

Longitudinal Links Between Self-Esteem and the Importance of Self-Direction Values During Adolescence



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Abstract

Self-direction values (e.g., independence, curiosity) are among the most important values to people worldwide. However, it is not clear what encourages their development. We propose that self-esteem may be associated with the development of self-direction values because feelings of self-worth provide the confidence needed for independent pursuit. As both independence and self-esteem develop during adolescence, we examined longitudinal associations between self-direction values and self-esteem in adolescents. Study 1 ($N_{T1} = 527$, 55.6% girls, $M_{age} = 16.24$, $SD = .71$, $N_{T2} = 198$) included two annual waves of data collection. Study 2 ($N_{overall} = 486$, 55.6% girls, initial $M_{age} = 13.76$, $SD = .51$, $N_{T1} = 418$, $N_{T2} = 420$, $N_{T3} = 426$, $N_{T4} = 387$) included four annual waves. In the studies, a cross-lagged panel model and a random-intercept cross-lagged panel model showed that adolescents who feel worthy are more likely to experience an increase in the importance of values of independent thoughts and actions relative to other values. Partial support was found for the opposite direction of association. The results were replicated across longitudinal studies of varying duration and across measures. We discuss the results in light of theories of self-esteem, values, and specifically the development of self-direction values.

Keywords

self-esteem, self-direction, values, longitudinal study, adolescence

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Self-direction values are consistently among the most important values for individuals worldwide (Schwartz, 2012; Schwartz & Bardi, 2001). Persons holding these values generally wish to direct their lives independently, make their own decisions, think creatively, and explore and investigate out of curiosity. Some see self-direction values as vital for the prosperity of society as a whole, as they foster individuals' investment in the group's tasks and the innovativeness required to meet new challenges (Schwartz & Bardi, 2001).

But how do self-direction values become important? There has been a marked increase of research on change in value importance over time (e.g., Bardi et al., 2014; Daniel et al., 2021; Daniel & Benish-Weisman, 2019), but we still have relatively little knowledge of how value importance, including self-direction values, develop in the first place. Specifically, we know little about the individual

or social antecedents of self-direction value importance.

Self-esteem provides an individual with the confidence required to set independent goals (reviewed in Baumeister & Vohs, 2018). Hence, in this study, we propose an association between self-esteem and the development of the importance of self-direction

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value. We investigate the dynamic links between these concepts in two longitudinal studies of adolescents to determine the direction of the effects over time.

Self-Direction Values During Adolescence

Values are broad goals that guide individuals in their lives. Although all values describe important end states, individuals vary in which values they prioritize (Schwartz, 1992). Schwartz (1992) defined 10 broad values that can be organized according to their underlying motivations. Some values share compatible motivations, while others conflict (Schwartz, 2012). For example, self-direction values share underlying motivations with universalism and stimulation values, but their motivations conflict with those of security values. This structure of the associations between 10 basic values has been replicated in hundreds of samples across cultures (Schwartz, 2012).

The values identified by Schwartz, including self-direction, have been found among children and adolescents (Döring et al., 2016; Lee et al., 2017). Youths' values form a structure of underlying relations similar to that of adults, and they are intra-individually quite stable over time (Cieciuch et al., 2016; Daniel & Benish-Weisman, 2019). Values are associated with attitudes and behaviors, both within time and longitudinally (Benish-Weisman, 2015; Berson & Oreg, 2016; Knafo et al., 2008; Vecchione et al., 2016). For example, studies have found self-direction value importance predicts learning orientation positively (Levontin & Bardi, 2019) and adolescents' avoidance of ambiguity negatively (Daniel, 2016).

As noted above, self-direction values are highly important world-wide (Schwartz & Bardi, 2001) and are linked with important life outcomes related to independence and novelty. For example, individuals who prioritize self-direction are more likely to innovate (Eva et al., 2017) or learn new topics or skills (Skimina et al., 2019), and they tend to be more educated (Schwartz, 2005). They are also more likely to set learning goals (Levontin & Bardi, 2019) conducive to success (see meta-analysis in Payne et al., 2007).

Self-direction values and their underlying aspiration for independence and experience change (see Schwartz, 2012) play a special role during adolescence, a time marked by cognitive, emotional, and social changes. Adolescents are in the process of forming their identity, and as part of this process, they explore possible value priorities, life styles, and decisions (Crocetti, 2017; Meeus, 2011). To do that, they strive for differentiation from their parents (Koepke & Denissen, 2012); they are more likely to take risks to explore multiple options for behavior (Braams et al., 2015); and insist on making independent decisions on their private matters, and to delegitimize parental control (Smetana, 2011). The overall outcome is a substantial focus on individual autonomy across contexts. This focus may be

associated with increase in priority of values of openness to change, and especially self-direction values.

It is no wonder, then, that in a sample of Polish early adolescents, openness to change values (including self-direction) were found to increase in importance until they became the most important values in the value hierarchy (Cieciuch et al., 2016). Similarly, in a sample of Jewish and Arab Israeli mid-adolescents, self-direction values were found to be among the most important values in the value hierarchy, and they even increased further in importance in the Jewish group (Daniel & Benish-Weisman, 2019). However, there are variations in this process of development, as in the second cultural group in the study, the Arab-Israeli group, no increase was found in importance of self-direction values (Daniel & Benish-Weisman, 2019). Past studies have not investigated the individual-level antecedents of self-direction value importance in adolescence.

