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Political efficacy in adolescence: Development, gender differences, and outcome relations

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Abstract

The present study focuses on political efficacy in terms of students' competence self-perceptions related to the domain of politics. The investigation addresses the mean level development and longitudinal relations to outcome variables including gender differences. Drawing on a sample of $N = 2504$ German students, political efficacy, along with meaningful outcome variables (i.e., political information behavior, political knowledge, and interest in politics), was measured at two measurement points, once in grade level 7 and once in grade level 10. Students' mean levels of political efficacy increased from the first to the second measurement point, and boys consistently displayed higher levels. Political efficacy demonstrated reciprocal relations to political information behavior and political knowledge, and showed a unidirectional relation to interest in politics across time. The pattern of outcome relations was invariant across gender. This study contributes to research and theory on political socialization in adolescence as it outlines temporal relations among, and gender differences in, facets of political socialization. Therefore, this study also offers new practical insights into effectively facilitating political education in adolescent students.

Keywords: political efficacy; reciprocal effects; gender differences; adolescence; development

The concept of political socialization has been studied for decades (for overviews see Dudley & Gitelson, 2002; Sapiro, 2004). In a broad sense, political socialization describes a developmental process by which individuals acquire and form attitudes, cognitions, value standards, and feelings regarding political issues. These orientations can target the micro (individual) level when referring to a person as an actor and the macro level when referring to the system or society. Research has focused on different constructs of political socialization such as interest in politics (e.g., Prior, 2010), participation, engagement or voting (e.g., Eckstein, Noack, & Gniewosz, 2012; Quintelier & van Deth, 2014; Vecchione & Caprara, 2009), and trust in or satisfaction with the political system and politicians (Levi & Stoker, 2000). This study considers political efficacy as another facet of political socialization (e.g., Caprara, Vecchione, Capanna, & Mebane, 2009; Ikeda, Kobayashi, & Hoshimoto, 2008; Niemi, Craig, & Mattei, 1991; Zimmerman, 1989), and examines its development during adolescence and longitudinal outcome relations including gender differences.

Political Efficacy

Research on political efficacy seems to encompass at least two broad approaches to operationalizing this construct. The first approach is strongly tied to Bandura's self-efficacy theory established in socio-cognitive theory (Bandura, 1993, 2001). Here, self-efficacy refers to an individual's expectation and self-confidence to successfully carry out a specific behavior (e.g., to solve a specific task). Applying this definition of self-efficacy to the domain of politics, political efficacy is assessed by asking individuals about their individual beliefs in their capabilities to engage actively and successfully in concrete political activities (e.g., state one's own political opinion openly, even in clearly hostile settings; actively promote the election of political candidates in which one trusts). In other words, individuals are asked to rate how confident they feel regarding their ability to execute specific actions or behaviors related to the domain of politics (Caprara et al. 2009; Vecchione & Caprara, 2009).

The second approach in research on political efficacy is characterized by the distinction between internal and external political efficacy. Internal political efficacy addresses the micro level and more generally taps “beliefs about one’s own competence to understand, and to participate effectively in, politics” (Niemi et al., 1991, p. 1407) rather than focusing on one’s self-perception of competence regarding specific behaviors. External political efficacy addresses the macro level and taps “beliefs about the responsiveness of governmental authorities and institutions to citizen demands” (Niemi et al., 1991, p. 1408). Hence, internal political efficacy covers general competence self-perceptions in the domain of politics, while external political efficacy covers beliefs about the competence of the political system to change and act.

Development of Political Efficacy

When measuring political efficacy pursuant to Bandura’s (1993) self-efficacy theory by asking students about their perceived ability and confidence to perform specific politics-related actions, political efficacy is found to increase across adolescence. For example, political efficacy was found to increase across three time waves in a sample of Swedish lower secondary and upper secondary school students (Sohl & Arensmeier, 2015). Similarly, Zaff et al. (2011) demonstrated increasing mean levels in civic efficacy from grade levels 8 to 11. This finding is plausible since adolescence can be characterized as the period of individual political socialization (De Haan & Schulenberg, 1997; Fend, 1991; Flanagan & Gallay, 1995; Sears & Levy, 2003; Yates & Youniss, 1998). Adolescents are increasingly faced with political issues once political education is introduced as a school subject in secondary school curricula. In society, possibilities for political participation and engagement increase (e.g., the right to vote and to join a political party), and adolescents meet increasing expectations in this regard. The exploration of different, even juxtaposed political perspectives is enhanced by the rising cognitive ability for self-reflection and weighing of differential interests and perspectives (Flanagan & Levine, 2010). Due to these changing environmental (external)

experiences and cognitive (internal) preconditions, facets of political socialization (e.g., political interest, involvement, and participation), including political efficacy, become more salient and increase during adolescence (e.g., Eckstein et al., 2012; Fend, 1991; Kerestes, Youniss, & Metz, 2004).

Only a few studies have followed the alternative approach to political efficacy and have thus investigated its mean level development when defining political efficacy in terms of general competence self-perceptions related to politics. Krampen (1990, 1998) examined the self-concept of one's own political competence defined as "the experience of expectancy of one's own action competence in political life situations" (Krampen, 1991, p. 7). Given this definition and the use of similar items for assessment purposes, the construct of self-concept of one's own political competence and the broad approach to political efficacy (i.e., conceptualizing political efficacy as individuals' general competence self-perceptions in the domain of politics) seem to share a high level of conceptual overlap. In the studies by Krampen (1990, 1998), self-concept of one's own political competence was found to be a stable construct which did not show any mean level changes across adolescent years (i.e., ages 14 to 17). Given that other studies showed increasing mean levels for constructs of individual political socialization including efficacy beliefs related to the performance of specific politics-related actions (Eckstein et al., 2012; Kerestes et al., 2004; Sohl & Arensmeier, 2015; Zaff et al., 2011), these findings of stability across adolescence are surprising. Instead, students' political efficacy or self-concept of one's own general political competence would have been expected to increase across adolescent years. Hence, in order to get further insight into the developmental trajectory of political efficacy during adolescence when operationalized as students' general competence self-perceptions in the domain of politics, the present study considers the development of this construct from grades 7 to 10 when using a large and representative student sample.

Outcome Relations

In general, self-efficacy has been conceptualized as a resource of students' motivation in terms of facilitating "choice of activities, level of effort, persistence, and emotional reactions" (Zimmerman, 2000, p. 86) in order that self-efficacy has been closely linked to behavior (Davis-Kean et al., 2008). Irrespective of the operationalization of political efficacy (see above), it has been found to be positively associated with several indicators of political behavior such as political participation (Caprara et al. 2009; Finkel, 1985; Ikeda et al., 2008; Krampen, 2000; Manganeli, Lucidi, & Alivernini, 2014; Morrell, 2003; Pasek, Feldman, Romer, & Jamieson, 2008; Vecchione & Caprara, 2009), political involvement (Cohen, Vigoda, & Samorly, 2001), or civic engagement (Pinkleton & Austin, 2000; Zimmerman, 1989).

Studies on the outcome relations of political efficacy, however, have often remained cross-sectional in nature (Cohen et al., 2001; Ikeda et al., 2008; Krampen, 1991; Vecchione & Caprara, 2009; Zimmerman, 1989). It was thus not possible to probe longitudinal relations which would allow insights into temporal relations between constructs. Regarding the temporal relations of political efficacy and indicators of political behavior, research and theory contrast the assumption of whether attitudes (i.e., political efficacy) shape behavior (i.e., political behavior), behavior shapes attitudes, or attitudes and behavior are reciprocally related to each other (Gastil & Xenos, 2010; Quintelier & van Deth 2014). Methodologically, cross-lagged panel model approaches are adequate means to sophisticatedly respond to this issue (Curran & Bollen, 2001). Cross-lagged models estimate the effects of one variable (e.g., political efficacy) measured at one time wave on an outcome variable (e.g., political behavior) measured at another time wave, and vice versa, while simultaneously considering the stability of the constructs. Previous findings on the temporal relations between political efficacy and political behavior have rather remained ambiguous and have partially supported both directions of relations. Finkel (1985) found effects of internal political efficacy on political participation (voting behavior and campaigning participation) across three years. Hence, this

study supported unidirectional effects with attitudes (political efficacy) preceding behavior (political participation). In contrast, Quintelier and Van Deth (2014) demonstrated that the effect of former political participation on later political efficacy was stronger than the effect of former political efficacy on later political participation, leading to the conclusion that political behavior has a larger effect on political attitudes than vice versa. To further illuminate the temporal relation between political efficacy and political behavior, the present study aims to test the longitudinal relation between political efficacy and political information behavior. In a two-wave panel study, Gastil and Xenos (2010) demonstrated a significant effect of media use on political efficacy but no simultaneous effect of political efficacy on media use. This finding might lead to the assumption of a precedence of information behavior over political efficacy. However, this study relies on a sample of adults so it remains unclear whether this pattern of results can be generalized to adolescents and applies to the critical developmental period of political socialization.

