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**Self-Determination Theory and the Role of Political Interest in Adolescents'  
Sociopolitical Development**

Silvia Russo & Håkan Stattin

Abstract

In this study we adopted an agentic perspective and used self-determination theory to analyze the role of political interest in youth's sociopolitical development. Inspired by this theoretical framework, we identified indicators of the needs for autonomy, relatedness, and competence within the political sphere. We followed two age cohorts (Swedish 13- and 16-year-olds) over one year, with a total of 1,992 adolescents, who are at a crucial age for sociopolitical development. Results from autoregressive structural cross-lagged models indicated that political interest predicted significant increases in autonomy, relatedness, and competence over one year, but that these psychological needs did not predict a change in political interest over the same time period. The findings speak in favor of an agentic perspective, suggesting that political interest can serve as a basis for youth's political development.

*Keywords:* political interest; longitudinal design; adolescence; self-determination theory

In this study, we adopted an agentic perspective and used a unifying theoretical framework, self-determination theory (Deci & Ryan, 2000), to analyze adolescents' sociopolitical development over one year. We focused on the role of political interest since it is a key prognostic factor for political and civic activity (Verba, Schlozman, & Brady, 1995). Consistent with this, virtually every study aimed at explaining political engagement has included political interest among its main determinants. However, theoretical arguments explaining the role of political interest in young people's political development are still less well developed. We suggested and tested the idea that youth's political interest acts as a motivational force for behaviors that satisfy the basic psychological needs for autonomy, relatedness, and competence within the political sphere.

### **Youth's Agency in Political Development**

Psychological theorists consider adolescence a crucial period for sociopolitical development (Sherrod, Torney-Purta, & Flanagan, 2010). Adolescence is regarded as a period of transition during which young people face the tasks of exploring and consolidating identity (Erikson, 1968), and of developing independence of thought (Flanagan & Christens, 2011). Adolescence is the time for exploration in a variety of fields, and politics is not an exceptional one. During this period, youth consolidate social responsibility (e.g., Wray-Lake & Syvertsen, 2011), develop a political identity (e.g., Yates & Youniss, 1998), and start to engage in political and civic activities (e.g., Flanagan, 2013; Levy, Solomon, & Collet-Gildard, 2016; Manganelli, Lucidi, & Alivernini, 2015). Overall, a variety of studies have confirmed the importance of this life period for youth sociopolitical development.

Some researchers focusing on adolescents' civic and political development have presented a view that goes beyond the internalization model of political socialization, which has tended to explain youth's political development on the basis of the unidirectional influences of the social environment. For example, Flanagan and Christens (2011) claimed

that young people are agents of social change and should be regarded as assets to their community; similarly, Yates and Youniss (1998) suggested that young people are reflective agents who interpret the options and opportunities that they encounter. This agentic perspective is in line with the most recent theories in developmental psychology, highlighting a view of individuals as active participants in their environment (e.g., Sameroff, 2009). In this study, we utilized this agentic perspective to analyze the role played by political interest in adolescents' political development.

The idea that youth's political interest can influence their own civic and political development has been tackled mainly in two areas of research. The first deals with civic and political discussions within the family. McDevitt (2006) suggested a model of developmental provocation, according to which young people who are interested in political issues will develop a sense of political agency at home. Once they are stimulated by some external factor, such as school civic education, they will want to initiate political discussion at home with their parents, who, in turn, will be prompted to strengthen their own political competence as preparation for future conversations. A series of empirical studies evaluating the consequences of participating in Kids Voting— a set of activities in a school curriculum dealing with issues related to voting in a democracy – supported this idea (McDevitt & Chaffee, 1998, 2000). This line of research suggests that once young people become interested in societal and political issues, they are likely to be eager to engage in discussion and get feedback from their family.

The second research model derives from media and communication studies, and concerns exposure to political news. In this field, the role of individual characteristics and predispositions, like socio-demographic characteristics, attitudes, interests, prior experience, and personality, in driving the selection of and attention to media content has for long been recognized. For example, the “uses and gratification” approach seeks to understand what

attracts and holds audiences to different types of media channels and contents (e.g., Cantril, 1942). Slater (2007) suggested that there is a mutual influence of media selectivity and media effects, which produces reinforcing spirals, such that political attitudes and beliefs increase political media use and are reinforced by it. For example, Strömbäck and Shehata (2010) adopted a longitudinal design to investigate the relationship between news-media use and interest in politics among adults. They found that the relationship between attention to political news and political interest was reciprocal, and that the effect of political interest on news-media use was stronger than the effect of news-media use on political interest. On the whole, empirical findings support the idea that people interested in politics tend to seek political information, mainly because political issues are salient to them (cf. Hutchings, 2001).

These studies indicate that youth interested in politics are active in bringing up political discussions with their family, stimulate civic interest in their communication partners, and are selective in the information they want to get from the media. They all point to the fruitfulness of an agency perspective on youth's political development, but the youth-agency view still lacks a unifying theoretical framework to explain how and why youth's interest in politics promotes their own political development.

### **Political Interest and Self-determination Theory**

One of the more influential models dealing with human motivation lies in self-determination theory (SDT, Deci & Ryan, 1991; 2000; Ryan & Deci, 2000; 2006). In this theory, intrinsic motivation refers to engagement in an activity because it is inherently interesting or enjoyable, whereas extrinsic motivation refers to engagement in an activity for instrumental reasons, e.g., with regard to social pressures or rewards (Ryan & Deci, 2000). SDT takes its starting point in young people's early intrinsic motivation. The theory suggests that young people freely explore the things they are interested in. For example, if they are

curious about and interested in politics, they will be motivated to pursue and develop their interest further if the conditions and other people's reactions to them facilitate the fulfillment of their basic psychological needs for autonomy, relatedness, and competence (Deci & Ryan, 2000). In the theory, intrinsic motivation acts as a driving force. Youth will try to satisfy their basic psychological needs in the fields where they are intrinsically motivated. When they feel their basic needs are satisfied, their interest will grow further in an iterative process of mutual reinforcement.

SDT has been used to study people's engagement in a variety of settings, such as sports and in school, but its application to politics is virtually absent (see, however, Stattin, Hussein, Özdemir & Russo, 2017). In this study, we do not use the standard SDT measures previously used in the literature. Instead, inspired by SDT, we identify various *indicators* that should be particularly relevant to politically interested young people in satisfying their basic psychological needs. We suggest that needs satisfaction should be reflected in the excitement, enjoyment, and perceived mastery experienced when engaging in politics-related behaviors.

