation values emphasize order, self-restriction, preservation of the past, and resistance to change (e.g., "This person think people should follow the rules at all times, even while no one is watching"; 13 items,  $\alpha = .82$ ).

**Peer nominations of behavior.** Peer nominations (Asher & McDonald, 2009) were used to assess direct and indirect aggression, prosocial behavior, and leadership. Israeli students belong to one "home class" with a teacher assigned as the home-class teacher; group activities often involve the whole class (e.g., field trips), with a few shifts to other classes in specific subjects. In Israel, adolescents were given a roster listing the names of their classmates and were instructed to circle the names that fit each criterion. In the United States, adolescents were given a list of 35 randomly selected classmates. For each nomination, adolescents received a different random list and were instructed to select names from that list that fit each criterion. In both samples, only the names of adolescents who had permission to participate in the study were listed.

Three items were used to assess direct aggression (i.e., "starts fights," "says mean things," and "hits and pushes";  $\alpha = .90$ ). Three items were used to assess indirect aggression (i.e., "talks about kids behind their back," "spreads rumors," and "gossips or spreads rumors";  $\alpha = .82$ ). Three items assessed prosocial behavior: "cooperates," "helpful," and "kind";  $\alpha = .83$ . Leadership was assessed with three items (i.e., "Who is a good leader?" "Who does everyone listen to?," "Other kids like to have him/her in charge";  $\alpha = .78$ ). For all nominations, adolescents' scores were calculated by dividing the number of nominations each adolescent received by the total number of classmates who could have nominated the adolescent. The final scores for each behavior were standardized within all of the participating students within a class/team.

**Delinquency.** Participants responded to 30 items compiled from Baker's (1986) Adolescent Delinquency Measure and modifications from Kulik, Stein, and Sarbin (1968) and Nye and Short (1957). Items include content about delinquent activities (e.g., destroyed property, took something that did not belong to you, skipped school without a legitimate excuse) and parental defiance (e.g., shouted at your mother or father, defied parents' wishes). Participants responded to each items by

rating how frequently they had been involved in the activity or circumstance on a scale from 1 (*never*) to 5 (*very often*). The scale was then summed to create a total score for delinquent behavior.

## RESULTS

### Data Analysis Plan

First, a set of preliminary analyses were conducted to examine bivariate relations among the values and behavior. To address our main research questions, value profiles were identified using LPA with the four value dimensions used as profile predictors. In order to examine how the value profiles differed in values and behavioral dimensions, the manual three-step approach was used as outlined by Vermunt (2010) and Asparouhov and Muthén (2014). In this approach, after the best-fitting model has been identified, the most likely profile variable is created based on the latent profile class posterior distribution obtained during the initial LPA. In the third step, the most likely profile variable is used as a latent profile indicator with uncertainty rates fixed at the probabilities from step 2. The outcomes are included in the model and Wald equality of means tests are used to compare the value profiles on each independent variable. Lastly, exploratory analyses examining interactions of value profiles with gender and ethnicity were conducted using a 4 (Value profile)  $\times$  2 (Gender)  $\times$  4 (Cultural group) multivariate analysis of variance (MANOVA). Significant multivariate effects were explored with follow-up analyses of variance (ANOVAs); simple effects were tested with one-way ANOVAs for each group.

### Preliminary Analyses

*Correlations among values and behavior.* Means and standard deviations for values and behavior can be found in Table 1, along with correlations among the variables. Conservation values were negatively correlated with openness-to-change values and self-enhancement values but were unrelated to self-transcendence values. Openness-to-change values were negatively correlated with self-transcendence values and positively correlated with self-enhancement values. Self-transcendence values were negatively correlated with self-enhancement values.

Correlations between the value dimensions and behaviors tended to be small in magnitude ( $r_s < .25$ ), as had been found in other studies (e.g., Bardi & Schwartz, 2003). Conservation and self-transcendence values were negatively related to delinquency and indirect and direct aggression. Self-transcendence values were also negatively related to leadership. Openness-to-change and self-enhancement values were positively related to delinquency and indirect and direct aggression. Openness-to-change values were also positively related to leadership and self-enhancement values were negatively associated with prosocial behavior.