Self-Esteem

Self-esteem is an individual's subjective evaluation of themselves, more specifically, of their worth as a person (Donnellan et al., 2011). Self-esteem denotes a positive attitude toward and acceptance of the self (Rosenberg, 1965). Self-esteem undergoes substantial changes during the developmental period of childhood and adolescence. Recent studies have found children typically increase in self-esteem gradually between the ages of four and early adulthood (Orth et al., 2018; Orth & Robins, 2014), with the gradual mastery of new skills and tasks and increasing levels of autonomy. While continuing to increase, the development of self-esteem slows down and is then replaced by stability, during early adolescence, as children enter the early stages of puberty and face the often difficult transition to junior high school (Orth et al., 2018)

Individuals with higher self-esteem are more likely to think critically and make their own decisions rather than follow the ideas of others (Baumeister & Vohs, 2018). One of the most robust outcomes of high self-esteem is an increase in the motivated independent pursuit of one's own initiatives (Baumeister et al., 2003; Baumeister & Vohs, 2018). Individuals with high self-esteem have confidence in their skills and judgments. This confidence, in turn, helps them to seek challenges. Taken together, these findings suggest that high self-esteem is likely to lead to greater motivation for independent thought and action. It therefore makes sense to expect that self-esteem will predict a longitudinal increase in prioritizing self-direction values. It is possible that self-direction value importance may also lead to increases in self-esteem, yet the theoretical support for that is relatively minor. Specifically, the only theoretical support for this direction is that as values motivate behavior, self-directed behavior may lead to increased self-esteem.

However, self-esteem is likely to only increase if the person pursuing independent action has succeeded in mastering the challenge posed (Moore & Smith, 2018), and as independent action does not always lead to success, this direction of causality is likely to be weaker.

Previous studies have rarely examined the associations between self-esteem and the importance of self-direction values, and have mostly been conducted among adults. In one previous cross-sectional study, the importance of self-direction values was positively correlated with self-esteem in a small sample of Finnish adults ($r = .30$, $p < .05$), and in a meta-analysis of eight samples of European emerging adults ($r = .11$, $p < .05$), but not in a meta-analysis of five samples of European adolescents ($r = .02$) (Lönnqvist et al., 2009).

One published study, the majority of its respondents adults, has investigated the longitudinal relations between self-esteem and value importance (Fetvadjev & He, 2019). In this previous study, self-esteem and the importance of self-direction values were bi-directionally and positively correlated. Nevertheless, this study found that all value types (self-direction and others) positively correlated with self-esteem. This finding is surprising considering that multiple previous studies established that the behaviors, attitudes and personality aspects that are positively associated with any specific value importance, are negatively associated with the value importance of opposing values in the circle (Benish-Weisman, 2015; Levontin & Bardi, 2019; Vecchione et al., 2016).

The Present Study

We hypothesized a directional positive association between self-esteem and later self-direction. We left the question of the reverse association open due to lack of conclusive literature. The research hypotheses were not pre-registered, yet founded on theory and previous results, as detailed above. These longitudinal dynamics are key among adolescents, as both the need for independence associated with self-direction and the need for the feeling of competence and mastery associated with self-esteem are of substantial importance during this developmental period (e.g., Koepke & Denissen, 2012; Smetana, 2011) and also because the two are positively correlated in adulthood (Fetvadjev & He, 2019; Lönnqvist et al., 2009).

To increase our confidence in the results, the hypotheses were tested in two separate annual longitudinal studies. In the first study, a sample of Israeli adolescents, who were, on average, 16 years of age at Time 1, reported their self-esteem and value importance twice over a year, and the model was estimated using a cross-lagged panel model (see Kenny & Harackiewicz, 1979). We examined whether individuals with relatively high levels of self-esteem/self-direction value importance are likely to increase in

their relative level of self-direction value importance/self-esteem, respectively (i.e., rank order association).

Values are relatively stable constructs, changing only gradually over long periods of time among adults (Schuster et al., 2019), but more so among children and adolescents, as documented in different cultures (Cieciuch et al., 2016; Daniel & Benish-Weisman, 2019; Vecchione et al., 2019). Similarly, self-esteem shows high stability over time, increasing with age (Orth & Robins, 2014). Due to the stability, capturing value importance or self-esteem changes may require long-term follow-up. We therefore added Study 2, as a replication of the Study 1 results over three years and at four measurement times to capture the long process of development.

In the second study, a sample of Jewish and Arab Israeli adolescents, were studied starting at 13 years of age. We applied a within-individual design (using a random intercept cross-lagged panel model; see Hamaker et al., 2015). Using this model, we asked whether self-esteem/self-direction value importance predicts a later increase in the level of self-direction value importance/self-esteem, respectively.

Study 1

Method

Participants. The study included 527 adolescents from three public schools in Israel, part of the public, non-religious school stream, including Jewish majority group members who were either born in Israel or whose parents immigrated as children. All students in the 10th and 11th grades were approached and then contacted in the following school year. Mean age at T1 was $M = 16.24$, $SD = .71$. Mean age at T2 was $M = 16.99$, $SD = .68$. Girls comprised 56% of the sample at T1, and 59.4% at T2. Participants reported their mothers' and fathers' highest level of education: elementary, 3%, 5.4%; high school, 63.3%, 61.5%; university, 26.9%, 25.7%, for mothers and fathers, respectively. Education information was missing for 7.4% of mothers and 6.5% of fathers.