The present study further aims to test longitudinal relations between political efficacy on the one hand and interest in politics on the other hand. Rather than being a behavioral construct, interest can be conceptualized as a motivational-affective construct depicting students' positive emotions, enjoyment, and value (subjective importance) in reaction to a specific content domain (for an overview of the different theories on interest see for example Hidi, Renninger, & Krapp, 2004; Wigfield & Cambria, 2010; Wigfield & Eccles, 2000). Previous studies showed strong associations between interest and competence self-perceptions including self-efficacy (Anderman et al., 2001; Chapman & Tunmer, 1995; Rottinghaus, Larson, & Borgen, 2003; Wigfield et al., 1997). Accordingly, cross-sectional studies have demonstrated positive associations between interest in politics and political efficacy (Caprara et al. 2009; Cohen et al., 2001; Morrell, 2003). The present study extends these findings by investigating longitudinal relations using cross-lagged panel models to explore whether interest in politics precedes political efficacy, political efficacy precedes interest in politics, or

both are mutually related across time. Research on competence self-perceptions related to other domains than politics has often demonstrated that competence self-perceptions precede interest (Denissen, Zarrett, & Eccles, 2007; Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002; Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005). This observation corresponds to the assumption that individuals are more interested in those domains in which they perceive themselves to be competent; in other words, self-perceptions of competence might trigger students' interests (Wigfield & Cambria, 2010). However, so far this presumption has not been tested with respect to the domain of politics.

Finally, the present study examines the longitudinal relation between political efficacy and political knowledge. In general, self-efficacy has been found to be highly associated with academic performance and achievement (Pajares & Graham, 1999; Pajares & Miller, 1999; Pietsch, Walker, & Chapman, 2003; Richardson, Abraham, & Bond, 2012; Schunk, 1989; Zimmerman, 2000). This finding also seems to apply to the domain of politics as Krampen (2000) and Ikeda et al. (2008) demonstrated cross-sectional correlations between self-concept of political competence and political knowledge both in adolescence and in early adulthood. In another cross-sectional study, Manganelli et al. (2014) reported a positive correlation between civic knowledge and citizen self-efficacy (conceptualized as self-perceived capability to perform activities related to citizenship participation in or outside school) and a lower, yet still statistically significant, correlation between civic knowledge and political efficacy (in terms of general competence self-perceptions related to politics). Considering longitudinal relations, self-efficacy was generally shown to influence achievement (Ferla, Valcke, & Cai, 2009; Parker, Marsh, Ciarrochi, Marshall, & Abduljabbar, 2014; Valentine, DuBois, & Cooper, 2004), and achievement has also been found to influence later self-efficacy (Parker et al., 2004). Hence, the relation seems to be reciprocal in nature so that self-efficacy is both a predictor and an outcome of achievement. In the present longitudinal study, we attempt to transfer the assumption of reciprocal relations between self-efficacy and achievement to the

domain of politics. In other words, the present study expands on previous cross-sectional studies on the association between political efficacy and political knowledge (Ikeda et al., 2008; Krampen, 2000; Manganello et al., 2014) by adding a longitudinal perspective to get insights into the temporal relation between both constructs.

Gender Differences

Boys have been found to display higher mean levels on various constructs of political socialization as they were found to be more interested and engaged in, and informed about, politics (e.g., Briggs, 2008; Cicognani, Zani, Fournier, Gavray, & Born, 2012; Mayer & Schmidt, 2004; Paxton, Kunovich, & Hughes, 2007). Boys were also found to place more importance on and to feel a stronger obligation to become involved in politics (Metzger & Smetana, 2009), although some studies did not find any gender differences in political participation (Cicognani et al. 2012) or students' willingness to participate in politics (Eckstein et al., 2012). Finally, boys have been found to display higher mean levels on political efficacy than girls (Caprara et al. 2009; Eckstein et al., 2013; Solhaug, 2006; Vecchione & Caprara, 2009).

Considering possible gender differences in the developmental trajectory of facets of political socialization, the *gender intensification hypothesis* (Hill & Lynch, 1983) would assume that gender differences increase with age. According to the gender intensification hypothesis, students increasingly assimilate to gender stereotypes. During adolescence, students begin to become increasingly aware of differential societal expectations for boys and girls and they experience different chances and opportunities to participate and become involved in specific domains. Hence, students might progressively adapt the opinion of politics being a "male" domain leading to an augmenting gender gap with boys' superiority on facets of political socialization. However, boys and girls were found to show a similar developmental trajectory across adolescence for willingness to participate in politics (Eckstein et al., 2012), attitudes towards political engagement (Eckstein et al., 2012), or civic efficacy

(Zaff et al., 2011). Hence, empirical findings rather argue for the *gender convergence hypothesis* for some facets of political socialization (see also Fredricks & Eccles, 2002; Jacobs et al., 2002). However, the assumptions of the gender intensification and the gender convergence hypotheses have not been tested with respect to the development of political efficacy. The present study aims to address this research gap and examines whether boys and girls converge or drift apart in their mean level development of political efficacy across adolescence.

Gender differences are also considered when examining longitudinal relations between political efficacy on the one hand and the three outcome variables included in this study (i.e., political information behavior, interest in politics, and political knowledge) on the other hand. Relations between political efficacy and politics-related outcomes might follow a gender-stereotypic pattern. Given the consistently found higher mean levels of political efficacy for boys (Caprara et al. 2009; Eckstein et al., 2013; Solhaug, 2006; Vecchione & Caprara, 2009), a gender-stereotypic pattern of outcome relations would suppose higher relations for boys. Yet, only a few studies have investigated gender-invariant vs. gender-differential relations between political efficacy and politics-related outcomes. For instance, Manganelli et al. (2014) found no gender differences in the strength of the relation between political efficacy on the one hand and civic knowledge and civic participation on the other hand. Manganelli et al. (2014), however, only realized a cross-sectional design so it was not possible to study gender-differences in longitudinal relations between political efficacy and politics-related outcomes. Hence, further research is required to examine gender invariance versus gender differences in longitudinal relations between political efficacy and politics-related outcomes.

The Present Study

The present study aims to examine the development and longitudinal outcome relations of political efficacy during adolescence while simultaneously considering gender differences. For this purpose, political efficacy was measured twice during secondary school

years, i.e., once in grade levels 7 (T1) and once in grade level 10 (T2) along with political information behavior, interest in politics, and political knowledge. The present study conceptualizes political efficacy in terms of students' general competence self-perceptions related to the domain of politics (Craig, Niemi, & Silver, 1990; Morrell, 2003; Niemi et al., 1991) rather than conceptualizing political efficacy as students' perceived ability and confidence to perform certain politics-related actions (Caprara et al. 2009; Vecchione & Caprara, 2009). This broad approach to political efficacy as pursued in the present study was also realized in the International Civic and Citizenship Education Study (ICCS; Schulz, Ainley, & Fraillon, 2011).

Method

Sample

The data considered in the present study originate from the large-scale longitudinal project "Learning Processes, Educational Careers, and Psychosocial Development in Adolescence and Young Adulthood (BIJU)" conducted under the aegis of the Max Planck Institute for Human Development, Berlin, Germany. The complete study covers seven measurement points with the first measurement point at the beginning of grade 7 in the 1991/1992 school year and the last measurement point in 2010 when the students were young adults. The original student sample ($N = 5,648$) was drawn from three German federal states (North Rhine-Westphalia, Mecklenburg-Western Pomerania, and Saxony-Anhalt), but $N = 2,404$ students from the federal state of Berlin were added in the second data collection which took place mid-term of students' grade level 7. To obtain representative samples of the four finally participating federal states, the sample was stratified by region and school type.

Since tests and questionnaires addressing politics were only administered at mid-term of grade 7 (i.e., the second measurement point of the complete study) and at the end of grade 10 (i.e., the fourth measurement point of the complete study), the present study solely focuses on these two measurement points. The sample of this study consists of $N = 2,504$ students

[male: $N = 1,035$ (41.3%); female: $N = 1,457$ (58.2%); no gender indicated: $N = 12$ (0.5%)] from 123 secondary schools who had completed at least one item on the scale for political efficacy at both measurement points. In Germany, contingent on the federal state, the transition to secondary school takes place after grade level 4 or 6, and the students do not experience another school transition afterwards but predominantly remain at the same school until graduation. The secondary school transition goes along with an ability tracking as, dependent on students' accomplishments at the end of elementary school, teachers' recommendations, and parents' voice, the students are allocated to different achievement tracks for secondary schooling. The sample of the present study includes students from all tracks of the German secondary school system, since 1,424 students attended the academic track (Gymnasium), 459 students attended the intermediate track (Realschule), 265 students attended the low track (Hauptschule), and 356 students attended a comprehensive track (Gesamtschule/Sekundarschule), which mostly encompasses lower and middle track students.