### Value Profiles

Using Schwartz's (1992) theory of values, our aim was to identify different patterns of value endorsement among the adolescents across the four higher order groups of values. In order to identify different patterns of endorsement, LPA was used.

In order to identify the number of profiles that best fit the data, a series of models were run in

TABLE 1  
Means, Standard Deviations, and Correlations Among Values and Behavioral Dimensions

	Mean	Min	Max	SD	1	2	3	4	5	6	7	8
1. ST	4.11	2.23	5.96	0.48	—							
2. SE	3.59	0.85	5.88	0.75	-.58**	—						
3. OP	4.29	2.59	6.13	0.53	-.41**	.19**	—					
4. CO	3.88	1.82	5.34	0.46	.05	-.52**	-.66**	—				
5. Direct Agg	-0.03	-1.62	4.53	0.87	-.24**	.25**	.15**	-.14**	—			
6. Indirect Agg	0.03	-1.26	3.69	0.85	-.15**	.16**	.16**	-.13**	.61**	—		
7. Prosocial	0.08	-1.91	2.75	0.86	.06	-.07*	-.05	.06	-.18**	-.01	—	
8. Leadership	0.06	-1.23	4.41	0.87	-.11**	.06	.09**	-.02	.16**	.27**	.65**	—
9. Delinquency	12.19	0.00	12.20	14.20	-.24**	.28**	.26**	-.23**	.32**	.17**	-.14**	.01

Note. ST = self-transcendence values; SE = self-enhancement values; OP = openness-to-change values; CO = conservation values; Direct Agg = direct aggression; Indirect Agg = indirect aggression.

\* $p < .05$ , two-tailed; \*\* $p < .01$ , two-tailed.

TABLE 2  
Latent Profile Analysis Model Fit

Classes	Log Likelihood	AIC	BIC	Entropy	LMR-LRT	<i>p</i>
1	-2,899.26	5,814.52	5,852.80	—	—	—
2	-2,654.07	5,334.13	5,396.33	0.68	476.35	<.01
3	-2,559.17	5,154.35	5,240.47	0.72	184.35	.01
4	-2,474.17	4,994.34	5,104.38	0.73	165.14	<.01
5	-2,429.942	4,915.88	5,049.85	0.74	85.92	.08
6	-2,389.34	4,844.68	5,002.57	0.75	78.88	.33

Note. Smaller log-likelihood values indicate better model fit. AIC = Akaike information criterion; BIC = Bayesian information criterion; LMR-LRT = Lo-Mendell-Rubin likelihood ratio test. The AIC and BIC are indices used to compare the fit of two or more models estimated from the same data set and smaller values are preferred. Entropy values close to 1 indicate clear delineation of classes. The Lo-Mendell-Rubin likelihood ratio test compares the model to a model with 1 less class. *p*-Values < .05 indicate that the model is significantly better than a model with 1 fewer classes.

Mplus7 (Muthén & Muthén, 1998–2012), each with an additional profile, up to six profiles. The models were evaluated according to the recommended indices of model fit (see Table 2) including the Bayesian information criteria, with a lower value indicating a better fitting model (Schwarz, 1978), relative entropy, and the Lo-Mendell-Rubin likelihood ratios test (LMR-LRT). Entropy ranges from 0 to 1, with values closer to 1 indicating greater classification utility; there is no accepted cut-off value for determining model fit from entropy. Entropy values are best used in judging model fit by comparing them to different models generated from the same data (Pastor et al., 2007). The LMR-LRT

tests whether a model with *K* number of profiles is a statistically significant better fit for the data compared to a model with *K* – 1 profiles (Lo, Mendell, & Rubin, 2001). Although AIC and BIC were lower for the models with five and six profiles, entropy was only marginally greater and the LMR-LRT test indicated that the five-profile model was not a significantly better fit compared to the four-profile model. Moreover, the four-profile model was a theoretically better fit and more parsimonious. As a result, the model with four profiles was selected.