Previous papers utilized parts of the data (one time point, a subsample, or different variables; citation omitted for blind review). The current research question and analyses were never published.

Procedure. We sent consent forms through schools at each time point to parents of all adolescents in the relevant grade level, and over 95% agreed to participate by not returning the forms (passive consent). We collected the data from 2009 to 2010. Participants provided assent and answered the questionnaire during 45-minute class sessions, with the assistance of trained research assistants. The study was conducted in accordance with the requirements of the University's and the Ministry of Education's ethical review boards.

Measures. *The Importance of Self-Direction Values.* Students' value importance were assessed using a 25-item version (Musiol & Boehnke, 2013; Schiefer et al., 2010) of the Portrait Values Questionnaire (PVQ; Schwartz, 2003). The 25-item PVQ has been shown to be suitable for use with adolescents (Benish-Weisman, 2015; Döring et al., 2015). It includes short verbal descriptions of 25 people's broad goals and aspirations, each implicitly indicating the importance of one of the 10 values. The described persons are the same gender as the participant. Three items measure the importance of self-direction values: "Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way"; "It is important to him/her to make his/her own decisions about what he/she does. He/she likes to be free and not depend on others"; "He/she thinks it's important to be interested in things. He/she likes to be curious and to try to understand all sorts of things." Adolescents are asked to rate how similar they are to the person described in the portrait, on a 6-point Likert scale (from 1 = *not like me at all* to 6 = *very much like me*). We inferred respondents' self-direction value importance from their self-reported similarity to people described in terms of self-direction values. We created a mean score across the items that measure self-direction values. Internal consistency of the value was ($\alpha_{T1} = .50$, $\alpha_{T2} = .54$, similar to previous findings with adults and the full scale, see Schwartz, 2005).

Self-Esteem. We measured self-esteem using five positively phrased Rosenberg Self-Esteem Scale items (Rosenberg, 1965). A mean score was calculated based on ratings of agreement with such sentences as "I feel that I have a number of good qualities" on a 7-point Likert scale (from 7 = *strongly agree* to 1 = *strongly disagree*; $\alpha_{T1} = .81$, $\alpha_{T2} = .81$).

Control Variables. Gender and parents' education were controlled for statistically, as they are related to values (e.g., Schwartz & Rubel, 2005; Sortheix et al., 2019). They were assessed via participants' reports.

Treatment of Missing Data. Of the adolescents, $N = 198$ (35%) participated at the second data point. The high percentage of missing data resulted from very strict bureaucratic procedures required by the Ministry of Education that prevented researchers from approaching all adolescents for a second time. Therefore, the response rate was external and not participant dependent. We compared the adolescents who were present and missing at T2 and found them similar in demographic variables (gender and parents' education level $\chi^2(1) = .79$, $p = .37$; $\chi^2(5) = 2.88$, $p = .72$, respectively), as well as in their self-direction value importance and self-esteem ($t(565) = 1.33$, $p = .18$, $t(565) = -.89$, $p = .37$, respectively). The adolescents who took part at both T1 and T2 were slightly older ($Mean = 16.33$ $SD = .67$) than those who took part only at T1 ($Mean = 16.19$, $SD = .72$, $t(566) = -2.37$, $p = .018$).

Syntax for the analysis is presented in Supplemental Material # 1. Unsurprisingly, Little's MCAR test was not significant, $\chi^2(10) = 10.20$, $p = .423$, indicating that the variables were missing completely at random. We used the Full Information Maximum Likelihood method to account for missing data using Mplus 8 (Muthén & Muthén, 2017).

Analysis Plan. We established time equivalence of the self-esteem and the self-direction value measurement using Longitudinal Invariance test across time of factor loadings and intercepts (see Muthén & Muthén, 2010). Invariance was identified when $\Delta\chi^2$ was not significant.

To test our hypotheses on the longitudinal relations between self-esteem and self-direction value importance, we performed cross-lagged panel modeling (Kenny & Harackiewicz, 1979). The model included the autoregressive paths for self-esteem and self-direction, estimating the associations between self-esteem at time T and self-esteem at time T + 1, as well as the associations between self-direction at time T and self-direction at time T + 1. The model also included the cross-lagged associations between self-esteem at time T and self-direction at time T + 1, and the associations between self-direction at time T and self-esteem at time T + 1. Lastly, it included the correlations of the constructs within each time point. The model estimated was fully saturated, and thus model fit was not estimated.

The model controlled for the participant's gender and parental education at both time points. Moreover, we controlled for mean response to all value items. Values operate in a system of values, and situation interpretation and actions are likely the product of not just one value but the system of values as a whole. Thus, the importance of a value in light of the importance of all other values is more informative than the raw value scores (Schwartz, 1992). Moreover, value research is typically conducted while taking account of mean response, thus this practice will be comparable to the literature (e.g. Feather, 1995; Maio & Olson, 1995). Analyses with no control variables are presented in Supplemental Material #3. Analysis of other value types are presented in Supplemental Material #4.