The first need, the need for *autonomy*, is about feeling free to explore and deepen personal interests in a self-governed manner. Being autonomous means perceiving a full sense of choice in endorsing actions that stem from personal interest (Deci & Ryan, 2002). If youth's exploratory behaviors are experienced as autonomous expressions of the self (Ryan, 1995), they should be accompanied by positive feelings and exploration of new stimuli (Deci & Ryan, 2008). If young people are politically interested, their motivations for exploration are likely to be primarily intrinsic (fun, enjoyable), rather than extrinsic (gaining the respect of others, making other people happy). They will likely be attentive to news, from whatever source, and will enjoy exploring what happens in society and the world.

The need for *relatedness* refers to feeling connected to others and being accepted by them. In general, relatedness has been described as striving authentically to relate to others

and to feel a satisfying involvement with them (Deci & Ryan, 1991). In other words, relatedness is the feeling of belonging to a group of people who share the same interest. For politically interested youth, we suggest that discussing politics with family and peers is one way of satisfying the need for relatedness. Young people with a high political interest are likely to talk often with their parents and peers about political issues, and they are also likely to be excited by what their parents and peers say in these conversations. It is worth noting that, according to SDT, the need for relatedness does not conflict with the need for autonomy. Rather, it is nested within the development of greater autonomy (Ryan & Lynch, 1989). Indeed, this need is satisfied mainly when individuals feel autonomously involved in a social relationship (Blais, Sabourin, Boucher, & Vallerand, 1990).

Finally, the need for *competence* is defined as “the desire to feel efficacious, to have an effect on one’s environment, and to be able to attain valued outcomes” (Deci, 1998, p. 152). Competence is not an attained skill but is rather a sense of confidence in action (Deci & Ryan, 2002); thus, feelings of efficacy (Bandura, 1996) are central to the satisfaction of competence needs. Experiences of learning about society from various sources, and from discussions with others, are likely to increase the perceived competence of young people who are interested in politics. Over time, interested youth will come to perceive that they can make a difference in society: that is, a more general sense of political efficacy is evoked.

### **The Present Study**

SDT offers a general framework for understanding what is likely to happen over time when young people have an early interest in politics. In the present study, we adopt the SDT perspective and suggest that politically interested youth will be active in meeting their basic psychological needs within the political sphere. We propose that the following indicators are salient to satisfying the needs for autonomy, relatedness, and competence.

Driven by an internal motivation to know more, and feeling that politics is engaging, youth who are politically interested will enjoy following the news (satisfying the need for autonomy). They will engage in political talks with parents and peers about politics and society, and will perceive them as exciting, to a greater extent than other youth (satisfying the need for relatedness). Finally, youth with a strong political interest will regard themselves as having political efficacy to a greater extent than other youth (satisfying the need for competence).

We use longitudinal data to test whether the early political interest of youth tends to enhance our proposed set of indicators over time. It is possible to claim that the direction of effects may be opposite to what we suggest, namely that all the indicators under study influence youth's political interest rather than being influenced by it. Indeed, according to SDT, needs satisfaction and intrinsic motivation are embedded in reciprocal influences, where intrinsic motivation entails engagement in activities relevant to satisfying the core psychological needs, and greater need satisfaction leads to motivational development, i.e., an increased interest (Ryan, 1995; Ryan & Deci, 2000; Sheldon, Elliot, Kim, & Kasser, 2001).

This alternative hypothesis about the direction of effects needs to be examined. Hence, in the present study, we analyzed and compared effects in both directions: from political interest to changes in autonomy, relatedness, and competence indicators, and from these indicators to change in political interest over one year. We tested our hypotheses using a longitudinal design and followed cohorts of 13- and 16-year-old youth over one year. We chose to focus on early and middle adolescence because this age period is crucial both to political development (e.g., Hooghe & Wilkenfeld, 2008), and to the development and expression of self-determination (Field, Hoffman, & Posch, 1997). Given that the literature highlights gender differences in the political development of youth (e.g., Cicognani, Zani,

Fournier, Gavray, & Born, 2012), we also examined potential differences between males and females.

## **Method**

### **Participants**

Our sample consisted of two age cohorts of youth (13- and 16-year-olds) from a Swedish city of 137,000 inhabitants. The city is close to the national average on factors such as population density, income level, and employment (Statistics Sweden, 2010). The proportion of people who were born outside the country, or had both parents born outside the country, was slightly higher (20.4%) in the city than it was nationally (19.1%).

The data come from two consecutive annual assessments (2010 and 2011) conducted in ten middle schools in three of the largest high schools in the city. 2010 was an election year in Sweden, and no major political crisis or scandal (of which we are aware) occurred between the first and the second assessment. The schools enrolled students from different neighborhoods, enabling us to include youth with varying social and ethnic backgrounds. The data collections took place during school hours and were administered by trained research assistants. Participants were informed about the types of items in the questionnaire and the approximate amount of time required, and that their participation was voluntary. Each class received a payment for participation of approximately 120 USD to their class fund. The regional research ethics committee approved the study and its procedures.

The adolescents were in either the 7<sup>th</sup> school grade (13-year-olds) or the 1<sup>st</sup> grade of high school (16-year-olds) at Time 1 (T1). Of the target sample of 960 13-year-olds, 897 answered the questionnaire at T1 (93.4%); one year later at Time 2 (T2), 866 adolescents completed the questionnaire again (out of a target sample of 987, 87.7%). In the second age group, out of the initial target sample of 1052, 864 16-year-olds completed the questionnaire at T1 (82.1%) and 807 at T2 (out of a target sample of 996, 81.0%). We tested whether the

dropout from T1 to T2 (117 persons in the younger cohort, and 188 persons in the older cohort) was related to sex, interest in politics, or to the indicators of autonomy, relatedness, and competence. A logistic regression analysis was performed to establish whether sample attrition (dropout = 0, retention = 1) was systematic. No significant differences emerged in the 13- and 16-year-old samples. In both cohorts, low  $R^2$  (.03 in the younger and .00 in the older) confirmed that the differences between the persons who participated in both the assessments and those who participated only in the first one were not substantial.

Taking both samples together, 50.8% were girls. About a third of the youth, 31%, had parents who were divorced. In responses to a question about their economic situation at home, 76.9% stated that their parents seldom or never complained about a lack of money, but 18.2% reported that this happened often, and 4.8% reported that their parents were always complaining. Finally, 9.1% of the youth were born outside Sweden; 19.6% had both parents born abroad, and 8.5% had one parent born abroad.

## Measures

Assessments were taken at both time points using the same survey items for both age cohorts. The measures were created specifically for this particular survey.