Values for each profile can be found in Table 3 and are depicted in Figure 2. The profiles were named according to the bipolar dimensions in

TABLE 3  
Differences Among Value Profiles

	<i>Anxiety-free</i>		<i>Other-focused</i>		<i>Self-focused</i>		<i>Undifferentiated</i>		Wald $\chi^2$ (3)
	<i>n</i> = 108		<i>n</i> = 220		<i>n</i> = 127		<i>n</i> = 429		
	Mean	SE	Mean	SE	Mean	SE	Mean	SE	
ST	4.53 <sup>a</sup>	0.03	4.50 <sup>a</sup>	0.02	3.45 <sup>c</sup>	0.04	3.97 <sup>b</sup>	0.02	959.15 <sup>***</sup>
SE	3.26 <sup>c</sup>	0.05	2.75 <sup>d</sup>	0.03	4.60 <sup>a</sup>	0.04	3.84 <sup>b</sup>	0.03	1,399.82 <sup>***</sup>
OP	4.79 <sup>b</sup>	0.04	3.83 <sup>d</sup>	0.03	4.98 <sup>a</sup>	0.04	4.19 <sup>c</sup>	0.02	861.79 <sup>***</sup>
CO	3.37 <sup>c</sup>	0.03	4.35 <sup>a</sup>	0.02	3.32 <sup>c</sup>	0.04	3.93 <sup>b</sup>	0.02	1,151.76 <sup>***</sup>
Direct Agg	-0.45 <sup>c</sup>	0.45	-0.55 <sup>d</sup>	0.02	0.72 <sup>a</sup>	0.17	0.13 <sup>b</sup>	0.08	284.78 <sup>***</sup>
Indirect Agg	-0.38 <sup>b</sup>	0.09	-0.58 <sup>b</sup>	0.04	0.49 <sup>a</sup>	0.13	0.25 <sup>a</sup>	0.06	266.03 <sup>***</sup>
Prosocial	0.11	0.15	0.03	0.09	-0.22	0.11	0.18	0.07	7.58
Leadership	-0.43 <sup>b</sup>	0.09	-0.37 <sup>b</sup>	0.13	0.53 <sup>a</sup>	0.30	0.26 <sup>a</sup>	0.11	68.90 <sup>***</sup>
Delinquency	16.96 <sup>b</sup>	2.61	4.04 <sup>d</sup>	0.37	30.60 <sup>a</sup>	2.28	9.06 <sup>c</sup>	0.56	198.37 <sup>***</sup>
Males (46.72%)	37 (34.26%)		79 (35.90%)		70 (55.12%)		227 (52.91%)		
Jewish Israeli (24.89%)	45 (41.67%)		43 (19.54%)		29 (22.83%)		103 (24.01%)		
Arab Israeli (36.43%)	41 (37.96%)		97 (44.09%)		22 (17.32%)		162 (37.76%)		
African American (26.13%)	10 (9.25%)		46 (20.91%)		54 (42.52%)		121 (28.21%)		
European American (12.56%)	12 (11.11%)		34 (15.45%)		22 (17.32%)		43 (10.02%)		

Note. Means with different superscripts differ at *p* < .05. ST = self-transcendence values; SE = self-enhancement values; OP = openness-to-change values; CO = conservation values; Direct Agg = direct aggression; Indirect Agg = indirect aggression. \*\*\**p* < .001, two-tailed.