Results

Tests of measurement longitudinal invariance of self-esteem and self-direction indicated factor loading and intercept invariance (self-esteem: $\Delta\chi^2(4) = 3.61$, $p = .46$; $\Delta\chi^2(4) = 6.01$, $p = .19$. Self-direction: $\Delta\chi^2(2) = 1.27$, $p = .53$; $\Delta\chi^2(2) = .98$, $p = .61$, respectively). The results indicated that the items loaded similarly across time for both constructs, and intercepts were equal across time points. Thus, it appears that both self-direction and self-esteem add equivalent meaning across ages.

Table 1 presents the mean scores and the correlations of the study variables, not accounting for the longitudinal nature of the variables. As the table shows, the importance of self-direction values related concurrently and positively to self-esteem at T2, but no association was found for T1.

Next, we conducted the cross-lagged panel model, to account for changes in the rank order of individuals. As seen in Figure 1 (Supplemental Material #2), we found T1 but no T2 concurrent association. There was moderate longitudinal stability in both the importance of self-direction values and in self-esteem.

Most importantly, self-esteem predicted a longitudinal increase in self-direction ($d = .20$) value priority over other values but self-direction value priority did not predict a later increase in self-esteem ($d = .07$). We wanted to compare the cross-lagged predictions from self-esteem to self-direction and vice versa. Fixing the self-esteem prediction of self-direction to be equal to the self-direction prediction of self-esteem indicated

Table 1. Means, Standard Deviations, and Correlations of the Main Variables in Study 1.

Variable	M	SD	1	2	3
Self-direction values					
1. T1	4.25	.65			
2. T2	4.29	.58	.35**		
Self-esteem					
3. T1	6.14	.99	-.00	.10*	
4. T2	6.16	.95	-.02	.13**	.57** ⁸
Age					
5. T1	16.24	.71			
6. T2	16.99	.68			

Note. $N_{T1} = 527$, 56% girls, $N_{T2} = 198$, 59.4% girls.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

no decrease in fit $\Delta\chi^2(1) = .47$, $p = .49$. Thus, the two directions of effect could not be proven different from one another.

Discussion

Study 1’s longitudinal results suggest an association in the development of self-esteem and self-direction value importance, as adolescents who reported feeling more worthy than others were more likely to increase their priority of self-direction values relative to other values, than others in the sample. In contrast, self-direction value priority did not significantly predict a later increase in self-esteem. However, the disparity between the two paths was not significant, and a model with no control variables presented in Supplemental Material #3 indicated a bi-directional association.

The longitudinal results shed new light over the within-time associations. Within-time zero-order correlations showed an association in the second, but not first time points. This association was eliminated in the full model, once the cross-lagged association was found. The results indicate that associations in late adolescence may be traced back to a developmental process taking place during adolescence, and thus suggest a sensitive period for the development of self-esteem and self-direction value importance.

We examined this question in a short-term longitudinal study, spanning two time points over a year. It is important to study the association across longer time periods and for a wider age span. Developmental processes may be gradual and thus should be captured across adolescence, not within a particular year of development. The two time points allow for an estimation of the developmental process using a cross-lagged panel model. Study of four time points

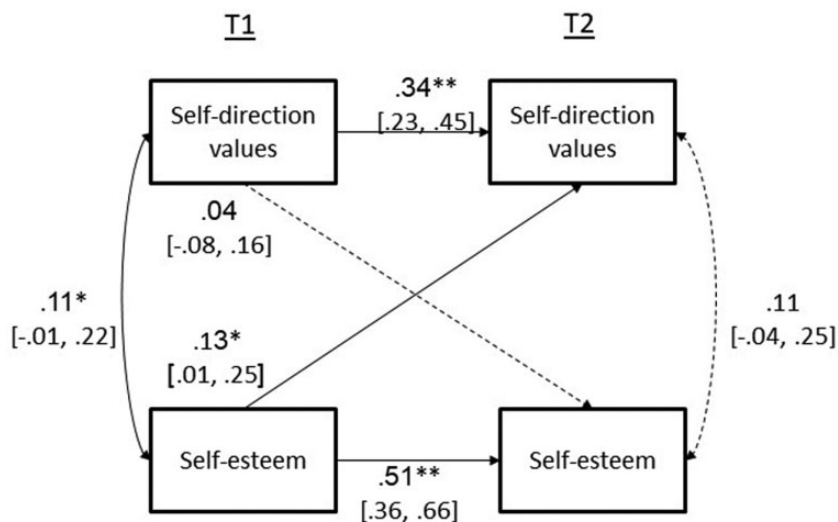


Figure 1. Cross-lagged panel model illustrating within person association between self-direction values (SD) and self esteem (SE) across four annual times in Study 1. Regression β 's and 95% confidence internals are presented. Solid lines represent estimates where 95% CIs do not include zero. Analysis is conducted with control for gender, parent education, and mean response across values.
 * $p < .05$, ** $p < .01$, a 95%.

allows for the estimation of a more advanced model, testing associations between variables within individuals.