**Political interest.** Political interest is the central measure in this study. The participants were asked “How interested are you in politics?” (see, for example, the ANES 2008-9 Panel Study for a similar item). They answered on a five-point scale ranging from *totally uninterested* (1) to *very interested* (5). In line with Silvia’s (2006) view that interest is an emotion, and with intrinsic motivation defined as perception of an activity or a topic as inherently *interesting* or *enjoyable* (Ryan & Deci, 2000), we combined this item with an item about feelings about politics. The participants were asked: “People differ in what they feel about politics. What are your feelings?” They answered on a six-item response scale using the following options: *loath* (1), *very boring* (2), *boring* (3), *neither fun nor boring* (4), *fun* (5),

*great fun* (6). Based on results from pilot studies, we distinguish between “very boring” and “loath”. The latter response option reflects a more active and avoiding kind of negative feeling. Correlations between the two items were .72 ( $p < .001$ ,  $M = 0.40$ ,  $SD = 0.26$  with the items rescaled to range between 0 and 1) at T1, and .78 ( $p < .001$ ,  $M = 0.44$ ,  $SD = 0.27$ ) at T2.

**Indicators of autonomy.** To assess whether adolescents experienced autonomy in their explorations of the political world, we focused on their cognitive and emotional engagement in news consumption. Participants indicated, on 6-point response scales, whether watching or reading the news (on TV, in daily newspapers, or on the Internet): *engages me a lot* (6)/*doesn't engage me at all* (1); *gives me many new ideas* (6)/*gives me no new ideas at all* (1); *is fun* (6)/*is boring* (1). The scale had good reliability ( $\alpha = .91$  at T1,  $M = 3.55$ ,  $SD = 1.32$ , and  $\alpha = .90$  at T2,  $M = 3.66$ ,  $SD = 1.26$ ).

**Indicators of relatedness.**

***Discussing civic issues with parents and peers.*** The participants were asked how often they discussed “What you have heard on the news about what is going on in Sweden and around the world”, “Political or societal issues”, and “Environmental issues”, responding separately for their parents ( $\alpha = .78$  at T1,  $M = 2.26$ ,  $SD = 0.69$ , and  $\alpha = .78$  at T2,  $M = 2.34$ ,  $SD = 0.67$ ) and peers ( $\alpha = .74$  at T1,  $M = 2.01$ ,  $SD = 0.67$ , and  $\alpha = .76$  at T2,  $M = 2.08$ ,  $SD = 0.67$ ). The response scale ranged from *never* (1) to *very often* (4) (cf. Meeusen & Dhont, 2015 for similar measures).

***Excited about parents' and peers' civic talk.*** The participants answered three questions about being excited by their parents' and peers' civic talk: “My parents (peers) talk about politics and societal issues in a way that makes them fun and interesting”, “My parents (peers) talk about things that happen in the world and in society in such a way that I become curious and want to know more”, and “My parents (peers) tell me about the news they have heard on TV or read about in a way that evokes strong feelings in me”. The five-point response scale

ranged from *definitely does not apply* (1) to *applies very well* (5). Cronbach's  $\alpha$  was .82 at T1 ( $M = 3.04$ ,  $SD = 1.03$ ) and .85 at T2 ( $M = 3.14$ ,  $SD = 1.01$ ) for excitement about parents' talk, and .87 at T1 ( $M = 2.44$ ,  $SD = 0.98$ ) and .89 at T2 ( $M = 2.62$ ,  $SD = 1.02$ ) for excitement about peers' talk.

**Indicators of competence.** To assess the adolescents' mastery experiences in their political engagements, we used a measure of youth's internal political efficacy in relation to political skills, defined as the belief in being able competently to participate in political action (e.g., Levy, 2013). After the stem question "If I really tried, I could manage to...", the participants considered eight activities: "Help to organize a political protest", "Take part in a demonstration in my hometown", "Convince others to sign petitions concerned with political or societal issues", "Actively contribute to the work of organizations trying to solve problems in society", "Take leadership of a group to address societal issues", "Be an active member of a political organization", "Discuss politics with persons with more experience than I have", and "Take on responsibility in a political youth organization". The response scale ranged from *I could definitely not manage that* (1) to *I could definitely manage that* (4). The scale had good reliability at both T1 ( $\alpha = .91$ ,  $M = 2.44$ ,  $SD = 0.73$ ) and T2 ( $\alpha = .94$ ,  $M = 2.50$ ,  $SD = 0.80$ ).

### Statistical Analyses

**Confirmatory factor analyses (CFA) and measurement invariance.** First, to examine whether the suggested indicators for autonomy, relatedness, and competence reflected three separate dimensions, we performed confirmatory factor analyses (CFA) to test a three-factor solution. More specifically, the indicators of cognitive and emotional engagement in news consumption loaded onto a factor labeled "autonomy", and the indicators of political efficacy loaded onto a factor labeled "competence". Given that we had four scales as indicators of relatedness, we used a domain-representative parceling technique (Kishton &

Widaman, 1994). We computed four mean indexes for civic talk with peers, civic talk with parents, excitement about parents' talk, and excitement about peers' talk. These four parcels loaded onto a factor labeled "relatedness". All the analyses were evaluated using three goodness-of-fit indices: the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis index (TLI; Tucker & Lewis, 1973), and the root-mean-square error of approximation (RMSEA; Browne & Cudeck, 1993). For both the CFI and TLI, values should exceed .90 in order to establish acceptable model fit, with values above .95 representing the optimal range. RMSEA values under .05 reflect excellent fit, and values between .05 and .08 indicate a reasonable fit.

Second, we tested the measurement invariance to ensure that the measurements of basic psychological needs were equal across time points and age cohorts. Factor loading invariance, i.e., metric invariance, served as evidence of measurement invariance, and was tested using Chi-Square difference tests. The Chi-Square difference ( $\Delta\chi^2$ ) is sensitive to sample size, and is expected to be significant for large samples. Alternatively, there is a recommendation to assume sufficient measurement invariance when  $\Delta\text{CFI} \leq .01$  (Kline, 2011). We report both indicators.

**Autoregressive structural cross-lagged models.** We used autoregressive structural cross-lagged modeling to test the idea that youth's political interest predicts changes in their autonomy, relatedness, and competence motivations over time, and the competing hypothesis that these indicators are, instead, predictors of political interest. The autoregressive components of the models are described by stability coefficients that reflect the amount of change between two points in time (Schlüter, Davidov, & Schmidt, 2007). In our case, political interest at T2 was regressed on its own lagged score, and on the lagged scores of the autonomy, relatedness, and competence latent factors as measured at T1; similarly, the autonomy, relatedness, and competence factors at T2 were regressed on their own lagged

scores, and on the lagged scores of political interest at T1 (cf. Figure 1). The cross-lagged coefficients and their magnitudes indicate how well variation in political interest at T1 predicts change in the indicators at T2, and vice-versa. All the variables included were modeled as latent factors.