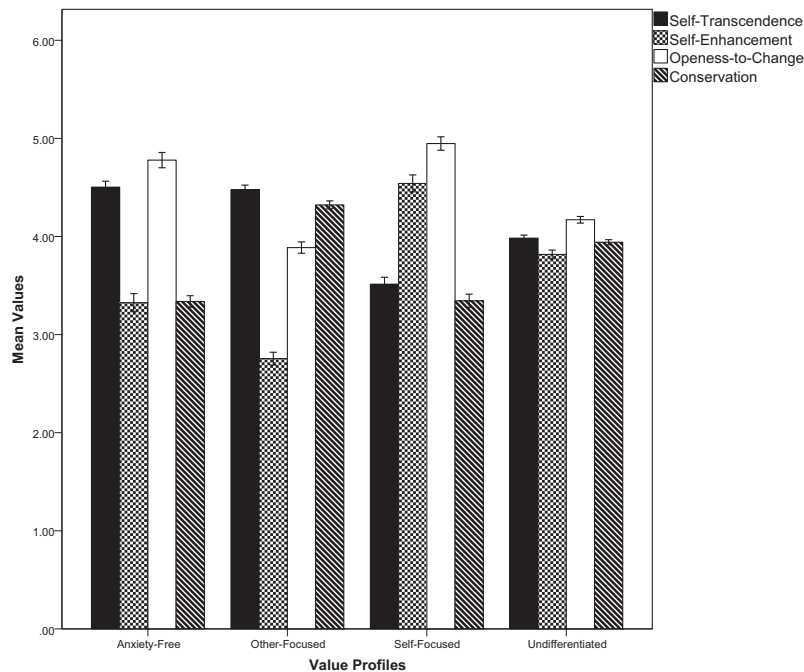


FIGURE 2 Value endorsement by value profile membership.

value theory. The first profile was labeled *anxiety-free* (12.22%) due to relatively high levels of openness-to-change and self-transcendence values compared to the other profiles. The second profile was labeled *other-focused* (24.89%) due to its high levels of conservation and self-transcendence values relative to the other profiles. The third profile was identified as *self-focused* (14.37%) due to high levels of openness-to-change and self-enhancement values compared to the other profiles. Lastly, the fourth profile was labeled *undifferentiated* (48.53%) due to the relatively consistent levels of endorsement across the four values.

To test the validity of the profile labels, Wald equality of means tests were run in order to test whether the value dimensions differed among the four profiles (Table 3). All profiles differed on the four value dimensions, with the exception that conservation values did not differ between the self-focused and anxiety-free profile, and self-transcendence values did not differ for the anxiety-free and undifferentiated profiles.

### Distinguishing Value Profiles Using Behavior

The second goal of the study was to examine whether the value profiles differed on behavioral dimensions. As described above, the behavioral dimensions were included in the third step of the

four-class mixture model as auxiliary outcome variables. Equality tests of means were run to compare each value profile across the five behavioral dimensions (Table 3).

**Direct aggression.** Equality of means tests indicated significant differences between the values profiles on direct aggression (see Table 3). Follow-up pairwise comparisons indicated that the self-focused profile was the most directly aggressive followed by the undifferentiated profile and the anxiety-free profile. The other-focused profile was the least directly aggressive.

**Indirect aggression.** As seen in Table 3, equality of means tests indicated significant differences between the value profiles on indirect aggression. Pairwise comparisons revealed that the self-focused and undifferentiated profiles were more indirectly aggressive than the anxiety-free and other-focused profiles.

**Prosocial behavior.** Equality of means tests indicated a nonsignificant effect for prosocial behavior.

**Leadership.** Equality of means tests indicated significant differences between the value profiles on leadership. Pairwise comparisons indicated that

the self-focused and undifferentiated profiles were viewed as leaders significantly more than the anxiety-free and other-focused profiles.

**Delinquency.** Finally, there were also significant differences among profiles for self-reported delinquency. Pairwise comparisons revealed that the self-focused profile reported significantly more delinquent behavior than all other profiles. The anxiety-free group reported more delinquent behavior than the undifferentiated profile and the other-focused profile. Lastly, the undifferentiated profile reported more delinquent behavior than the other-focused profile.

### Exploratory Analyses: Gender and Culture as Moderators

Chi-square analyses were also conducted to compare profiles on gender and cultural group composition (Table 3). Analyses revealed that profiles were differentially composed of boys and girls ( $\chi^2 = 27.28, p < .001$ ). There were a greater number of females in the anxiety-free and other-focused profiles than was expected by chance. Profiles also differed in composition by cultural group ( $\chi^2 = 65.60, p < .001$ ). There were a greater number of Jewish Israeli adolescents in the anxiety-free profile, but a fewer number of African Americans than was expected by chance. There were a greater number of Arab Israelis in the other-focused profile than was expected by chance. Lastly, there were a fewer number of Arab Israelis and a greater number of African Americans in the self-focused profile group than was expected by chance.