Despite its strengths, Study 1 was limited in a number of respects. First, there was a high rate of attrition between T1 and T2. This attrition was not participant related, but a result of requirements of the Ministry of Education. Thus, it was not likely to result in biased findings. Nevertheless, the high level of attrition reduced the size of the sample in T2, and the statistical power. Second, Study 1 measured the concepts of self-direction and self-esteem using short surveys (self-direction value importance was measured using the PVQ25; self-esteem was measured using the five positive items of the Rosenberg Self-Esteem scale). Using the full scales can better represent the constructs of interest, by increasing equivalence of self-esteem over time, or reliability of measurement of self-direction values, both low in this study. Finally, Study 1 included only one cultural group, Jewish majority members in Israel. Self-esteem and the importance of self-direction values develop within a cultural setting and thus may differ across cultures. While there are small cultural differences in the importance of self-direction values (Fischer & Schwartz, 2011), studies show differences in levels of self-esteem (Schmitt & Allik, 2005) and its development (Hamamura & Septarini, 2017). The question is whether differences in the mean levels of self-esteem and value importance translate into differences in processes of co-development in the constructs. Study 2 was constructed to address the limitations, as well as replicate the results.

Study 2

Study 2 was designed to replicate Study 1 results while overcoming its limitations: including full scales, four time points, and two cultural groups (Jewish majority members and Arab minority members in Israel). The long-term nature of the study allowed us to estimate a random-intercept cross-lagged panel model (Hamaker et al., 2015).

Method

Participants. The study included 511 adolescents from four public schools in Israel. Public schools in Israel belong to one of two ethnic streams, Jewish or Arab, with each group learning in its native language. We excluded 25 adolescents from the analyses as they did not provide gender, ethnicity, or education information, resulting in an overall $N=486$. Of the students in the sample, 44.2% were Jewish, and 55.4% were Arab citizens of Israel; 55.6% were girls. Participants completed the measures in their native language (Hebrew or Arabic). The students were approached in their schools annually between the 8th and 11th grades over four years (T1–T4), and their initial age

was $M_{\text{age}} = 13.76$, $SD = .51$. The highest level of education in the first time point as were reported by participants were elementary, 3.1%, 5.1%; high school, 36.6%, 42.1%; university, 32.1%, 24.5%, for mothers and fathers, respectively. Education information was missing for 28.2% of mothers and 28.4% of fathers.

Syntax for analysis is presented in Supplemental Material #5. Previous papers utilized parts of the data (one time point, a subsample, or different variables; citation omitted for blind review). The current research question and analyses were never published.

Procedure. We approached seven public schools in the northern district of Israel by telephone; four agreed to participate. We sent consent forms at each time point to parents of all adolescents in the relevant grade level, and over 95% agreed to participate by passive agreement (i.e., by not returning the forms). All participants in the grade level were approached, regardless of participation at a previous time point. We collected the data each year between February and March 2011–2014. The procedure was similar to the one described in Study 1.

Measures. Self-Direction Values. Students' values were assessed using the full 40-item version of the Portrait Values Questionnaire (PVQ; Schwartz, 2003). The questionnaire is described in the Method section of Study 1. The importance of self-direction values was measured with four items: "Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way"; "It is important to him/her to make his/her own decisions about what he/she does. He/she likes to be free to plan and to choose his/her activities for himself"; "He/she thinks it's important to be interested in things. He/she likes to be curious and to try to understand all sorts of things"; "It is important to him/her to be independent. He/she likes to rely on himself/herself". Internal consistency of the values was $\alpha_{T1} = .68$, $\alpha_{T2} = .67$; $\alpha_{T3} = .66$, $\alpha_{T4} = .74$ and is comparable to what was found with adults (Schwartz, 2005).

Self-Esteem. We measured self-esteem using the 10-item Rosenberg Self-Esteem Scale, including positively and negatively worded items (Rosenberg, 1965). The questionnaire is described in the Method section of Study 1 ($\alpha_{T1} = .76$, $\alpha_{T2} = .84$; $\alpha_{T3} = .85$, $\alpha_{T4} = .75$).

Demographic and Control Variables. Ethnicity, gender, and parents' education were based on the participants' reports.

Treatment of Missing Data. In Study 2, 86.7% of the participants took part at three or four of the four measurement points. We included adolescents who participated in at least one data measurement point: 8th grade, $N=418$; 9th grade, $N=420$; 10th grade, $N=426$; 11th grade, $N=387$. We compared the adolescents who were present and missing at T4 and found no significant differences between them for

any of the demographic variables (i.e., gender, ethnicity, fathers' and mothers' education level, $\chi^2(1) = 2.32, p = .13$; $\chi^2(1) = .001, p = .99$; $\chi^2(2) = 1.49, p = .48$, $\chi^2(2) = .56, p = .76$, respectively) or for self-direction value importance and self-esteem ($t(425) = .31, p = .76$; $t(421) = -.74, p = .46$, respectively).

The percentage of missing data ranged between 0% and 17.2%. Little's MCAR test was significant, $\chi^2(13) = 43.12, p > .001$, indicating the variables were not missing completely at random. We used the Full Information Maximum Likelihood method to account for missing data using Mplus 8 (Muthén & Muthén, 2017).

Analysis Plan. As in Study 1, we estimated longitudinal invariance of the constructs across time (Muthén & Muthén, 2010). Moreover, we established invariance across cultures using Multigroup Confirmatory Factor Analysis (Ciecuch et al., 2014) searching for configural, metric, and scalar invariance across times. Invariance was identified when $\Delta RMSEA < .015$, $\Delta CFI = .01$ (Ciecuch et al., 2014).