The model was first tested for the young and old cohorts simultaneously, with all structural parameters allowed to vary across groups. We then conducted a multiple group analysis using a sequential method for testing the imposition of structural invariance constraints across groups. Across-group equality constraints were successively imposed on the regression coefficients until further constraints would significantly worsen the model's fit (Chou & Bentler, 2002). The parameter with the smallest group difference was equated across the groups first, and the revised model was then estimated. We used Chi-Square difference tests to compare the less constrained model with the more constrained model (Kline, 2011). A significant  $\chi^2$  difference value suggests that constraining the path to be equal across groups worsens the model fit and the less constrained model should be retained, whereas a non-significant difference indicates that the two models provide equal fit to the data and the more constrained/parsimonious model should therefore be retained.

All the analyses were run in Mplus 7 (Muthén & Muthén, 1998–2010). We treated missing cases using the Mplus default option, which estimates models using all available data, according to missing-data theory (Asparouhov & Muthén, 2010).

## Results

### Confirmatory Factor Analyses (CFA) and Measurement Invariance

We first checked the configural invariance of the measurement model for the three psychological needs. The three-factor solution provided good fit for both the T1,  $\chi^2(87, N = 1777) = 523.31, p < .001, CFI = .97, TLI = .97, RMSEA = .05$ , and T2 measures,  $\chi^2(87, N = 1689) = 636.19, p < .001, CFI = .97, TLI = .96, RMSEA = .06$ . Standardized factor loadings

ranged from .64 to .92 at T1, and from .66 to .92 at T2. The three-factor solution was superior to a one-factor solution with all the items loading on a single latent factor: T1,  $\chi^2(90, N = 1777) = 5403.22, p < .001, CFI = .65, TLI = .59, RMSEA = .18$ ; T2,  $\chi^2(90, N = 1689) = 5189.67, p < .001, CFI = .69, TLI = .64, RMSEA = .18$ . We conclude that autonomy, relatedness, and competence can be treated as three separate, internally consistent dimensions.

We then tested the longitudinal invariance of corresponding factor loadings. We compared the baseline unconstrained model to a competing model in which factor loadings were constrained to be equal across the time points. We found that the measurement model was longitudinally invariant:  $\Delta\chi^2 = 14.18, \Delta df = 12, p = .29, \Delta CFI = .00$ . Based on this longitudinally invariant model, we also assessed loadings invariance across age (13 vs. 16 year-olds) using multiple group analysis. Again, the measurement model was invariant:  $\Delta\chi^2 = 19.82, \Delta df = 12, p = .07, \Delta CFI = .00$ . We relied on this longitudinally and age-invariant model to test the following structural equation models. Correlations between the latent factors for the two age groups are reported in Table 1.

### **Autoregressive Cross-lagged Analyses**

First, a fully unconstrained model was estimated in which all of the path coefficients were allowed to vary across the age groups. The model showed good fit indices:  $\chi^2(1017) = 2471.03, CFI = .96, TLI = .96, RMSEA = .04$ . Table 2 summarizes results from the cross-lagged analyses of all the indicators of autonomy, relatedness, competence, and political interest. All the autoregressive paths in the model were positive and significant. In both age cohorts, youth's political interest was associated with a significant increase in relatedness, competence, and autonomy between T1 and T2. By contrast, youth's political interest was mostly unaffected by autonomy, relatedness, and competence. The only exception was a positive and significant effect of competence on the increase in political interest among the

16-year-olds. Overall, there seems to be strong support for the idea that youth's political interest serves as the basis for the development of autonomy, relatedness, and competence.

To test whether certain paths that showed potential group differences statistically differed between the younger and older cohorts, the fully unconstrained model was used as a baseline model with which a more constrained model with one of the parameters constrained to be equal across groups could be compared. The model fit became significantly worse only when constraining two paths. The first was the autoregressive path for competence,  $\chi^2(1) = 4.44, p = .04$ , and the second the autoregressive path for political interest,  $\chi^2(1) = 5.70, p = .02$ . These differences indicate that there was higher stability for political interest and competence in the older cohort than in the younger one. All the other paths were statistically equal across the two age groups, indicating that the effects of political interest on autonomy, relatedness, and competence are similar in the groups.

The final model with all regression paths constrained to be equal across the two age groups except the autoregressive paths for competence and political interest achieved good model fit:  $\chi^2(1025) = 2474.71, p < .001$ , CFI = .96, TLI = .96, and RMSEA = .04. Parameter estimates for the pathways included in this model are shown in Figure 1. All autoregressive pathways and synchronous correlations (not shown in the illustration for the sake of clarity) were significant and positive. Each of the parameter estimates for the cross-lagged pathways from political interest to the basic psychological needs one year later was significant. None of the parameter estimates for the cross-lagged pathways from the basic psychological needs to political interest one year later was significant (with the exception of a marginally significant negative effect of autonomy on political interest). Overall, these findings support our expectation that political interest at T1 predicts increase in the psychological needs one year later, at T2.

We used multiple group analysis to test whether gender moderated any path in the autoregressive structural cross-lagged model. We followed the same procedure previously used to test age differences. First, we checked whether the measurement model was invariant across gender, and found that it was invariant,  $\Delta\chi^2 = 12.27$ ,  $\Delta df = 12$ ,  $p = .42$ ,  $\Delta CFI = .00$ . Second, we estimated a fully unconstrained model with all structural paths allowed to vary across the gender groups, and used a step-by-step procedure to constrain the path coefficients to be equal across gender groups. None of the constraints applied resulted in a significantly worse model fit (the highest  $\chi^2$  difference was found for the autoregressive path for competence,  $\Delta\chi^2 = 3.74$ ,  $\Delta df = 1$ ,  $p = .05$ ). We conclude that the effects observed are approximately equal for both males and females.