In order to explore whether gender and culture moderated the way value profiles were related to behavior, individuals were assigned to a value profile based on their most likely group membership obtained in step 1 of the LPA. A 4 (Value profile)  $\times$  2 (Gender)  $\times$  4 (Cultural group) MANOVA was run with the five behavioral dimensions as dependent variables. Results revealed a nonsignificant Value profile  $\times$  Gender  $\times$  Cultural group interaction, Wilks'  $\lambda = 0.95, p = .46$  and a nonsignificant Value profile  $\times$  Cultural group interaction, Wilks'  $\lambda = 0.95, p = .50$ . However, there was a significant Value profile  $\times$  Gender interaction, Wilks'  $\lambda = 0.96, p = .003, \eta_p^2 = .014$ . Follow-up univariate tests revealed nonsignificant Value profile  $\times$  Gender interactions for indirect aggression,  $F(3, 827) = 0.86, p = .46$ , prosocial behavior,  $F(3, 827) = 2.11, p = .10$ , leadership,  $F(3, 827) = 1.90, p = .13$ , and delinquency,  $F(3, 827) = 1.93, p = .12$ .

However, there was a significant Value profile  $\times$  Gender interaction for direct aggression,  $F(3, 827) = 4.47, p = .004, \eta_p^2 = .02$ . Tukey's post hoc tests revealed that for females, the self-focused profile ( $M = -0.03, SD = 0.84$ ) and the undifferentiated profile ( $M = -0.22, SD = 0.68$ ) were significantly more directly aggressive than the other-focused profile ( $M = -0.44, SD = 0.47$ ). No significant differences emerged between the anxiety-free profile ( $M = -0.28, SD = 0.58$ ) and the other profiles. For males, the self-focused profile ( $M = 0.76, SD = 1.33$ ) was significantly more directly aggressive than the undifferentiated ( $M = 0.28, SD = 0.94$ ), other-focused ( $M = -0.17, SD = 0.63$ ), and anxiety-free ( $M = 0.18, SD = 0.92$ ) profiles. The undifferentiated profile group was also significantly more directly aggressive than the other-focused profile.

### DISCUSSION

Previous research has identified behavioral correlates of values (e.g., Bardi & Schwartz, 2003; Benish-Weisman, 2015; McDonald et al., 2015), but with a few exceptions (e.g., Lee et al., 2011; Nonis & Swift, 2001) has largely ignored the relative importance a person places on all values and how this profile of values may predict behavior. Thus, the primary goals of this study were (1) to use LPA to identify groups of adolescents who endorse values in characteristic ways and (2) to examine the behavioral characteristics of these groups of adolescents. The third, exploratory goal of this study was to examine gender and cultural differences in value profiles and investigate whether there were differences in how profiles were associated with behavior among American and Israeli youth.

Schwartz's theory of values argues that, although the content and structure of values are considered universal, the relative importance of each value may differ across groups and cultures (Bardi et al., 2014; Schwartz, 1992). Previous research that has compared value endorsement across cultures has generally found that self-transcendence values are endorsed at high levels, while self-enhancement values are endorsed at low levels (Lee & Soutar, 2010; Schwartz & Bardi, 2001). Although there was variation in the absolute endorsement of values across cultures, for every group in this study openness-to-change and self-transcendence values were endorsed at the highest levels, whereas self-enhancement values were endorsed at the lowest levels. The high endorsement of openness-to-change values in this

adolescent sample may not be surprising as Gouveia et al. (2015) found adolescents endorsed openness-to-change values more than adults. As a primary task of adolescence is identity formation (Erikson, 1968), high openness-to-change values may reflect a desire to explore new interests or hobbies. Furthermore, risk-taking behaviors and delinquency increase for many during adolescence (Steinberg, 2004) which may reflect, in part, this high endorsement of openness-to-change values.

Regarding our primary goals, we found that utilizing LPA was successful in identifying profiles that were congruent with the theoretical structure of Schwartz's (1992) theory. We hypothesized that four profiles would emerge reflecting the bipolar value dimensions: anxiety-based, anxiety-free, self-focused, and other-focused value profiles. This hypothesis was partially supported. A total of four profiles emerged, three of which corresponded to the hypothesized profiles: a self-focused profile high in self-enhancement and openness-to-change values, an other-focused profile high in self-transcendence and conservation values, and an anxiety-free profile high in self-transcendence and openness-to-change values.