We used a random intercepts cross-lagged panel model to model the data (Hamaker et al., 2015). The current model added to the previous cross-lagged panel model an assumption of trait-like and enduring individual differences in the constructs. In this multilevel model, time points were nested within adolescents, and the variance was separated into within-adolescent and between-adolescent components. That is, we examined how self-direction value importance related to self-esteem over time by separating the between-person factor, which is time-invariant, and the within-person factor, which was the focus of the analysis; see Figure 2 (Lim et al., 2016). In this model, the autoregressive parameters estimated the amount of within-adolescent continuity

through time. The lagged parameters estimate whether a within-person deviation from the trait level of a variable has a prospective effect on change in the within-person deviation from the trait level of another variable (Hamaker et al., 2015; Orth et al., 2020). We tested the directionality of the paths between values and self-esteem by comparing a model in which cross-lagged paths (self-esteem predicting self-direction and self-direction predicting self-esteem) were restricted to be equal, to a model allowing them to vary freely. The models were estimated with control for gender and a mean score of parental education over the four time points. We also controlled for mean response on all 10 values, to understand the unique prediction of self-direction value importance over and above all other values. Again, we additionally analyzed models with no control variables, and the results are presented in Supplemental Material #7. Models for other value types are presented in Supplemental Material #8.

A combination of indices was used to determine the adequacy of the model fit, including the comparative fit index (*CFI*; Hu & Bentler, 1999), root mean square error of approximation (*RMSEA*; Kline, 2011), and standardized root-mean-square residuals (*SRMR*; Hu & Bentler, 1999). Consistent with the literature, models resulting in a *CFI* > .95, *RMSEA* < .06 and *SRMR* < .06 were considered as showing an excellent fit, while models resulting in *CFI* > .90, *RMSEA* < .08 and *SRMR* < .09 were considered as showing an adequate fit (Schermelleh-Engel et al., 2003).

We used the χ^2 difference test to compare this model to an alternative model, in which all paths were constrained to equality across time (e.g., continuity in self-direction between T1 and T2 is equal to continuity in self-direction between T2 and T3, and between T3 and T4). To examine cultural differences (i.e., Jewish majority, Israeli Arab), we compared two

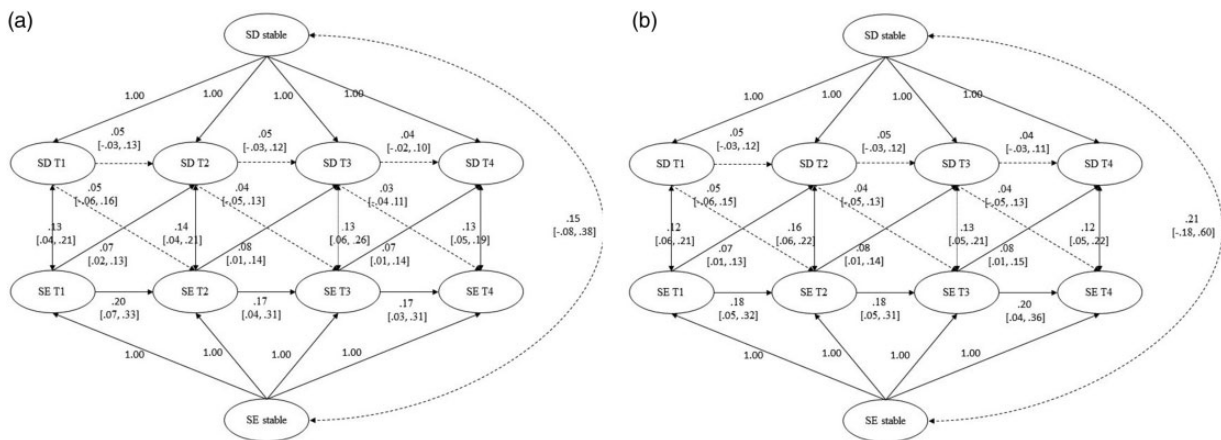


Figure 2. Random intercepts, cross-lagged panel model illustrating within person association between self-direction values (SD) and self-esteem (SE) across four annual times, controlling for between person differences. Regression β 's and 95% confidence intervals are presented. Solid lines represent estimates where 95% CIs do not include zero. Analysis is conducted with control for gender, parent education, and mean response across values. The model is restricted to equality across cultural groups. Pathways constrained to 1.00 to isolate between-person factor. Panel A = Jewish Majority. Panel B = Arab Israelis.

models, both estimating the two groups simultaneously; in the first, the paths were restricted to equality between the cultural groups (e.g., continuity in self-direction between T1 and T2 is equal in the Jewish majority and Israeli Arab groups) and in the second, the paths were free to vary.

Results

First, we estimated measurement longitudinal invariance. Self-esteem factor loadings varied over time $\Delta\chi^2(27) = 42.72, p = .03$. Partial equivalence tests indicated item 3 factor loading varied by time, and a model with this item free was equivalent to a free model $\Delta\chi^2(24) = 35.52, p = .06$. Intercepts also varied over time $\Delta\chi^2(27) = 85.43, p < .001$. A partial model indicated that intercepts of items 1, 8, and 3 varied over time $\Delta\chi^2(18) = 27.58, p = .07$. Self-direction factor loadings and intercepts were invariant over time $\Delta\chi^2(9) = 9.58, p = .39$; $\Delta\chi^2(9) = 13.23, p = .02$, respectively.