Panel attrition between the first (i.e., mid-term of grade 7; T1) and second (i.e., end of grade 10; T2) measurement points of this study was related to different sources on the school level, class level, and individual student level. Since the BIJU study was conducted subsequent to the German reunification in 1990 and given the following transformation process especially in the Eastern part of Germany, some schools and classes had been closed or merged and thus were no longer available for participation. Thus, drop-out on the school and class levels was unsystematic. On the individual student level, students might have moved, changed school, or had to repeat a class (about 10% per year). Moreover, low-track students commonly leave school after grade level 9 to start an apprenticeship or vocational training. The minority of low-track students continuing schooling until the end of grade level 10 and thus participating in our study are students with a relatively high level of achievement and educational aspirations. Although our sample can thus be regarded as positively biased in terms of students' achievement (Baumert, Köller, & Schnabel, 2000), it can be taken as

sufficiently representative for students with a regular secondary school career across grade levels 7 to 10.

Measures

Political efficacy. Political efficacy was measured at both T1 and T2 by the following four items (T1: $\alpha = .839$, T2: $\alpha = .901$) taken from the “Trierer Inventar zur politischen Partizipation Jugendlicher” (TIPP-H; Krampen, 1988): “Thinking in political contexts suits me.; As far as the discussion of politics is concerned, I can actually always find something to say.; I find it easy to understand political matters.; Participation in debates on political topics is easy for me”. The respective scale of the TIPP-H was designed to measure the construct of self-concept of political competence defined as students’ self-perceptions of competence in the domain of politics. Since the wordings of the items were highly similar to the items used to assess internal political efficacy in the ICCS (Schulz et al., 2011)¹ and correspond to alternative approaches to measuring internal political efficacy (Craig, & Maggionto, 1982; Craig et al., 1990; Morrell, 2003; Niemi et al., 1991), we applied this scale to depict internal political efficacy. Students had to respond on a 4-point Likert scale whether the item statements were totally true (1), more probably true (2), more probably not true (3), or not true (4). For ease of interpretation, the items were recoded before the analyses so that higher values indicated higher levels of political efficacy.

Political information behavior. The scale for assessing students’ information behavior related to politics (TIPP-H; Krampen, 1988) applied at both measurement points asked for the frequency of students seeking information about politics by means of talking to their family or friends, reading the newspaper or magazines, or watching news on TV. The scale consisted of four items (T1: $\alpha = .765$, T2: $\alpha = .775$) to which the students had to respond on a 5-point Likert scale (1 = daily, 2 = several times a week, 3 = once a week, 4 = more seldomly, 5 = never). Recoded items were utilized in the analyses in order that higher values represented more frequent information behavior.

Interest in politics. At T1 and T2, the students were asked to rate their interest in politics on a single item by using a 5-point Likert scale (1 = very high, 2 = high, 3 = medium, 4 = low, 5 = very low). This item had been administered in the previous national (GLES; German Longitudinal Election Study) and international election studies (ANES; American National Election Studies) as well as in the German General Social Survey (GGSS) (Gabriel & van Deth, 1995). Again, responses were recoded so that higher values depicted higher levels of interest.

Political knowledge. Students completed a political knowledge test at both T1 and T2. The test comprised questions referring to students' knowledge about Germany's political system, national and international institutions, and economics. The items were drawn from previous national and international studies, in particular from the Six Subjects Study (cf., Torney, Oppenheim, & Farnen, 1975) developed by the International Association for the Evaluation of Educational Achievement (IEA; 9 items), a study by Fend and Prester (1986; 6 items), a study by Schulze (1977; 2 items), and three items from a German version (Beck & Krumm, 1990) of the Test of Economic Literacy (Walstad & Soper, 1987). At both T1 and T2, the political knowledge test comprised 13 items in total. Five identical items were used in the different test versions at T1 and T2 so that an anchor-item design was used (Hambleton & Swaminathan, 1985). Internal consistency assessed by Kuder-Richardson Formula 20 (KR-20) was .77 at T1 and .76 at T2. Individual achievement scores were calculated in a vertical test-equating procedure on the basis of the one-parameter item response model within the framework of item response theory (IRT; Embretson & Reise, 2000) using weighted likelihood estimates (WLE; Warm, 1989) in the ConQuest software (Wu, Adams, & Wilson, 1998). The item and ability parameters of T2 were rescaled according to the metric of T1.

Statistical Analyses

All analyses were based on the structural equation modeling (SEM) framework and were conducted with *Mplus* Version 7.1 (Muthén & Muthén, 1998-2012). We used the

maximum likelihood estimator with robust standard errors and fit statistics (i.e., the MLR option in *Mplus*) which has been found to be robust against violations of normality assumptions of the measured variables and which is sensitive to the treatment of categorical variables originating from 4-point (political efficacy and political information behavior) and 5-point (interest in politics) Likert response scales as continuous variables (e.g., Beauducel & Herzberg, 2006). The students in our sample came from 222 different classes located in 123 different schools so that our sample cannot be taken as a randomly selected sample with independent observations because students attending the same class might be more similar to each other than to students attending other classes. We thus defined students' classes as a cluster variable and conducted all analyses by applying the `type = complex` option in *Mplus* which corrects for possibly biased standard errors of parameter estimates and inflated levels of Type I error due to the hierarchical nature of the data.

We started with confirmatory factor analytic (CFA) models (Brown, 2006) in order to test the integrity of the political efficacy measure. To conduct longitudinal analyses and examine the development of political efficacy, measurement invariance across time should be established (Millsap, 2011; Van den Schoot, Lugtig, & Hox, 2012). Accordingly, we first tested the invariance of factor loadings of the items used to measure political efficacy across time to ensure that the same constructs with the same underlying meanings were assessed at both measurement points. Second, we examined the invariance of item intercepts across time as an important prerequisite to test the developmental trajectory of the factor means of political efficacy, which was finally realized by a latent change model (McArdle, 2009; McArdle & Nesselroade, 1994). In the latent change models, the variance of T2 political efficacy was decomposed into its initial value at T1 and a difference score depicting the change between T1 and T2: $\text{political efficacy T2} = 1 * \text{political efficacy T1} + 1(\text{political efficacy T2} - \text{political efficacy T1})$. Hence, the difference score directly represents the difference between the mean levels at t1 and t2 and can be tested for significance. As a latent

variable, the difference score can function as an endogenous variable that is itself predicted by other variables. This option allows for examining whether boys and girls differ in their mean level development of political efficacy.

Cross-lagged panel models (Curran & Bollen, 2001) were applied to examine the longitudinal relations between political efficacy and the different outcome variables. To examine whether boys and girls differed in their relations between political efficacy and the outcome measures, a series of multi-group invariance tests were conducted using gender as a grouping factor. Starting with a model of configural invariance (i.e., assuming an invariant factor pattern with the same number of factors defined by the same set of items), the taxonomy of invariance models continues with tests of weak measurement invariance (i.e., assuming invariant factor loadings) as the precondition for all further invariance tests, strong measurement invariance (i.e., assuming invariant factor loadings and item intercepts) required to test for latent mean differences, and strict measurement invariance (i.e., assuming invariant factor loadings, item intercepts, and item uniquenesses; Meredith, 1993; Millsap, 2011). The series of invariance models then proceeds with models for evaluating the invariance of factor variances. In the case of invariant factor variances, invariant factor correlations can be tested by probing invariant factor covariances (Marsh, 1994). Finally, the factor means were restricted to be of the same size and thus set to be invariant in order to test gender differences in the factor mean levels.

All models including factors for the same constructs at both measurement points (e.g., political efficacy at T1 and T2) integrated correlated uniquenesses between items which were repeatedly used at both measurement points as a protection against biased stability estimates and commonly leading to improved model fit (Marsh & Hau, 1996). Missing data on the variables were handled by the full maximum likelihood estimator (FIML) implemented in *Mplus*. This approach has been found to result in efficient and less biased parameter estimates even in the case of a high amount of missing data (Graham, 2009), and it is accepted as an

adequate means of accounting for missing data in longitudinal studies (Jeličić, Phelps, & Lerner, 2009)².

For the purpose of model fit evaluation, we report a wide range of descriptive goodness-of-fit indices (e.g., Marsh, Hau, & Wen, 2004) including the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) including its confidence interval, and the standardized root mean square residual (SRMR). For the CFI and TLI, values above .90 and .95 represent an adequate respectively good model fit (Hu & Bentler, 1999). For the RMSEA, values should be below .05 for a close fit, or between .05 and .08 for a reasonable fit (Browne & Cudeck, 1993). Regarding the SRMR, Hu and Bentler (1999) propose values below .08 for a good model fit although others (e.g., Kline, 2005) also accept values below .10. For the purpose of evaluating longitudinal or multi-group invariance, we follow the advice to inspect the changes in the descriptive goodness-of-fit indices between less and more restrictive models. Cheung and Rensvold (2002, see also Chen, 2007) suggested that invariance can be asserted as long as the CFI does not drop more than $\Delta = -.01$. Thus, there are several guidelines for evaluating the fit of latent variable models including invariance models but these guidelines should not be treated as universally applicable “golden rules”. Model evaluation is rather a complex operation and researchers should use goodness-of-fit indices including their cut-off values as rough guidelines only while simultaneously considering other information such as parameter estimates as well as the statistical conformity and theoretical adequacy of a resulting model (Marsh et al., 2004).