Finally, we examined more specifically the link between political interest and the separate measures of relatedness. The relatedness factor includes the frequency of talk with parents, talk with peers, and excitement about these conversations with parents and peers. It could be argued that the effect of interest on relatedness might apply to one (or more) of these specific components. Similarly, it might be the case that significant effects of one (or more) of these components on political interest would appear when analyzed separately. We tested an autoregressive cross-lagged model in which the four components of relatedness at T2 were regressed on political interest at T1, and political interest at T2 was regressed on the four components of relatedness at T1. As described above, we started with a fully unconstrained model with the path coefficients allowed to vary across the age groups and we proceeded by constraining one parameter at a time. Only the autoregressive path for political interest was significantly different across ages,  $\chi^2(1) = 5.66$ ,  $p = .02$ , indicating higher stability among older adolescents (16-year-olds, unstandardized coefficient = 0.91,  $p < .001$ ) than younger adolescents (13-year-olds, unstandardized coefficient = 0.79,  $p < .001$ ). The final model with all regression paths constrained to be equal across the two age groups except the

autoregressive paths for political interest achieved good model fit:  $\chi^2(71) = 235.10, p < .001$ , CFI = .98, TLI = .97, and RMSEA = .05. The results showed that political interest at T1 had positive and significant effects on all the components of relatedness one year later, at T2 (unstandardized coefficients for political talk with parents, political talk with friends, excitement about parents talk, and excitement about friends talk were 0.18, 0.17, 0.25 and 0.24, respectively, all with  $p < .001$ ). None of the effects of these components at T1 on political interest at T2 was significant. We conclude that the observed effects for relatedness are homogeneous in relation to its specific components: It seems that political interest fostered political talk with parents, political talk with friends, excitement about parents' talk, and excitement about friends' talk to a similar extent in both age groups.

### **Discussion**

Socialization is the process through which people become functioning members of their social groups (Zigler, Lamb, & Child, 1982). The classical socialization literature has offered mostly unidirectional accounts, emphasizing that it is parents, peers, teachers, and the media that affect youth (Barrett & Brunton-Smith, 2014). Modern developmental theories, by contrast, emphasize the bidirectional and transactional processes via which socialization agents and youth shape and reshape each other through behaviors and communications (Kuczynski, 2003; Sameroff, 2009). As a contrast to the classical socialization view, we aimed, in this study, to test whether politically interested youth can be active in their own political development. In this endeavor, we used the best-known theoretical model of human motivation, i.e., the one that is embodied in self-determination theory (Deci & Ryan, 1991; 2000; Ryan & Deci, 2000; 2006).

According to SDT, when people are free to explore their interests and have an internal motivation, they will pursue their interests and make use of available resources to become better at what they are doing. Our starting point was the idea that interest in politics should be

regarded as an indicator of intrinsic motivation, i.e., the perception of an activity or a topic as inherently interesting or enjoyable (Ryan & Deci, 2000). The basic assumption is that if people are interested in certain things, they will have positive feelings connected with them. This was well substantiated in this study by the high correlations found between interest in and feelings about politics.

SDT is a fruitful theoretical framework to build upon because it indicates what is likely to happen over time to youth with an early interest in politics. The theory suggests that people will try to satisfy their basic psychological needs for autonomy, relatedness, and competence in relation to topics in which they are intrinsically motivated. Therefore, in this study, based on this theory, we proposed and found support for the view that an early interest in politics leads to exploring and enjoying the political world (autonomy). An early interest also leads to sharing political interest with important others through discussions and enjoying these conversations (relatedness). Finally, an early interest in politics is associated with a growing sense of political efficacy (competence). These results show that political interest is a strong motivation behind youth's engagement in a variety of politically related activities.

The main results show that interest in politics at T1 predicted changes on the psychological needs at T2. They give strong support to our hypothesis that politically interested adolescents are active in meeting their basic psychological needs within the political sphere. It is also worth noting that the opposite hypothesis (that autonomy, relatedness, and competence predict changes in interest) was not confirmed. The only instance of a reciprocal relationship was found for the effects of competence in the older age cohort (age 16). Not only do young people with an interest in politics tend to develop the sense that they can influence political decisions, but their feelings of mastery push their political interest further. This finding is in line with Bandura's (2006) claim that beliefs in personal efficacy are central to and pervasive in human agency.

In relation to age differences, we found that political interest and competence had higher stability at age 16 than at age 13. These differences are in line with previous reports on the stability of political interest over time (e.g., Prior, 2010; Russo & Stattin, 2016) and with studies showing that the stability of political attitudes increases with age (e.g., Alwin & Krosnick, 1991). Importantly, no other effects differed between age cohorts: This indicates that – already by the age of 13 – political interest plays a key role in promoting youth’s political development. We found no gender differences in the effects of political interest on changes in autonomy, relatedness, and competence. This supports SDT’s fundamental principles of universality and the idea that the basic theoretical processes should not differ by gender (Ryan & Deci, 2002).

That political interest had systematic effects on autonomy, relatedness, and competence, and that the effects of basic psychological needs on interest were generally non-significant, speak in favor of an agentic view of youth’s political development. Politically interested youth seem to act in a self-determined manner to satisfy their needs in relation to their own interests. Overall, these findings not only support recent studies showing youth agency in political development (e.g., Levy, 2013; McDevitt, 2006; Strömbäck & Shehata, 2010), but also enrich the agency perspective by providing a strong theoretical rationale for expecting youth’s agency in relation to a variety of theory-based outcomes.

### **Strengths and Weaknesses**

We need to report on the strengths and weaknesses of the present study. One obvious weakness is that the study is based upon youth’s reports of their own thoughts, feelings, and behaviors. Ideally, we would also have had independent reports on the development of the young people’s political interests and psychological needs. This should be a focus in future research. Also, self-reports might be affected by response biases. When addressing political issues, there is a major concern related to social desirability. The degree to which social-

desirability biases respondents' answers to political questions varies from country to country. In Sweden (where we conducted our study) people seem to be less subject to social desirability bias when reporting on their voting behavior, plausibly because it is a country where honesty is regarded as having a high value (Karp & Brockington, 2005). Therefore, we believe that social desirability should not substantially undermine the strength of our results.

Another weakness is that the target population was limited to 13- and 16-year-olds. We focused on this age range because adolescence is a crucial period for sociopolitical development (e.g., Flanagan & Sherrod, 1998). We found high stability in political interest among the 16-year-olds, but lower stability among the 13-year-olds. We might expect even lower stability among younger youth, for whom there is a wider window for changes in political interest. If this is the case, perhaps we should expect to find stronger support for our alternative hypothesis about the direction of effects at an early age. Future research needs to target younger groups of youth, maybe focusing on the ages between 10 and 12, when the full emergence of a "naïve political theory" takes place and youths, at least in European democracies, develop partially elaborated ideas about political parties and elections (Berti, 2005).