Table 2 presents the mean scores and the correlations of the study variables. As the table shows, self-direction value importance related positively to self-esteem within time for T1, T2, and T4. The association at T3 was not significant.

Next, we took two preliminary steps for the estimation of the longitudinal models. First, we tested whether the model paths varied by cultural group. The results pointed to equivalence of the models across cultures $\Delta\chi^2(5) = 2.75, p = .74$. Second, we tested whether the model paths varied by time $\Delta\chi^2(11) = 15.49, p = .16$. The results indicated the same model applied across cultures and time points, and these restrictions were applied in the results described below.

Finally, the full model fit the data very well ($CFI = .993, RMSEA = .024, SRMR = .056$). Figure 2 (Supplemental material #6) presents the

results for the path model of the longitudinal associations between self-direction value importance and self-esteem. As the figure indicates, there were positive associations within time between self-direction value importance and self-esteem at T1-4. The results also showed moderate continuity in self-esteem during adolescence.

As hypothesized, when an individual's self-esteem was high (relative to their self-esteem at other time points), it related to an increase in the importance of self-direction values ($d_1 = .31, d_2 = .33, d_3 = .33$) but not vice versa ($d_1 = .08, d_2 = .06, d_3 = .07$). Comparison to an alternative model in which the two directions of effects were constrained to equality (self-esteem prediction of self-direction is equal to self-direction prediction of self-esteem), indicated a decrease in fit $\Delta\chi^2(1) = 4.54, p = .03$. Thus, there is direct evidence for a uni-directional, and not a bi-directional association.

Discussion

Study 2's results suggest a within-person association between self-esteem and an increase in the importance of self-direction values over time. The more individuals felt worthy as persons the more important their values independence and creativity became later on. In Study 2, we found conclusive evidence in support of a unidirectional association, as the paths in the two directions varied significantly, and a model with no control variables produced unidirectional associations (see Supplemental Material # 7), as did the main analyses. These results were replicated in two cultures, and across a longer period of development, compared to Study 1.

Moderate continuity in self-esteem and self-direction value importance echo past results documenting test-retest associations over long periods of time during adolescence (Orth & Robins, 2014) and

Table 2. Means, Standard Deviations, and Correlations of the Main Variables in Study 2.

Variable	M	SD	1	2	3	4	5	6	7
Self-direction values									
1. T1	4.30	.60							
2. T2	4.33	.58	.21**						
3. T3	4.40	.58	.21**	.34**					
4. T4	4.40	.58	.24**	.25**	.39**				
Self-esteem									
5. T1	3.22	.48	.16**	.06	.05	.05			
6. T2	3.27	.54	.18**	.12*	.10*	.09	.62**		
7. T3	3.21	.56	.14**	.04	.06	.14**	.44**	.57**	
8. T4	3.21	.57	.12**	.08	.13*	.20**	.40**	.51**	.55**
Age									
9. T1	13.76	.52							
10. T2	14.59	.52							
11. T3	15.65	.55							
12. T4	16.40	.49							

Note. $N_{\text{overall}} = 486$, 55.4% girls, $N_{T1} = 438, N_{T2} = 448, N_{T3} = 445, N_{T4} = 389$.

* $p < .05$. ** $p < .01$.

suggest that self-esteem is already a rather stable individual characteristic at this young age. It also replicates past studies documenting moderate stability in values during adolescence (Vecchione et al., 2019)

General Discussion

This study provides the first longitudinal evidence for the role of self-esteem in the development of prioritizing self-direction values during adolescence. We found evidence in line with the idea that high self-esteem contributes to the development of self-direction. Prioritizing self-direction values over other values did not predict increases in self-esteem. The results were replicated in two longitudinal samples of mid-adolescence, over one year and over three years, across measurements and cultures. The results were consistent at the between- and within-individual level. Thus, an increase in self-esteem in comparison with others in the sample, and an increase in self-esteem in comparison to the self's level at other time points, were both associated with respective increases in self-direction value importance. The results were consistent and therefore can be considered robust.

The findings of the two studies are unique in their revelation of the development of and relationship between adolescents' self-esteem and the prioritization of self-direction values. Self-direction value importance, and to some extent self-esteem as well, undergo change and renegotiation during adolescence (Daniel & Benish-Weisman, 2019; Orth et al., 2018) probably because of adolescents' increasing need for autonomy and control over their own lives (Koepeke & Denissen, 2012; Smetana, 2011). The results of the two studies suggest that these two developmental processes are related.

Most of the literature on value development has focused on the role of factors in the social environment, such as parental behaviors and values (Barni et al., 2011; Döring et al., 2017), schools (Berson & Oreg, 2016), and friends (Benish-Weisman et al., 2019; Daniel et al., 2016). Only a few studies have looked at the role of factors within the person, such as moral emotions and cognition (Daniel et al., 2014, 2016) or behavioral tendencies (Vecchione et al., 2016). Our two linked studies represent one of the first attempts to predict value development longitudinally using within-person characteristics.