The fourth and largest profile that emerged was labeled as undifferentiated due to its moderate endorsement of all four values. Although the undifferentiated profile consists of approximately half of the sample, the size of the profile does not reflect issues with the analysis. LPA identifies unobserved subgroups of participants who differ from one another based on their endorsement of a set of continuous variables within a distribution; the size of each profile is dependent on the heterogeneity of responses on a set of variables. Large profiles are not uncommon. Research employing LPA has identified similarly sized or larger profiles (e.g., Muthén, 2004; Nonis & Swift, 2001; Pastor et al., 2007).

It is possible that the undifferentiated value profile is especially large due to the developmental time frame of adolescence. Among the milestones that occur during adolescence, identity exploration is among the most important. Adolescents' increasing autonomy allows them to explore what is important to them and seek new opportunities, which may be reflected in how they prioritize their values. However, many adolescents in eighth grade may have not yet taken the time to think about what is important to them and what they value. Although the priority of values has been demonstrated to change with age, change as a result of conscious reflection may be driven by identity

exploration and achievement (Bardi & Goodwin, 2011; Bardi et al., 2014; Gouveia et al., 2015). Compared to adolescents who have achieved their identity, adolescents in identity moratorium or diffusion may not distinguish among values as strongly and these adolescents may occupy the undifferentiated profile. To our knowledge, only one study has explored values as they related to identity status (Knafo & Schwartz, 2004). Knafo and Schwartz (2004) found that adolescents who were exploring or had achieved their identity had more accurate perceptions of their parents' values compared to adolescents in diffusion or foreclosure. These findings suggest that there are differences in the way adolescents understand or navigate values based on their identity status. Future research would benefit from examining how identity status predicts value profile membership and how profile membership changes as a result of identity status over time. We hypothesize that the undifferentiated profile would consist largely of adolescents in moratorium or diffusion. As the adolescents in moratorium begin to achieve their identity, it is likely that they will transition to another group characterized by differences among values.

Contrary to our hypothesis, an anxiety-based value profile was not identified. An anxiety-based value profile would be characterized by the disproportionate endorsement of conservation values and self-enhancement values. However, it may be that the undifferentiated group partly reflects a subdued anxiety-based profile. Although this group did not endorse conservation and self-enhancement values more than they endorsed openness-to-change and self-transcendence values, when compared to the other profiles the undifferentiated profile endorsed conservation more than self-focused and anxiety-free youth and they endorsed self-enhancement more than other-focused and anxiety-free adolescents. Schwartz and Bardi (2001) suggested that although there are differences in the level of endorsement across cultural groups, there may be a universal hierarchy of values such that values are endorsed in a similar rank order across cultures. For instance, they noted that benevolence values were endorsed more than other values across cultures, but that there were mean level differences in the endorsement across cultures. Therefore, it may be that a universal hierarchy of values among these adolescents, which prioritizes openness and self-transcendence, prevented a group from emerging that endorsed conservation and self-enhancement values at higher levels.

In addition, although the value endorsement of the undifferentiated group suggests that they have not yet decided on which values are most important to them, their behavioral characteristics appear more defined. Although the self-focused group was the most directly aggressive, the undifferentiated group was comparatively more indirectly and directly aggressive and viewed as higher on leadership compared to the anxiety-free and the other-focused groups. They were also less delinquent than the self-focused and anxiety-free groups. In a way, this pattern of behavior may be what one would expect of an anxiety-based group, which may use more aggression with their peers, without breaking social rules, as a means to meet needs for achievement or to maintain the social hierarchy.

However, based on value endorsement alone, we are hesitant to characterize the undifferentiated group as anxiety-based. Instead, it may be that some of the youth in this group have values that may be more anxiety-based, whereas others are still likely to be "finding themselves" and deciding on which values matter most to them. Thus, we suggest that this group is heterogeneous. If followed developmentally, we may find that youth in this group transition to other value profiles. We may also find that a more distinct anxiety-based value profile would emerge later in adulthood when conservation values increase in importance and openness-to-change values decrease (Gouveia et al., 2015). It may also be that future studies using samples from East Asian countries, which are more collectivistic and place greater emphasis on customs and traditions, would find an anxiety-based profile (Ho, 1994).