Finally, this study is based on youth from a single Swedish city. Our sample is fairly similar in demographic characteristics to the national average. However, whether the findings are valid for youth of the same ages in other countries is an open question. When youth report on their political interest they are embedded in a particular social and cultural context (cf. Flanagan, 2013), which to a certain extent relates to and reproduces the civic culture of their country (Almond & Verba, 1963). Indeed, levels of political interest vary between countries (Schulz, Ainley, Fraillon, Kerr, & Losito, 2010). The findings from Sweden reported in this study need to be cross-validated in other countries.

The major strength of the study is that we have proposed new ideas about how young people's political interests affect their political development in several different ways. These ideas, built on self-determination theory, were tested in a study with a longitudinal design, which, in several regards, goes against the mainstream of research in the field. Young people's interest in politics has been mainly attributed to external influences (Barrett & Brunton-Smith, 2014). We advanced the view that adolescents who are interested in politics are active agents in their own political development, and we provided empirical evidence in support of this view. Additionally, we explicitly examined several indicators related to basic psychological needs – feelings, thoughts, and behaviors in youth's everyday environments – and inferred how these indicators may relate to youth's intrinsic motivation for politics.

### **Practical Implications and Conclusions**

From a democracy perspective, how do we best help young people to develop an early interest in politics? What our study suggests is that there are politically interested adolescents who promote their own political development. We still have little knowledge about whether interested youth are affected by how the people around them react to their interest. According to SDT, significant others can facilitate the development of intrinsic motivation by supporting youth in the fulfillment of their psychological needs (Krapp, 2005). For example, positive feedback might satisfy people's need for competence and, consequently, enhance intrinsic motivation (Deci, 1971). A similar suggestion comes from educational models of interest, which maintain that interest is mostly self-generated, and that, for an interest to develop into an enduring and stable predisposition, many facilitating conditions need to be met, such as favorable social circumstances and support from others (Hidi & Renninger, 2006). On this view, a social environment that does not allow youth to satisfy their basic needs is an obstacle to the development of their interest in politics.

We also need to attend to the other side of the coin – the youth who have virtually no interest in politics. The findings of this study suggest two main messages about how to stimulate political interest among youth who do not have any political curiosity. First, our findings indicate that political interest is already very stable by age 16. Efforts to encourage political interest and awareness should target younger adolescents, i.e., at 13 years of age or perhaps even younger. In this regard, we agree with Levy's (2013) claim that it is necessary to build a culture for political interest, and that one way to do so is to provide youth with opportunities to experience politics in a supportive environment. As indicated by the high correlations between feelings of interest and experiencing positive feelings for politics, our findings support the idea that political interest might develop in tandem with positive emotional experiences (Silvia, 2006). Second, we found that efficacy beliefs are reciprocally related to political interest among 16-year-olds. Therefore, instilling and stressing the collective sense that youth can make a difference in society might help both to reinforce and to stimulate interest in political issues among them (Levy, 2013).

To conclude, this study is the first systematically to examine the role that youth's political interest plays in their interactions with others in their different everyday environments, and what it means for the needs for autonomy, relatedness, and competence within the political sphere. The results speak in favor of an agentic view, suggesting that young people who are interested in politics can promote their own political development. Overall, the study sheds new light on the role that youth's intrinsic motivation for politics plays in their political development over time.

## References

- Almond, G. A., & Verba, S. (1963). *The civic culture: Political attitudes and democracy in five nations*. Newbury Park, CA: Sage Publications.
- Alwin, D. F., & Krosnick, J. A. (1991). Aging, cohorts, and the stability of sociopolitical orientations over the life span. *American Journal of Sociology*, *97*, 169-195.  
doi:10.1086/229744
- Asparouhov, T., & Muthén, B. (2010). *Weighted least squares estimation with missing data* (Technical report). Retrieved from  
<http://www.statmodel.com/download/GstrucMissingRevision.pdf>
- Bandura, A. (1996). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2006). Adolescent development from an agentic perspective. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 1-43). Greenwich, CT: Information Age Publishing.
- Barrett, M. & Brunton-Smith, I. (2014). Political and civic engagement and participation: Towards an integrative perspective. *Journal of Civil Society*, *10*, 5-28.  
doi:10.1080/17448689.2013.871911
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238. doi:10.1037/0033-2909.107.2.238
- Berti, A. E. (2005). Children's understanding of politics. In M. Barrett & E. Buchanan-Barrow (Eds.), *Children's understanding of society* (pp. 69-104). Hove, UK: Psychology Press.
- Blais, M. R., Sabourin, S., Boucher, C., & Vallerand, R. J. (1990). Toward a motivational model of couple happiness. *Journal of Personality and Social Psychology*, *59*, 1021-1031.  
doi:10.1037/0022-3514.59.5.1021

- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen, & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Beverly Hills, CA: Sage Publications.
- Cantril, H. (1942). Professor quiz: A gratifications study. In P. F. Lazarsfeld & F. Stanton (Eds.), *Radio Research 1941* (pp. 34-45). New York: Duell, Sloan & Pearce.
- Chou, C. P., & Bentler, P. M. (2002). Model modification in structural equation modeling by imposing constraints. *Computational Statistics and Data Analysis*, *41*, 271-287.  
doi:10.1016/S0167-9473(02)00097-X
- Cicognani, E., Zani, B., Fournier, B., Gavray, C., & Born, M. (2012). Gender differences in youths' political engagement and participation. The role of parents and of adolescents' social and civic participation. *Journal of Adolescence*, *35*, 561-576.  
doi:10.1016/j.adolescence.2011.10.002
- Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*, 105. doi:10.1037/h0030644
- Deci, E. L. (1998). The relation of interest to motivation and human needs - The self-determination theory viewpoint. In L. Hoffmann, A. Krapp, K. A. Renninger, & J. Baumert (Eds.), *Interest and learning. Proceedings of the Seeon-conference on interest and gender* (pp. 146-162). Kiel, Germany: IPN.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. A. Dienstbier (Ed.), *Nebraska symposium on motivation, 1990: Perspectives on motivation* (pp. 237-288). Lincoln, NE: University of Nebraska Press.
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*, 227-268.  
doi:10.1207/S15327965PLI1104\_01