Results

Development of Political Efficacy across Adolescence

After confirming a separate factor for political efficacy defined by the four respective items at T1 (Model S1 of the Online Supplements) and T2 (Model S2 of the Online Supplements) separately, Model 1 (Table 1) stated one factor for political efficacy at T1 and one factor for political efficacy at T2. This model demonstrated a good model fit and showed

a correlation of $r = .490$ ($p < .001$) between the political efficacy factors implying a moderate stability of political efficacy between grade levels 7 to 10.

The next set of models was used to test longitudinal measurement invariance. In this context, Model 2 assumed invariant factor loadings across time while Model 3 additionally included time-invariant item intercepts. The decline in the CFI value between these two models ($\Delta\text{CFI} = -.01$) was exactly at the threshold of the tolerable range (i.e., $\Delta\text{CFI} \leq -.01$) for stating invariance (Cheung & Rensvold, 2002). Given this finding, it might be critical to maintain strong longitudinal measurement invariance (i.e., factor loading and item intercept invariance; Meredith, 1993), yet it is essential to meaningful studies of mean level development. Hence, to further scrutinize the longitudinal invariance of item intercepts, we stated a model of partial invariance (Byrne, Shavelson, & Muthén, 1989). Since the intercept of the first item for measuring political efficacy (“Thinking in political contexts suits me.”) was found to substantially increase across T1 and T2, this intercept was freed and thus not restricted to be invariant across time in Model 3a. This model of full invariance of factor loadings and partial invariance of item intercepts (i.e., assuming the intercepts of all items apart from the intercept of the first item to be of equal size at T1 and T2) resulted in a good model fit, which did not substantially decrease compared to Model 2. Hence, the findings supported at least partial longitudinal invariance of item intercepts enabling a meaningful investigation of the mean level development of political efficacy over time. For this purpose, we stated a latent change model (Model 4). The results indicated an increase of political efficacy between grade levels 7 and 10 given the positive value of the difference score (standardized value: .421). This finding was further supported by the descriptive statistics (Table 2).

Gender Differences in the Mean Level and Development of Political Efficacy

In order to examine whether boys and girls differed in their mean levels of political efficacy, we conducted a Multiple Indicators Multiple Causes (MIMIC) model (Hancock,

2001) using students' gender as a binary predictor variable (0 = female, 1 = male) for the two factors of political efficacy measured at T1 and T2 (Model 5). Gender was found to have a significant effect on political efficacy at both measurement points (T1: $\beta = .194$; T2: $\beta = .274$; both $p < .001$) indicating that boys displayed higher levels of political efficacy at T1 and T2.

To investigate whether boys and girls differed in the mean level development of political efficacy, gender was included as a binary predictor variable (0 = female, 1 = male) of the difference score in the latent change model (Model 4) leading to Model 6. Gender was found to be significantly related to the difference score ($\beta = .166$, $p < .001$) indicating that the increase in political efficacy was more substantial for boys than for girls. This finding was further confirmed by the descriptive statistics (Table 2).

Longitudinal Relations to Outcome Variables

A further target of this study was to examine the longitudinal relations of political efficacy to the three outcome variables (i.e., political information behavior, interest in politics, and political knowledge). Starting the respective analyses by considering political information behavior as an outcome variable, Model S8 assumed separate factors for political efficacy and political information behavior at each measurement point. Based on this model, a cross-lagged panel model³ (Model 7) estimated the mutual effects of political efficacy and political information behavior across time. Prior political efficacy was found to be related to later political information behavior ($\beta = .184$, $p < .001$), and prior information behavior was found to be related to subsequent political efficacy ($\beta = .148$, $p < .001$; Figure 1).

To test for differences in boys' and girls' relations between political efficacy and information behavior, we conducted a series of invariance models (Models S9 to S15). These models all included factors for political efficacy and information behavior at T1 and T2, while considering gender as a grouping variable. The results provided support for strict measurement invariance across gender (i.e., invariance of factor loadings, item intercepts, and item uniquenesses, see Model S12). Model S13 further demonstrated invariance of factor

variances enabling researchers to conduct tests of invariant factor covariances to examine the invariance of factor correlations (Marsh, 1994). Due to a gain in model parsimony, the fit even increased when stating invariant factor covariances in Model S14, illustrating that boys and girls did not differ in their relations between political efficacy and political information behavior. The model fit, however, declined substantially ($\Delta\text{CFI} = -.012$) when additionally constraining the factor means to be invariant across gender (Model S15). This finding suggests gender differences in the factor means. For identification purposes, in the model of strong measurement invariance (i.e., invariant factor loadings and item intercepts; Model S11), the factor means were fixed to zero in one group (girls in our case) serving as the reference group but freely estimated in the other group (boys in our case). The estimated factor means for boys can thus be interpreted as their deviance from girls' factor means expressed in *SD* units. We also calculated effect sizes according to Cohen's (1988) *d* realized in SEM (Hancock, 2001) for which, in our case, positive values indicated higher values for boys. Corresponding to the results emanating from the MIMIC model reported above, boys displayed higher mean levels of political efficacy at both measurement points (T1: .369; T2: .558; both $p < .001$) with an effect size growing from a small (T1: $d = 0.40$) to a medium (T2: $d = 0.58$) effect. In addition, boys were found to have higher mean levels of political information behavior at T1 (.284, $p < .001$) and T2 (.444, $p < .001$). Again, the corresponding effect sizes increased from a small effect at T1 ($d = 0.30$) to a medium effect at T2 ($d = 0.62$).

Considering interest in politics, the same series of analyses was conducted as when applying political information behavior as an outcome variable. Based on a model with separate factors for interest in politics and political efficacy at each measurement point (Model S16), a cross-lagged panel model (Model 8) was estimated. Political efficacy measured at T1 was found to be significantly associated with interest in politics measured at T2 ($\beta = .273$, $p < .001$), whereas previous interest in politics at T1 was not found to be related with subsequent political efficacy at T2 ($\beta = .014$, *ns*; Figure 1).

The invariance models supported configural (Model S17), weak (Model S18), strong (Model S19), and strict (Model S20) measurement invariance across gender as well as the invariance of factor variances (Model S21), and covariances (Model S22). Thus, boys and girls were found to display similar relations between political efficacy and interest in politics at both measurement points. The results, however, indicated gender differences in the factor means due to a substantial decrease in model fit ($\Delta\text{CFI} = -.017$) when restricting the factor means to be of equal size in both gender groups (Model S23). Besides their higher mean levels of political efficacy, boys were found to have higher mean levels of interest in politics at both time points (T1: .288; T2: .423; both $p < .001$) with small to medium effect sizes (T1: $d = 0.32$; T2: $d = 0.46$).

Using political knowledge as an outcome variable, Model S24 included separate factors for political efficacy and political knowledge at both measurement points. The cross-lagged panel model (Model 9) revealed positive relations between previous political efficacy and subsequent political knowledge ($\beta = .134, p < .001$) as well as between previous political knowledge and subsequent political efficacy ($\beta = .108, p < .001$; Figure 1).

The relations between political efficacy and political knowledge were found to be similar for boys and girls since the declines in the CFI values were above the cut-off criterion of $\Delta\text{CFI} = -.01$ across the different models in the hierarchy of invariance models up to the model of invariant factor variances and covariances (Models S25 to S30). However, there was a substantial decline in model fit when additionally assuming invariant factor means (Model S31). Boys and girls were not only found to differ in their mean levels of political efficacy favoring boys but boys also demonstrated higher levels of political knowledge at T2 (.174, $p < .001$; $d = 0.18$). Boys and girls displayed similar mean levels of political knowledge at T1 (see also Table 2).

Discussion

The present study extends research on political efficacy as a frequently studied construct of students' political socialization at the micro level by examining its mean level development and outcome relations across three years of adolescence (grade 7 to 10). Mean level development and outcome relations were investigated along with gender differences. With respect to outcome relations, three different outcome variables were considered including behavioral (information behavior), affective (interest in politics), and cognitive (political knowledge) constructs.

Development of Political Efficacy and Outcome Relations

The findings revealed that political efficacy increased across grade levels 7 to 10. This finding replicates results from previous studies on the developmental trajectory of political efficacy (Eckstein et al., 2012; Zaff et al., 2011) and fits the notion of adolescence marking the period of political socialization (De Haan & Schulenberg, 1997; Fend, 1991; Flanagan & Gallay, 1995; Sears & Levy, 2003).