In the area of self-esteem, past studies have focused on the role of self-esteem in directing individual differences in behavior. They found that self-esteem was related to behaviors of initiation and independent action within different life contexts, such as at work and the social contexts (e.g., Buhrmester et al., 1988; Cameron et al., 2013; LePine & Van Dyne, 1998; Wang & Hu, 2018). Self-confidence has been linked with achievement and learning goals, both of which are associated with increased risk-taking and independence (Liem et al., 2008; Payne et al., 2007). Based on

our results, we suggest that individuals with high self-esteem not only behave in a self-initiated way but also come to prioritize self-direction values across contexts of their lives. Thus, they mark independence, control over their life, creativity, and curiosity as goals to pursue in various life areas. As values have previously been shown to direct behavior (Arieli et al., 2014; Sagiv et al., 2011), these particular value priorities may be the reason for their self-initiated behaviors. Future studies could test the role of the importance of self-direction values in mediating the relations between self-esteem and autonomous behaviors.

Our studies are not the first longitudinal studies examining the dynamic links between self-esteem and the importance of self-direction values. One previous study investigated these associations in a sample that contained mainly adults (Fetvadjiev & He, 2019). This previous study used a values measure that was not based on the Schwartz (1992) theory and extracted items to represent the Schwartz values contents. This study found bi-directional longitudinal effects between the importance of self-direction values and self-esteem. The reason for the differences may be due to different analysis choices. Unlike this past study, we controlled for the personal mean of values. Indeed, when we did not employ this control, we obtained a bi-directional longitudinal association between self-esteem and values in one of our two samples, presented in the supplemental materials. Controlling for the personal mean across all value items was recommended by Schwartz (1992, 2012; see He & van de Vijver, 2015, for consistent yet weak effect of scale use across measures), and is often used and typically results with findings that are more in line with the values circle (see Parks-Leduc et al., 2015). The theoretical rationale for employing this control is that values exist in a system, and the whole value circle takes part in affecting interpretations and behaviors, as any behavior is relevant to conflicting values. For example, the choice to pursue independence in the context of request for compliance is relevant both for self-direction and for conformity values. Hence, the crucial aspect of values in affecting outcomes is not only how important one value is to the individual, but how important this value is to the individual compared to the rest of the individual's values, namely the value priority beyond other values. This is how we operationalized values in our analyses, and the results align with our interpretation. However, as there are alternative approaches, we present the findings without control for mean answer on the value scale in the Supplemental Material (#3 and #7).

We argue that the association between self-esteem and self-direction values takes place within the context of the value system. Moreover, it takes place within the context of other variables as well. For example, religiosity is negatively correlated with the importance of self-direction values within time

(see, e.g., Saroglou et al., 2004). It would be interesting to see if our results differ for populations of varying religious devotion, as higher levels of religious devotion may block the development of the importance of self-direction values despite an increase in self-esteem.

The null findings regarding the role of prioritizing self-direction in self-esteem development may be because an important antecedent of self-esteem is success or failure in tasks, including others' evaluations of one's success or failure (Moore & Smith, 2018). Independent aspirations and behavior may lead to increases in self-esteem if they result in success of the independent pursuits. They may be unrelated, or negatively related to self-esteem changes in contexts of failure in such fulfilment. Future studies may investigate such moderation of the association.

Strengths, Limitations, and Future Directions

The conjoined studies have a number of substantial strengths. First, they examined the longitudinal association between self-esteem and prioritizing self-direction values, taking an important step forward by directly measuring both between- and within-individual development over time. In addition, the use of a longitudinal sample and a cross-lagged panel design allowed inferences on the direction of effect. However, this type of design does not permit interpretation of causality in the associations between the variables. It is still possible that unmeasured variables that co-vary with the importance of self-direction values and self-esteem were responsible for the measured relations. For example, shared genetic influences may account for the development of both concepts (Schermer et al., 2011; Uzefovsky et al., 2016). Experimental manipulations, such as school interventions to promote self-esteem among adolescents (Haney & Durlak, 1998), may be used to investigate the causal role of the variables in development.

Second, the studies demonstrated robust effects. The effects were similar in two different longitudinal samples, across three years, in two cultures, using short and long measures of the same concepts. In the face of the replicability crisis, these results offer strong evidence for the validity of the conclusions.

A limitation of the studies was their reliance on self-report data to measure both self-direction value importance and self-esteem. Self-report data can be subject to social desirability bias. However, values are almost exclusively measured using self-reports because of their inherently subjective and internal nature. Moreover, social desirability has been shown to be a personality trait that is meaningfully related to value importance, not a bias in the reporting of values (Schwartz et al., 1997). Similarly, self-esteem is a measure of an individual's perspective on the self. It is thus most accurately measured using self-reports. That said, future studies may explore the use of



self-esteem measures less susceptible to self-report bias, such as implicit self-esteem.

Overall, the studies' strengths outweigh their limitations. In this novel work, we investigated the associations between self-direction value importance and self-esteem among adolescents. We found that adolescents' self-esteem was associated with an increase in prioritizing self-direction values over time, but the opposite direction of effect (from self-direction to self-esteem) was not found. The findings suggest that self-esteem is a developmental precursor of the prioritization of self-direction values.

Author Note

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Data Accessibility Statement

  The study data and analysis scripts used for this as well as a list of previous studies using this dataset for other purposes can be accessed at the Supplemental Material. Study measures are openly available.

Declaration of Conflicting Interests


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Supplemental Material

Supplemental material for this article is available online.

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