The second primary goal of the study was to examine behavioral characteristics of the value profiles. It was hypothesized that the self-focused profile would be directly and indirectly aggressive and the other-focused and anxiety-free profiles would be low on aggressive behaviors. These hypotheses were partially supported. Self-focused boys were more directly aggressive than the other groups of boys. For girls, the self-focused and undifferentiated groups were more directly aggressive than the other-focused group. For both boys and girls, the self-focused group was more indirectly aggressive than the anxiety-free and other-focused profile groups. These results align with previous correlational research which has found that self-enhancement values are positively correlated with aggression and self-transcendence values are negatively correlated with aggression in adolescence (e.g., Knafo et al., 2008; McDonald et al., 2015).

In addition, it is noteworthy that, despite also being high on openness-to-change values, the anxiety-free adolescents were not high on direct and indirect aggression. This is in slight contrast to past research which has found positive associations between openness-to-change values and aggression (e.g., Knafo et al., 2008). Our findings suggest that this effect might only be true when combined with self-enhancement values. Failing to consider the entire system of values may suggest that openness-to-change values also drive aggression. The use of value profiles illustrates that this is not the case.

In regard to prosocial behavior, it was hypothesized that the self-focused profile would be low, while the anxiety-free and other-focused profiles would be high. Our hypotheses were not supported; no significant differences in prosocial behavior emerged. It is interesting to note that none of the profiles were especially high on prosocial behavior, which was measured with peer nominations of "cooperative," "kind," and "helpful." In contrast to aggressive behavior or leadership, it may be more difficult for adolescents to identify peers who are particularly high on prosocial behavior because it is normative to act in this way. In comparison, it may be easier to identify peers who are low on this dimension. Other studies have also found only small associations between values and highly normative behaviors (Bardi & Schwartz, 2003), because adolescents are expected to perform these behaviors regardless of their values. Future research would do well to use other indices of prosocial behavior, such as self-reports of community activism, volunteerism, and altruistic behaviors. It may be that these behaviors distinguish between the profiles better than the nominations used herein.

Research on popularity and influence in the peer group has found that influential adolescents may be a heterogeneous group, characterized as either "tough" or prosocial youth (Rodkin et al., 2000). Consequently, it was hypothesized that the self-focused and anxiety-free profiles would be high on leadership, reflecting "tough" and prosocial leaders, respectively. These hypotheses were only partially supported. Results indicated that the self-focused and undifferentiated profiles were rated higher on leadership compared to the other-focused and anxiety-free adolescents. The emergence of the self-focused profile as leaders may be because self-focused adolescents are more "in line" with perceptions of influence and leadership compared to anxiety-free or other-focused adolescents. Our findings support research that suggests that



aggressive behavior becomes increasingly associated with perceived popularity during adolescence (e.g., Cillessen & Mayeux, 2004; LaFontana & Cillessen, 2010). Perhaps self-enhancement values are necessary for adolescents to emerge as leaders. Self-enhancement values emphasize power and dominance and may promote motivations to be in charge and lead. Furthermore, it may be that peers' perceptions of leadership in adolescence may be driven more by power and dominance (self-enhancement values) compared to self-direction (openness-to-change values) or concern for others (self-transcendence values).

Contrary to hypotheses, the anxiety-free profile was not rated high on leadership by their peers. This is surprising given past research has identified a nonaggressive group of adolescents that are viewed as socially prominent (Rodkin, Farmer, Pearl, & Van Acker, 2006; Rodkin et al., 2000). Although an anxiety-free profile did not emerge as high on leadership in this study, we suggest that individuals other than those who are self-focused may be seen as leaders in other cultural contexts or at other ages. For instance, there may be a larger portion of other-focused leaders in more collectivistic cultures in which it may be more highly valued to be humble and focused on promoting group functioning rather than individual functioning. The values associated with leadership may also differ in adulthood compared to adolescence. Future research should continue to examine how patterns of value priorities are related to leadership in other settings and in other age groups.