The findings of the longitudinal analyses showed reciprocal relations between political efficacy and political information behavior. This stands in contrast to the findings from Gastil and Xenos (2010) according to which media use had a significant effect on political efficacy but political efficacy did not show any effect on media use. Gastil and Xenos yet studied an adult sample while the present study covers a long time period in adolescence. Corresponding to our results, the direction of influence between political efficacy and information behavior seems to be mutually reinforcing throughout this developmental period, complementing the effect of behavior on attitudes found by Gastil and Xenos by a simultaneous effect of attitudes on behavior. Adolescence as the peak time of political socialization might lead to close interrelations between politics-related attitudes and behaviors. Further studies should thus examine whether the relationship between political efficacy and politics-related outcomes might change contingent upon the age or developmental phase of the sample considered (see below). Moreover, the divergent findings might be grounded in the use of different

instruments to measure political information behavior in our study and media use in the study by Gastil and Xenos. When examining the relation between political efficacy and media use, the type and content of media should be taken into account. For example, in a cross-sectional study, Aarts and Semetko (2003) demonstrated that watching public television facilitates, while watching commercial television mitigates, political efficacy. Both the measures for political information behavior and media use as applied in this study and in the study by Gastil and Xenos did not ask for internet use although recent studies documented a positive impact of information-seeking internet use on political knowledge, political participation and engagement, and political interest (Bakker & de Vreese, 2011; Boulianne, 2009; Quintelier & Vissers, 2007). Hence, future studies are necessary to probe for the relation between internet use and political efficacy.

The longitudinal analyses further revealed reciprocal relations between political efficacy and political knowledge. Hence, political efficacy can be conceptualized as an outcome and determinant of political knowledge. This corresponds to other studies showing mutually reinforcing relations between competence self-perceptions and achievement outcomes, extending them to the domain of politics (Ferla et al., 2009; Huang, 2012; Marsh & Craven, 2006; Parker et al., 2014; Valentine et al., 2004).

With respect to interest in politics, the results only showed unidirectional relations since former political efficacy was related to later interest in politics, but former interest in politics was not related to later political efficacy. This finding replicates findings on the relations between competence self-perceptions and interest in other domains than politics. For instance, prior competence self-perceptions in math were associated with subsequent interest in math, but prior math interest displayed a negligible relation with subsequent math competence self-perceptions (Marsh et al., 2005). Hence, this finding supports the assumption that students become more interested in and are inclined to attribute more value to those domains in which they also feel competent (Jacobs et al., 2002). The important role of self-

efficacy beliefs in forming interest (Bandura, 1997; Bandura & Schunk, 1981) has often been demonstrated academic or vocational domains (Fouad & Smith, 1996; Fouad, Smith, & Zao, 2002; Lent, Brown, & Hackett, 1994; Lent et al., 2008) and thus seems to also apply to the domain of politics.

At a first glance, the longitudinal relations between political efficacy and the three outcome variables seem rather small. However, the coefficients for longitudinal relations in cross-lagged panel models should always be interpreted against the background of the stability of the constructs over time (Adachi & Willoughby, 2014). The constructs of political socialization investigated here displayed substantial stability estimates which might have attenuated the effects among them across time. Moreover, it should be noted that the two measurement points considered in this study were three years apart (grade level 7 to 10), and this substantial time lag might also prevent higher longitudinal relations among constructs. Finally, it has to be noted that cross-lagged panel models conducted in other domains with even smaller time lags have revealed coefficients for longitudinal relations among constructs which show similar sizes to the ones we found for the longitudinal relations between political efficacy and politics-related outcomes (e.g., Arens et al., in press; Carlo, Padilla-Walker, & Nielson, 2015; Gross, Shaw, & Moilanen, 2008; Marsh et al., 2005; Zimmermann, Schütte, Taskinen, & Köller, 2013). Hence, the relations between political efficacy and politics-related outcomes found in this study can still be considered to be meaningful and of practical importance (see below).

Gender Differences

Gender differences were examined with respect to the mean levels of political efficacy, its mean level development, and in the pattern of relations between political efficacy and outcome criteria. Boys were found to display higher mean levels of political efficacy at both time points. In addition, boys demonstrated higher mean levels of information behavior and interest in politics at both time points, and political knowledge at the second measurement

point. These findings match the previously found gender differences in various constructs of political socialization such as interest and engagement in politics (e.g., Briggs, 2008; Cicognani et al., 2012; Fend, 1991; Mayer & Schmidt, 2004; Paxton et al., 2007; Verba, Burns, & Scholzman, 1997), and replicate boys' superior political efficacy (Caprara et al. 2009; Eckstein et al., 2013; Solhaug, 2006; Vecchione & Caprara, 2009).

Our findings implicated a gender-specific trajectory of political efficacy as the increase in the mean level of political efficacy across grade levels 7 and 10 was found to be more pronounced for boys than for girls. Given that boys were found to display higher levels of political efficacy already in grade 7, gender differences in political efficacy seem to be reinforced with students' age. The development of political efficacy therefore seems to be in line with the gender intensification hypothesis (Hill & Lynch, 1983). Interestingly, the gender intensification hypothesis has been disputed in recent studies on the trajectories of other domain-specific competence self-perceptions and motivation constructs. Following a gender-stereotypic pattern, boys were found to display higher mean levels of self-perceptions and motivation in the domains of math and physical ability, while girls were found to show higher mean levels in the verbal domain (Cvencek, Meltzoff, & Greenwald, 2011, Eccles, Wigfield, Harold, & Blumenfeld, 1993; Marsh, 1989; Meece, Glienke, & Burg, 2006; Steinmayr & Spinath, 2008). Hence, the gender intensification hypothesis would predict that these gender differences might grow across adolescence leading to increasing boys' superiority on math-related and physical ability-related constructs and girls' augmenting advantage on verbal-related constructs. However, many studies found that gender differences in mean levels of motivational constructs remain stable across adolescence (Watt, 2004), or even decrease (i.e., *gender convergence hypothesis*; Fredricks & Eccles, 2002; Jacobs et al., 2002; Nagy et al., 2010) when considering the math, verbal, and physical ability domains. Thus, in the context of the debate on whether gender differences in mean levels of motivation and self-perceptions increase (gender intensification hypothesis), decline (gender convergence hypothesis), or

remain unchanged during adolescence, researchers are advised to separately consider each construct (i.e., interest, self-efficacy) and each domain (i.e., math, politics).

Since this study and previous ones consistently found higher mean levels of political efficacy for boys (Caprara et al. 2009; Eckstein et al., 2013; Solhaug, 2006; Vecchione & Caprara, 2009), a gender-stereotypic pattern of outcome relations would suppose higher relations between political efficacy and political information behavior, political interest, and political knowledge for boys. However, boys and girls did not differ in their longitudinal relations between political efficacy and the three outcome variables considered. This result corresponds to previous findings from research on other domain-specific motivation constructs and extends them to the domain of politics. Given the gender stereotypic mean level differences (see above), one would expect higher relations between math (verbal) motivation and self-beliefs and math (verbal) achievement for boys (girls). However, boys and girls were found to differ in the sizes of relations between math or verbal competence self-perceptions and achievement measures (Helmke & van Aken, 1995; Marsh & Yeung, 1998; Valentine et al., 2004). Looking at other outcomes than achievement, there was no evidence of gender-differential relations between self-beliefs and choices in math and science either (Simpkins & Davis-Kean, 2005; Simpkins, Davis-Kean, & Eccles, 2006). In addition, Marsh et al. (2005) demonstrated gender-invariant longitudinal relations between competence self-perceptions, interest, and achievement in math (see also Marsh & Yeung, 1998). Furthermore, our findings match insights from the domain of politics since Manganello et al. (2014) found no gender differences in the strength of the relation between political efficacy and civic knowledge. In the present study, these findings were replicated for longitudinal relations and a wider set of politics-related outcomes (i.e., political information behavior, interest in politics, and political knowledge).

Practical and Theoretical Implications and Directions for Future Research

This study entails various practical implications. In essence, it highlights the importance of political efficacy, which was demonstrated to influence later political information behavior, interest in politics, and political knowledge. This insight might stimulate efforts in fostering students' political efficacy. There is indeed evidence that civic education programs can enhance political efficacy which itself also acts as a mediator variable in the effectiveness of intervention programs to promote political participation (Pasek et al., 2008, see also Kahne & Westheimer, 2006). Given the found reciprocal relations between political efficacy on the one hand and political information behavior and political knowledge on the other hand, it seems necessary to combine intervention approaches targeting political efficacy with intervention approaches promoting political information behavior and political knowledge. However, the finding of the unidirectional relation between political efficacy and interest in politics indicates the relevance of promoting political efficacy for the purpose of enhancing students' interest in politics. Future research is necessary to design effective interventions to promote students political efficacy. Such endeavors might base on and benefit from self-efficacy enhancement interventions in other academic (writing, math, and science: Bandura & Schunk, 1981; Hidi, Berndorff, & Ainley, 2002; Luzzo, Hasper, Albert, Bibby, & Martinelli, 1999; Zimmerman & Kitsantas, 2002), non-academic (sports: Kitsantas, Zimmerman, & Geary, 2000), and vocational domains (Betz & Schifano, 2000). These intervention approaches employ various means to foster self-efficacy including modeling, feedback strategies, encouragement and social support, as well as mastery experiences, and these strategies should be adapted and empirically validated for the domain of politics.