- Deci, E. L., & Ryan, R. M. (2008). Facilitating optimal motivation and psychological well-being across life's domains. *Canadian Psychology, 49*, 14-23. doi:10.1037/0708-5591.49.1.14
- Deci, E. L., & Ryan, R. M. (Eds.). (2002). *Handbook of self-determination research*. Rochester, NY: University Rochester Press.
- Erikson, E. (1968). *Identity, youth and crisis*. New York: Norton.
- Field, S., Hoffman, A., & Posch, M. (1997). Self-determination during adolescence a developmental perspective. *Remedial and Special Education, 18*, 285-293. doi:10.1177/074193259701800504
- Flanagan, C. A., & Christens, B. D. (2011). Youth civic development: Historical context and emerging issues. *New Directions for Child and Adolescent Development, 134*, 1-9. doi:10.1002/cd.307
- Flanagan, C. A., & Sherrod, L. R. (1998). Youth political development: An introduction. *Journal of Social Issues, 54*, 447-456. doi:10.1111/j.1540-4560.1998.tb01229.x
- Flanagan, C. A. (2013). *Teenage citizens: The political theories of the young*. Harvard: Harvard University Press.
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational Psychologist, 41*, 111-127. doi:10.1207/s15326985ep4102\_4
- Hooghe, M., & Wilkenfeld, B. (2008). The stability of political attitudes and behaviors across adolescence and early adulthood: A comparison of survey data on adolescents and young adults in eight countries. *Journal of Youth and Adolescence, 37*, 155-167. doi:10.1007/s10964-007-9199-x
- Hutchings, V. L. (2001). Political context, issue salience, and selective attentiveness: Constituent knowledge of the Clarence Thomas confirmation vote. *The Journal of Politics, 63*, 846-868. doi:10.1111/0022-3816.00090

- Karp, J. A., & Brockington, D. (2005). Social desirability and response validity: A comparative analysis of overreporting voter turnout in five countries. *The Journal of Politics*, *67*, 825-840. doi:10.1111/j.1468-2508.2005.00341.x
- Kishton, J. M., & Widaman, K. F. (1994). Unidimensional versus domain representative parceling of questionnaire items: An empirical example. *Educational and Psychological Measurement*, *54*, 757-765. doi:10.1177/0013164494054003022
- Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: The Guilford Press.
- Krapp, A. (2005). Basic needs and the development of interest and intrinsic motivational orientations. *Learning and Instruction*, *12*, 383-409.  
doi:10.1016/j.learninstruc.2005.07.007
- Kuczynski, L. (2003). Beyond bidirectionality: Bilateral conceptual frameworks for understanding parent – child relations. In L. Kuczynski (Ed.), *Handbook of dynamics in parent – child relationships* (pp. 1-24). New York: Russell Sage Foundation.
- Levy, B. L. (2013). An empirical exploration of factors related to adolescents' political efficacy. *Educational Psychology*, *33*, 357-390. doi:10.1080/01443410.2013.772774
- Levy, B. L., Solomon, B. G., & Collet-Gildard, L. (2016). Fostering political interest among youth during the 2012 presidential election: Instructional opportunities and challenges in a swing state. *Educational Researcher*, *45*, 483-495. doi:10.3102/0013189X16683402
- Manganelli, S., Lucidi, F., & Alivernini, F. (2015). Italian adolescents' civic engagement and open classroom climate: The mediating role of self-efficacy. *Journal of Applied Developmental Psychology*, *41*, 8-18. doi:10.1016/j.appdev.2015.07.001
- McDevitt, M. (2006). The partisan child: Developmental provocation as a model of political socialization. *International Journal of Public Opinion Research*, *18*, 67-88.  
doi:10.1093/ijpor/edh079

- McDevitt, M., & Chaffee, S. H. (1998). Second chance political socialization: "Trickle-up" effects of children on parents. In T. J. Johnson, C. E. Hays, & S. P. Hays (Eds.), *Engaging the public: How government and the media can reinvigorate American democracy* (pp. 57-66). Lanham, MD: Rowman and Littlefield.
- McDevitt, M., & Chaffee, S. H. (2000). Closing gaps in political communication and knowledge effects of a school intervention. *Communication Research*, 27, 259-292. doi:10.1177/009365000027003001
- Meeusen, C., & Dhont, K. (2015). Parent-child similarity in common and specific components of prejudice: The role of ideological attitudes and political discussion. *European Journal of Personality*, 29, 585-598. doi:10.1002/per.2011
- Prior, M. (2010). You've either got it or you don't? The stability of political interest over the life cycle. *The Journal of Politics*, 72, 747-766. doi:10.1017/S0022381610000149
- Russo, S., & Stattin, H. (2016). Stability and change in youths' political interest. *Social Indicators Research*. Advance online publication. doi:10.1007/s11205-016-1302-9
- Ryan, R. M. (1995). Psychological needs and the facilitation of integrative processes. *Journal of Personality*, 63, 397-427. doi:10.1111/j.1467-6494.1995.tb00501.x
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78. doi:10.1037//0003-066X.55.1.68
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: does psychology need choice, self-determination, and will? *Journal of Personality*, 74, 1557-1586. doi:10.1111/j.1467-6494.2006.00420.x
- Ryan, R. M., & Lynch, J. H. (1989). Emotional autonomy versus detachment: Revisiting the vicissitudes of adolescence and young adulthood. *Child Development*, 60, 340-356. doi:10.2307/1130981

- Sameroff, A. (2009). The transactional model. In A. Sameroff (Ed.), *The transactional model of development: How children and contexts shape each other* (pp. 3-21). Washington, DC: American Psychological Association.
- Schlüter, E., Davidov, E., & Schmidt, P. (2006). The dynamics of authoritarianism and anomia: Applying autoregressive cross-lagged and latent growth models to a three-wave panel study. In K. Montfort, H. Oud, & A. Satorra (Eds.), *Longitudinal models in the behavioral and related sciences* (pp. 315-336). Mahwah, New Jersey: Lawrence Erlbaum Publishers.
- Schulz, W., Ainley, J., Fraillon, J., Kerr, D., & Losito, B. (2010). *ICCS 2009 international report: Civic knowledge, attitudes, and engagement among lower-secondary school students in 38 countries*. Amsterdam: International Association for the Evaluation of Educational Achievement.
- Sheldon, K. M., Elliot, A. J., Kim, Y., & Kasser, T. (2001). What is satisfying about satisfying events? Testing 10 candidate psychological needs. *Journal of Personality and Social Psychology*, *80*, 325-339. doi:10.1037/0022-3514.80.2.325
- Sherrod, L. R., Torney-Purta, J., & Flanagan, C. A. (Eds.). (2010). *Handbook of research on civic engagement in youth*. Hoboken, NJ: Wiley.
- Silvia, P. J. (2006). *Exploring the psychology of interest*. New York: Oxford University Press.
- Slater, M. D. (2007). Reinforcing spirals: The mutual influence of media selectivity and media effects and their impact on individual behavior and social identity. *Communication Theory*, *17*, 281-303. doi:10.1111/j.1468-2885.2007.00296.x
- Stattin, H., Hussein, O., Özdemir, M., & Russo, S. (2017). Why do some adolescents encounter everyday events that increase their civic interest whereas others do not? *Developmental Psychology*, *53*, 306-318. doi:10.1037/dev0000192