Lastly, we examined the associations between the value profiles and delinquent behavior. It was hypothesized that the self-focused and anxiety-free profiles may be relatively high on delinquent behaviors, while the other-focused profile would be low on delinquent behaviors. These hypotheses were supported. Results indicated that the self-focused profile reported the most delinquent behavior, followed by the anxiety-free profile. The other-focused youth reported the least delinquent behavior compared to the other profiles. These results are congruent with research that suggests that adolescent-limited delinquency may be motivated by a desire for mature status and power (Moffitt, 1993), which may be reflected in the values of self-focused adolescents. Moreover, the fact that the anxiety-free profile was also high on delinquent behavior suggests that openness-to-change values may place youth at greater risk for delinquent behavior, regardless of their endorsement of self-transcendence values. Although both the self-

focused and anxiety-free profiles were high on delinquent behavior, it is possible that they participated in different types of delinquent activity. For example, the anxiety-free profile may partake in forms of delinquency that are status offenses (e.g., underage drinking and smoking) or could be perceived as victimless (e.g., marijuana use), but may not commit more delinquent activities that hurt other people (e.g., stealing, damaging property). Future research should examine group differences on different forms of delinquency.

It will also be useful for future studies to study value profiles and behavior longitudinally. The cross-sectional design prevented us from examining if and how value profile membership changes over time and what factors, such as identity status, might predict change. Additionally, research in other developmental time periods is necessary in order to identify how value profiles change with age and whether other value profiles, such as an anxiety-based profile, is present in other cohorts. In addition, while we worked under the theoretical assumption that values influence behavior, it is also feasible that behavior influences values. For example, values may attract an adolescent's attention to situations that are congruent with their values, providing opportunities to act in specific ways (Benish-Weisman, 2015). Conversely, behaviors may cause a change in values, particularly during adolescence when peer influence is greatest. Future work that examines profiles and behaviors over time will be able to document stability and change in value profiles as well as the direction of influence between values and behavior. Will self-focused adolescents continue to prioritize self-enhancement values, or will they exhibit age-related trends in the decrease of self-enhancement and increase of self-transcendence values (Gouveia et al., 2015)?

Previous research has found cultural differences in the endorsement of values (Schwartz & Bardi, 2001) and there was reason to believe that value profiles would be related to behavior differently depending on cultural constraints on behavior (Roccas et al., 2010). Overall, there were few differences in the way that the values profiles were related to behaviors among the different cultural groups, suggesting that the ways in which values motivate behavior are more universal than culturally dependent. However, we should also note that our cultural groups also differed in SES, were from different neighborhoods, and attended separate schools. Thus, we cannot disentangle culture, SES, neighborhood, and school effects. We recommend

the continued study of how culture or context may affect the relationships between values and behavior, especially in other more collectivistic cultures which may yield differences in both the structure of value profiles and their behavioral associations.

The current study focused on both problematic and positive interpersonal behaviors; however, future research would do well to include a wider variety of behaviors, particularly those that may be more influenced by conservation and self-transcendence values. For example, community or religious involvement, altruistic behavior, academic engagement, and internalizing problems may further differentiate the profiles. There may also be differences among the profiles in their relationships with parents. For instance, would other-focused adolescents have warm and open relationships with parents, whereas self-focused adolescents' relationships, might be characterized by more conflict? Examining a broader range of characteristics will continue to illustrate the utility of considering value profiles.

In conclusion, results supported the theoretical structure of values and indicated key differences between the value profiles. Schwartz (1992) argued for the importance of considering how values form an ordered system of priorities, but to date most research has employed variable-centered approaches that fail to consider this. The present study supports Schwartz's (1992) hypothesized relations among values and demonstrates how they are behaviorally distinct. With the exception of the undifferentiated profile, the value profiles reflected the theoretical relations among the values, and the behavioral dimensions demonstrated differences between the profiles. Findings also highlight the importance of considering a person's value profile before making conclusions regarding their behavior. For instance, past research has demonstrated positive relations between aggression and openness-to-change values (Benish-Weisman & McDonald, 2015; Knafo et al., 2008). However, despite both self-focused and anxiety-free adolescents endorsing openness-to-change values at high levels, only the self-focused profile was rated highly on aggressive behavior. Failure to consider an anxiety-free adolescents' complete value profile might lead someone to predict that they would be aggressive when in reality they were not. Similarly, based on their endorsement of self-transcendence values, we may predict that anxiety-free adolescents would be low on delinquent behavior. However, our findings suggest that openness-to-change values may underlie delinquent behavior, regardless of endorsement

of other values. It is important for subsequent research on values to employ similar person-centered methods to capture the theoretical structure of values and better explain how the system of values is related to behavior.

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