Timely attempts to promote students' political efficacy seem to be important since political socialization in adolescent years might affect political life and behavior in adulthood. For example, political involvement during adolescent years has been found to predict voting behavior and political engagement in adulthood (Flanagan, 2004; Youniss et al., 2002). Finally, specific intervention approaches to promote individuals' political efficacy should go

along with general efforts at the school and classroom level to foster political education comprehensively (Pasek et al., 2008; Sohl & Arensmeier, 2015; Torney-Purta, 2002). Joint efforts in enhancing political efficacy and increased attention to political education might trigger a reversal of the growing alienation and disinterest of adolescents in politics (Jennings & Stoker, 2004; Sherrod, Flanagan, & Youniss, 2002; Syvertsen, Wray-Lake, Flanagan, Wayne Osgood, & Briddell, 2011) and might help secure the functioning and sustainability of democratic systems (Galston, 2001; Verba, Schlozman, & Brady, 1995).

The findings on gender differences in the mean levels of political efficacy, political information behavior, political knowledge, and interest in politics indicated small to medium effect sizes which are consistently in favor of boys. In addition, boys' superiority on the mean levels of constructs of political socialization was found to increase with students' age. On a practical level, these findings indicate that especially girls might be in need of interventions to foster political efficacy in particular and political socialization in general. Effective and sustainable interventions to foster girls' political socialization early in adolescence seem to be of high importance as otherwise girls are likely to be left behind due to boys' initial and further increasing superiority leading to politics as a male-dominated domain. Intervention programs should thus take care to adequately address girls' needs, pre-knowledge, and preferences.

Theoretically, the present study enriches findings on political efficacy and embeds this construct into a network of other facets of political socialization (i.e., political information behavior, interest in politics, and political knowledge). This network should be further expanded, for example by also integrating students' sense of belonging to the community (e.g., Chiessie, Cicognani, & Sonn, 2010), trust in politics (Levi & Stoker, 2000), or political participation (Eckstein et al., 2012; Quintelier & van Deth, 2014; Vecchione & Caprara, 2009). Here, it is important to note that various constructs of political socialization might show differential developmental trajectories including gender effects across adolescence.

Other constructs of political socialization – for example, institutional trust (Fend, 1991; Hooghe, & Wilkenfeld, 2008; Jennings & Stoker, 2004) or the degree of confidence in the government and parliament (Quintelier & van Deth, 2014) – might suffer from a decline during adolescent years, at least in short term. This might be due to adolescents' critical reviews of political issues which might result from increasing examinations of and reflections on political issues (Wasburn, 1994). Hence, although adolescence can be seen as the peak period of political socialization (De Haan & Schulenberg, 1997; Fend, 1991; Flanagan & Gallay, 1995; Sears & Levy, 2003; Yates & Youniss, 1998), this does not automatically imply a positive development with concurrent increases in the mean levels of all facets of political socialization. Instead, researchers and practitioners should be aware that the distinct components of political socialization might show differential developmental trajectories and outcome relations and may require differential intervention strategies. Moreover, only internal political efficacy is considered in the present study while external political efficacy has been neglected and should thus be integrated in further studies.

Future studies should be conducted in order to unveil variables contributing to the formation and explanation of constructs of political socialization. In this context, studies should examine the relation between political efficacy and student characteristics whereby both politics-related and general personal characteristics should be taken into account. With respect to politics-related characteristics, Caprara et al. (2009) found higher mean levels of political efficacy in persons demonstrating higher levels of political ideology and political commitment irrespective of their political orientation on the left (liberal)-right (conservative) continuum. Hence, it might be interesting to further explore the association between political efficacy and political ideology. With respect to general student characteristics, it might be promising to investigate the association between personality traits and political efficacy. In this context, individuals with higher levels of extraversion and openness have been demonstrated to display higher levels of political efficacy (Vecchione & Caprara, 2009).

Hence, further studies should build upon this finding and study differential developmental trajectories and outcome relations of political efficacy contingent upon personality traits. In addition, studies on the development and outcome relations of constructs of political socialization should take into account their consistently found strong association with background variables. For instance, higher socioeconomic status (SES) and higher levels of education have been found to be related to higher levels of political efficacy (Caprara et al., 2009; Cohen et al., 2001; Vecchione & Caprara, 2009) and higher levels of civic knowledge (Atkins & Hart, 2003). Finally, environmental and socialization factors should be considered as political efficacy (and other facets of individual political socialization) including their development and outcome relations might be affected by parental or peer influences (Cicognani et al., 2012; Flanagan, Bowes, Jonsson, Csapo, & Sheblanova, 1998; Gniewosz, Noack, & Buhl, 2009; Neundorf, Smets, & García-Albacete, 2012; Oswald & Schmid, 1998; Quintelier, 2014).

A limitation of this study concerns the inclusion of only two measurement points which did not allow for a more fine-grained study of the developmental trajectory of political efficacy across adolescence. Hence, further studies would benefit from integrating additional measurement points throughout the life span. Respective studies would enable the integration of political efficacy into life-course models of political socialization (e.g., Jennings & Stoker, 2004; Wasburn, 1994). Such models distinguish between different developmental stages characterized by differential mean levels, outcome relations, stability, and susceptibility of various facets of political socialization. In this context, the inclusion of younger students might be particularly worthwhile to gain insights into the timing and conditions of the formation of political efficacy and whether the size of outcome relations differs with students' age.

Further reflection seems to be needed with respect to the construct of political efficacy including its conceptual definition and empirical operationalization. At a global level, a

problem targets the distinction between constructs addressing the social, civic, and political levels (Amnå, 2012). While some authors (Youniss et al., 2002; see also Flanagan & Faison, 2001) argue for an integrated framework, others (Amnå, 2012) advocate for a strict distinction between social, civic, and political engagements, postulate a clearer conceptual clarity, and hint at different ambitions, orientations, and perspectives of social, civic, and political constructs (see also Walker, 2002). Nevertheless, interconnections between constructs on the social, civic, and political levels seem plausible (for empirical findings see Cicognani et al., 2012; Manganelli et al. 2014), and their exploration presents an avenue for future research. At the level of constructs specially referring to the domain of politics, existent literature seems to adhere to various constructs with different labels, although they seem to overlap. For instance, the items used in this study to assess political efficacy were designed by Krampen (1988, 1991) to measure self-concept of one's own political competence, yet these items revealed a high level of overlap with the items used to measure internal political efficacy in the ICCS (Schulz et al., 2011). Thus, the constructs of internal political efficacy and self-concept of one's own political competence seem to be similar to each other on the conceptual theoretical level as well as the empirical level of operationalization. Future research is necessary to clarify the meaning of various constructs referring to students' competence self-perceptions in the domain of politics elucidating their similarities and differences. In this context, it should be tested whether and how results vary contingent upon the theoretical approach to political efficacy, that is, when using Bandura's (2001) framework of self-efficacy asking for students' self-perceptions of competence to successfully accomplish specific behaviors (e.g., Caprara et al. 2009; Vecchione & Caprara, 2009) instead of asking for students' general self-perceptions of competence related to the political domain as realized in the present study. Moreover, measurement issues should be taken into account since various instruments and scales exist for measuring internal political efficacy which themselves have been criticized for their poor psychometric properties and blurred separation

from related constructs (Craig et al., 1990). Although the scale of political efficacy used here demonstrated good reliability estimates and the relations to the three political outcomes supported its validity, it is necessary to further examine its adequacy for the assessment of political efficacy. It might also be worthwhile to test whether political efficacy in itself comprises further facets. The domain of politics can be classified into conventional forms of politics addressing national and international affairs and non-conventional forms such as local politics, social politics, or environmentalism. Women were found to display higher levels of interest and engagement in areas of non-conventional politics (e.g., Briggs, 2008; Oswald & Schmid, 1998; Verba et al., 1997). Therefore, gender effects in the mean levels, in the mean level development, and in the outcome relations of political efficacy might vary contingent upon the conceptualization and specific facet of politics considered.

Besides reflections on the conceptual definition and measurement of political efficacy, a brief note on the assessment of interest in politics seems also necessary. Interest in politics was measured by one item only and a broader conceptualization of interest is needed which should consider different theoretical and methodological approaches to the construct (Hidi et al., 2004; Wigfield & Cambria, 2010).