- Strömbäck, J., & Shehata, A. (2010). Media malaise or a virtuous circle? Exploring the causal relationships between news media exposure, political news attention and political interest. *European Journal of Political Research*, *49*, 575-597. doi:10.1111/j.1475-6765.2009.01913.x
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, *38*, 1-10. doi:10.1007/BF02291170
- Verba, S., Schlozman, K. L., & Brady, H. E. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge, MA: Harvard University Press.
- Wray-Lake, L., & Syvertsen, A. K. (2011). The developmental roots of social responsibility in childhood and adolescence. *New Directions for Child and Adolescent Development*, *134*, 11-25. doi:10.1002/cd.308
- Yates, M., & Youniss, J. (1998). Community service and political identity development in adolescence. *Journal of Social Issues*, *54*, 495-512. doi:10.1111/j.1540-4560.1998.tb01232.x
- Zigler, E., Lamb, M., & Child, I. (1982). *Socialization and personality development*. New York: Oxford University Press.

Table 1. Standardized correlations among the latent factors of autonomy, relatedness, competence, and political interest.

	1	2	3	4	5	6	7	8
1. Autonomy T1	-	.54	.55	.41	.33	.22	.43	.24
2. Autonomy T2	.58	-	.43	.58	.21	.29	.37	.47
3. Relatedness T1	.53	.48	-	.72	.49	.38	.76	.50
4. Relatedness T2	.40	.54	.77	-	.36	.56	.60	.73
5. Competence T1	.27	.24	.52	.45	-	.53	.55	.35
6. Competence T2	.27	.28	.47	.51	.70	-	.43	.59
7. Interest T1	.48	.42	.73	.63	.56	.55	-	.63
8. Interest T2	.35	.45	.60	.72	.52	.65	.83	-

*Note.* Correlations for the younger age cohort (13-year-olds) are above the main diagonal, for the older age cohort (16-year-olds) below the main diagonal. All correlations are at  $p < .001$

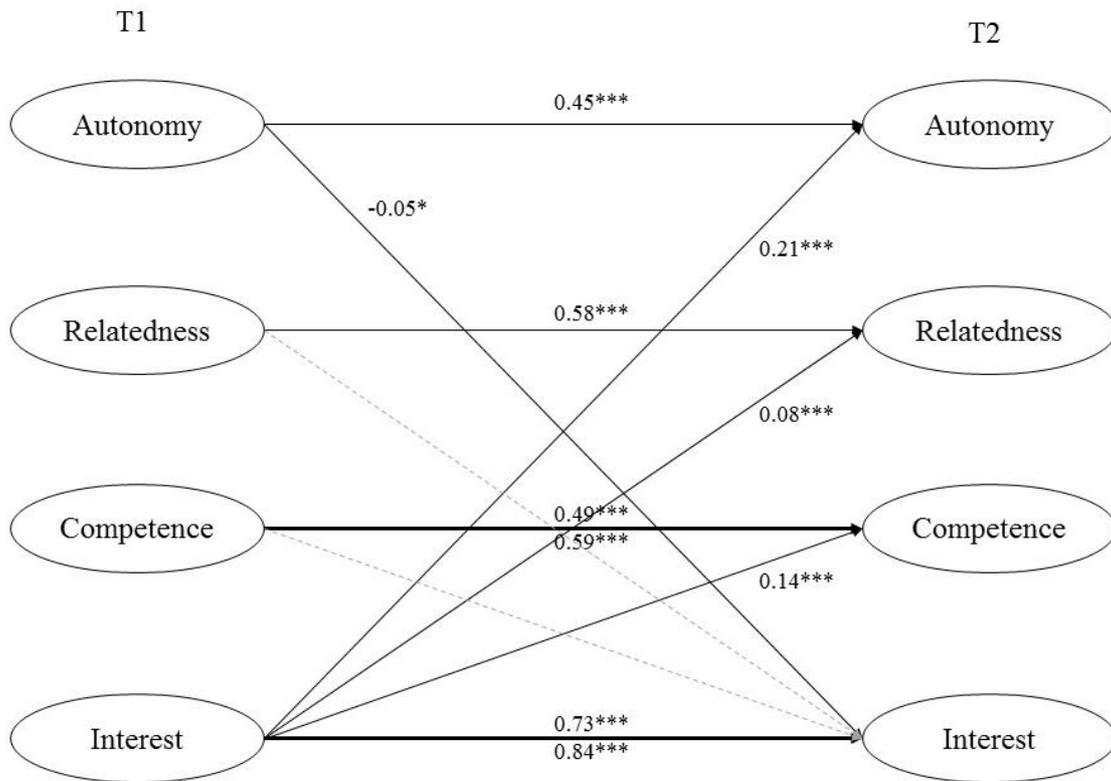
Table 2. Coefficients for the fully unconstrained model.

Dependent variables	Independent variables	Age 13			Age 16		
		<i>B</i>	<i>SE</i>	$\beta$	<i>B</i>	<i>SE</i>	$\beta$
Interest T2	Interest T1	0.71***	0.08	0.63	0.85***	0.06	0.84
	Autonomy T1	-0.05	0.03	-0.06	-0.05	0.03	-0.05
	Relatedness T1	0.07	0.15	0.03	-0.09	0.13	-0.04
	Competence T1	0.03	0.07	0.02	0.14*	0.06	0.08
Autonomy T2	Autonomy T1	0.44***	0.03	0.46	0.45***	0.04	0.49
	Interest T1	0.23***	0.05	0.18	0.20***	0.04	0.20
Relatedness T2	Relatedness T1	0.56***	0.06	0.57	0.61***	0.05	0.63
	Interest T1	0.09**	0.03	0.18	0.07**	0.02	0.18
Competence T2	Competence T1	0.50***	0.04	0.43	0.59***	0.04	0.56
	Interest T1	0.13***	0.03	0.19	0.15***	0.02	0.25

*Note.* Age 13 group  $n = 991$ , age 16 group  $n = 1002$ .

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Figure 1. The autoregressive structural cross-lagged model.



*Note.* Unstandardized coefficients are reported. Dashed lines indicate non-significant paths; solid lines indicate significant paths, equal across age groups; solid bold lines indicate significant paths, unequal across age groups. The first coefficient is for the younger cohort, the second for the older cohort. \*\*\*  $p < .001$ , \*  $p < .05$