The sample of this study consists of German adolescent students only so that further research is needed to examine whether the findings can be generalized to samples from other countries or cultures, or to different periods in history. The first measurement point took place shortly after Germany's reunification and the sample comprised students from federal states in both former East and West Germany. Additional analyses⁴ did not show any differences between students from former East and West Germany with regard to their outcome relations and mean levels (at T1 and T2) of political efficacy. However, East German students revealed a more positive development of political efficacy, i.e., the increase in mean level was larger in this group. East German students also demonstrated higher levels of political knowledge at both time points, while West German students displayed higher interest in politics at T1.

Hence, there seemed to be only few differences between East and West German students and German reunification seemed to have only little impact on the findings. Although this conclusion might at a first glance be surprising given the tremendous social and political changes associated with the reunification, this conclusion matches the insights from the study of Prior (2010). This study demonstrated high stability or persistence of political interest and political, social, and historical events only had a weak and short-dated influence. Yet, further studies are needed to illuminate which, when, and how socio-political and historical events and conditions impact on the stability, level, and trajectory of various constructs of political socialization. In sum, the present study contributes to theory and research by offering new insights into the construct of political efficacy, and it also offers stimulating suggestions for future research.

Footnotes

¹ See the item wordings on p. 179 of the ICCS technical report edited by Schulz et al. (2011): “I know more about politics than most people of my age.; When political issues or problems are being discussed, I usually have something to say.; I am able to understand most political issues easily.; I have political opinions worth listening to; As an adult, I will be able to take part in politics.; I have a good understanding of the political issues facing this country.”

² On request, the *Mplus* input files for all models reported in this study can be provided to interested readers by the first author.

³ Preliminary models (Models S3 to S7 in Table S1 of the Online Supplements) provided evidence of the longitudinal invariance of factor loadings and item intercepts for the factors of political information behavior.

⁴ Additional models were conducted in order to test the invariance of findings across students from former East ($N = 1200$) and West ($N = 1304$) Germany. The results are depicted and described in Table S3 of the Online Supplements. In essence, the findings indicate that students from East and West Germany did not differ in their mean levels of political efficacy

(Model G1) and political information behavior (Model G9) at both time points. They also showed similar levels of interest in politics at T2, but East German students displayed lower mean levels of interest in politics at T1 (Model G16), but higher levels of political knowledge at both time points (Model G23). The latent change model (Model G2) for depicting the mean level development of political efficacy demonstrated that East German students experienced a more positive development, i.e., a larger increase of political efficacy between T1 and T2. East and West German students were found to display similar relations between political efficacy and the three outcome variables (i.e., political information behavior, interest in politics, and political knowledge) as the model fits did not decline substantially when including invariant factor covariances (Models G8, G15, G22) relative to models with freely estimated factor covariances (Models G7, G14, G21).

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Table 1

Goodness-of-fit Indices

Model	Model description	χ^2	df	CFI	TLI	RMSEA	CI RMSEA	SRMR
1	Separate factors for political efficacy at T1 and T2	52.741	15	.995	.990	.032	[.023; .041]	.014
2	Separate factors for political efficacy at T1 and T2, invariance of factor loadings	57.203	18	.994	.991	.029	[.021; .038]	.017
3	Separate factors for political efficacy at T1 and T2, invariance of factor loadings and item intercepts	134.372	21	.984	.978	.046	[.039; .054]	.030
3a	Separate factors for political efficacy at T1 and T2, invariance of factor loadings and partial invariance of item intercepts	91.701	20	.990	.986	.038	[.030; .046]	.020
4	Latent change model	52.741	15	.995	.990	.032	[.023; .041]	.014
5	MIMIC model with gender as a predictor	78.215	21	.992	.987	.033	[.025; .041]	.015
6	Latent change model with gender as a predictor of the difference score	289.358	22	.964	.941	.070	[.063; .077]	.105
7	Separate factors for political efficacy and information behavior at T1 and T2, cross-lagged panel model	387.766	90	.980	.973	.036	[.033; .040]	.026
8	Separate factors for political efficacy and interest in politics at T1 and T2, cross-lagged panel model	255.668	27	.976	.960	.058	[.052; .065]	.023
9	Separate factors for political efficacy and political knowledge at T1 and T2, cross-lagged panel model	71.692	27	.995	.991	.026	[.019; .033]	.013

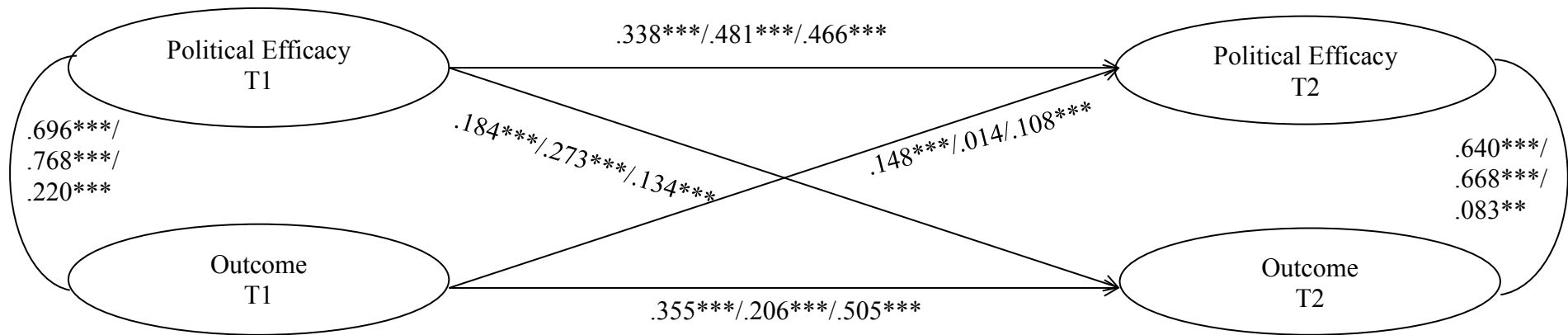
Note. All models were estimated by the maximum likelihood estimator with robust standard errors (MLR), using the type = complex option with classes as cluster variables, and with integrated correlated uniquenesses between repeatedly used items. All χ^2 values are statistically significant with $p < .05$. CFI = comparative fit index, TLI = Tucker-Lewis-Index, RMSEA = root mean square error of approximation, CI = confidence interval, SRMR = standardized root mean squared residual.

Table 2

Manifest Mean Levels (and Standard Deviations in Parentheses) Separated for Boys and Girls

	Political efficacy T1	Political efficacy T2	Information behavior T1	Information behavior T2	Interest in politics T1	Interest in politics T2	Political knowledge T1	Political knowledge T2
Total sample	2.266 (0.707)	2.444 (0.724)	2.760 (0.942)	3.028 (0.917)	2.544 (1.000)	2.778 (1.012)	0.712 (1.241)	2.162 (1.313)
Boys	2.414 (0.754)	2.667 (0.727)	2.902 (0.979)	3.243 (0.929)	2.716 (1.010)	3.028 (1.074)	0.737 (1.286)	2.307 (1.376)
Girls	2.159 (0.648)	2.281 (0.674)	2.657 (0.900)	2.874 (0.876)	2.420 (0.902)	2.598 (0.921)	0.697 (1.209)	2.067 (1.257)

Figure 1. Cross-lagged panel models for relations between political efficacy and outcome variables



Note. Standardized coefficients. The first coefficient originates from Model 9 in Table 1 when using political information behavior as an outcome variable, the second coefficient is from Model 10 in Table 1 when using interest in politics as an outcome variable, the third coefficient is from Model 11 in Table 1 with political knowledge as an outcome variable.

*** $p < .001$; ** $p < .01$; * $p < .05$.

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Table S1

Goodness-of-fit Indices

Model	Model Description	χ^2	df	CFI	TLI	RMSEA	CI RMSEA	SRMR
S1	One factor for political efficacy at T1	24.733	2	.989	.968	.067	[.045; .092]	.015
S2	One factor for political efficacy at T2	6.886	2	.998	.995	.031	[.008; .058]	.006
S3	One factor for political information behavior at T1	17.331	2	.993	.978	.055	[.033; .081]	.014
S4	One factor for political information behavior at T2	41.647	2	.982	.947	.089	[.067; .114]	.021
S5	Separate factors for political information behavior at T1 and T2	94.239	15	.985	.971	.046	[.037; .055]	.018
S6	Separate factors for political information behavior at T1 and T2, invariant factor loadings	126.210	18	.979	.967	.049	[.041; .057]	.032
S7	Separate factors for political information behavior at T1 and T2, invariant factor loadings and item intercepts	127.679	21	.979	.973	.045	[.038; .053]	.031
Political Efficacy and Information Behavior								
S8	Separate factors for political efficacy and information behavior at T1 and T2	387.766	90	.980	.973	.036	[.033; .040]	.026
S9	Separate factors for political efficacy and information behavior at T1 and T2, configural invariance across gender	492.912	180	.978	.971	.037	[.033; .041]	.029
S10	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings across gender	540.844	192	.975	.969	.038	[.034; .042]	.035
S11	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings and item intercepts across gender	581.756	204	.973	.969	.039	[.035; .042]	.035
S12	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across gender	724.414	220	.964	.961	.043	[.039; .046]	.048
S13	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across gender	759.335	224	.962	.959	.044	[.040; .047]	.069

(continued)

Table S1 (continued)

S14	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across gender	757.705	230	.963	.961	.043	[.040; .046]	.068
S15	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across gender	924.860	234	.951	.950	.049	[.045; .052]	.067
Political Efficacy and Interest in Politics								
S16	Separate factors for political efficacy and interest in politics at T1 and T2	255.668	27	.976	.960	.058	[.052; .065]	.023
S17	Separate factors for political efficacy and interest in politics at T1 and T2, configural invariance across gender	290.428	54	.974	.957	.059	[.053; .066]	.025
S18	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings across gender	320.631	60	.972	.957	.059	[.053; .065]	.033
S19	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings and item intercepts across gender	342.635	66	.970	.959	.058	[.052; .064]	.032
S20	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across gender	403.000	74	.964	.956	.060	[.054; .066]	.042
S21	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across gender	466.611	78	.958	.951	.063	[.058; .069]	.096
S22	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across gender	471.996	84	.958	.955	.061	[.056; .066]	.094
S23	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across gender	625.027	88	.941	.940	.070	[.065; .075]	.081

(continued)

Table S1 (continued)

Political Efficacy and Political Knowledge								
S24	Separate factors for political efficacy and political knowledge at T1 and T2	71.692	27	.995	.991	.026	[.019; .033]	.013
S25	Separate factors for political efficacy and political knowledge at T1 and T2, configural invariance across gender	108.294	54	.993	.989	.028	[.021; .036]	.017
S26	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings across gender	132.648	60	.991	.987	.031	[.024; .038]	.027
S27	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings and item intercepts across gender	156.085	66	.989	.985	.033	[.026; .040]	.026
S28	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across gender	228.987	74	.981	.977	.041	[.035; .047]	.039
S29	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across gender	260.617	78	.978	.974	.043	[.038; .049]	.077
S30	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across gender	270.035	84	.977	.976	.042	[.037; .048]	.078
S31	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across gender	429.306	88	.958	.957	.056	[.051; .061]	.070

Note. All models were estimated by the maximum likelihood estimator with robust standard errors (MLR), with the type = complex option using classes as cluster variables, and with integrated correlated uniquenesses between repeatedly used items. All χ^2 values are statistically significant with $p < .05$. CFI = comparative fit index, TLI = Tucker-Lewis-Index, RMSEA = root mean square error of approximation, CI = confidence interval, SRMR = standardized root mean squared residual.

Table S2

Standardized Factor Correlations between Political Efficacy, Political Information Behavior, Interest in Politics, and Political Knowledge measured at T1 and T2

	Political efficacy T1	Political efficacy T2	Political information behavior T1	Political information behavior T2	Political interest T1	Political interest T2	Political knowledge T1
Political efficacy T2	.492						
Political information behavior T1	.701	.420					
Political information behavior T2	.432	.719	.482				
Political interest T1	.768	.384	.675	.390			
Political interest T2	.431	.732	.418	.785	.415		
Political knowledge T1	.217	.211	.130	.231	.203	.237	
Political knowledge T2	.244	.233	.141	.230	.196	.279	.535

Note. The model fit of this model which is not presented in the main manuscript is $\chi^2(138) = 708.399$ ($p < .001$); CFI = .971; TLI = .960; RMSEA = .041; CI RMSEA = [.038; .044]; SRMR = .027. For all factor correlations: $p < .001$.

Table S3

Goodness-of-fit Indices of Invariance Models across East and West German students

Model	Model Description	χ^2	df	CFI	TLI	RMSEA	CI RMSEA	SRMR
G1	MIMIC model with East vs. West German students as a predictor and political self-efficacy as an outcome	63.989	21	.994	.990	.029	[.021; .037]	.014
G2	Latent change model for the mean level development of political self-efficacy with East vs. West German students as a predictor of the difference score	248.403	22	.969	.949	.064	[.057; .071]	.102
Political Efficacy and Information Behavior								
G3	Separate factors for political efficacy and information behavior at T1 and T2, configural invariance across East vs. West German students	470.306	180	.981	.974	.036	[.032; .040]	.028
G4	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings across East vs. West German students	492.211	192	.980	.975	.035	[.032; .039]	.030
G5	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings and item intercepts across East vs. West German students	516.660	204	.979	.976	.035	[.031; .039]	.031
G6	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across East vs. West German students	543.035	220	.979	.977	.034	[.031; .038]	.032
G7	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across East vs. West German students	560.251	224	.978	.976	.035	[.031; .038]	.047
G8	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across East vs. West German students	564.904	230	.978	.977	.034	[.031; .038]	0.046
G9	Separate factors for political efficacy and information behavior at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across East vs. West German students	572.697	234	.977	.977	.034	[.030; .038]	.044

(continued)

Table S3 (continued)

Political Efficacy and Interest in Politics								
G10	Separate factors for political efficacy and interest in politics at T1 and T2, configural invariance across East vs. West German students	299.970	54	.975	.958	.060	[.054; .067]	.024
G11	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings across East vs. West German students	316.403	60	.974	.961	.058	[.052; .065]	.028
G12	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings and item intercepts across East vs. West German students	330.533	66	.973	.963	.057	[.051; .063]	.028
G13	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across East vs. West German students	340.966	74	.973	.967	.054	[.048; .060]	.030
G14	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across East vs. West German students	364.853	78	.971	.966	.054	[.049; .060]	.059
G15	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across East vs. West German students	386.710	84	.969	.967	.054	[.048; .059]	.057
G16	Separate factors for political efficacy and interest in politics at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across East vs. West German students	400.477	88	.968	.968	.053	[.048; .059]	.053
Political Efficacy and Political Knowledge								
G17	Separate factors for political efficacy and political knowledge at T1 and T2, configural invariance across East vs. West German students	104.885	54	.994	.990	.027	[.019; .035]	.017
G18	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings across East vs. West German students	119.096	60	.993	.990	.028	[.021; .035]	.022

(continued)

Table S3 (continued)

G19	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings and item intercepts across East vs. West German students	129.503	66	.993	.990	.028	[.021; .035]	.022
G20	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, and item uniquenesses across East vs. West German students	150.848	74	.991	.989	.029	[.022; .035]	.024
G21	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, and factor variances across East vs. West German students	200.894	78	.986	.984	.035	[.029; .042]	.059
G22	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, and factor covariances across East vs. West German students	213.608	84	.985	.984	.035	[.029; .041]	.056
G23	Separate factors for political efficacy and political knowledge at T1 and T2, invariant factor loadings, item intercepts, item uniquenesses, factor variances, factor covariances, and factor means across East vs. West German students	363.258	88	.968	.968	.050	[.045; .055]	.076

Note. Sample sizes were $N = 1200$ for East German students and $N = 1304$ for West German students.

The MIMIC model (Model G1) did not show mean level differences for political efficacy between East and West German students; the grouping variable of East vs. West German students was not significantly related with the mean levels of political efficacy at both measurement points (T1: $\beta = -.058$; T2: $\beta = .021$, both *ns*).

In the latent change model for examining the mean level development of political efficacy, the grouping variable of East vs. West German students was significantly related to the difference score ($\beta = .072$, $p < .01$) indicating that East German students experienced a larger increase in the mean levels of political efficacy across T1 and T2 (East German students were labelled 2, West German students were labelled 1 in the analyses).

Model G16 did not indicate any mean level differences between East and West German students with regard to political efficacy and interest in politics at both time points, since the goodness-of-fit indices remain similar between Models G15 (without invariance constraints on factor means) and G16 (invariance on factor means). However, when inspecting Model G12, in which the factor means were set to zero in the group of West German students as the reference group and freely estimated in the group of East German students as the comparison group, the results showed lower mean levels of interest in politics at T1 for East German students ($-.133$, $p < .05$), but similar levels of interest in politics as T2 and political efficacy at both time points.

Given the substantial decrease in model fit between Models G22 and G23 ($\Delta CFI = -.017$; $\Delta TLI = -.016$; $\Delta RMSEA = +.015$), East and West German students seem to differ in their factor mean levels of political knowledge. The inspection of Model G19 in which the factor means were fixed to zero in the group of West German students but freely estimated in the group of East German students showed that East German

students displayed significantly higher mean levels of political knowledge at both time points (T1: .620, T2: .324; for both $p \leq .001$). All models were estimated by the maximum likelihood estimator with robust standard errors (MLR), with the type = complex option using classes as cluster variables, and with integrated correlated uniquenesses between repeatedly used items. All χ^2 values are statistically significant with $p < .05$. CFI = comparative fit index, TLI = Tucker-Lewis-Index, RMSEA = root mean square error of approximation, CI = confidence interval, SRMR = standardized root mean squared residual.