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Civic Competencies During Adolescence: Longitudinal Associations with Sympathy in Childhood

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Abstract

Civic competencies are essential prerequisites for adolescents' active citizenship; however, little is known about their developmental precursors. In order to address this research gap, this study examined the role of sympathy in late childhood, early, and mid adolescence for civic competencies in mid and late adolescence. Based on a representative sample of 1118 Swiss children (51% females, $M_{age\ T1}$ = 9.26, $SD_{age\ T1}$ = 0.20, $range_{ageT1}$: 8.50 - 12.58 years), this study investigated associations of sympathy with four components of civic competence: attitudes about social justice, informal helping, perceived efficacy to take responsibility and perceived political efficacy. The findings revealed that sympathy in late childhood (i.e., age 9) reflected an early predictor of all four components of civic competence assessed 6 years later. Moreover, sympathy in early adolescence (i.e., age 12) positively predicted attitudes about social justice and informal helping in late adolescence (i.e., age 18). Lastly, changes in sympathy from mid to late adolescence (i.e., age 15 to 18) positively correlated with changes in all four components of civic competence. This study highlights that civic competencies reflect a multidimensional construct that starts to form in late childhood, with sympathy being a central individual predictor in the emergence of civic competencies during adolescence.

Keywords: Civic Competencies; Sympathy; Late Childhood, Adolescence, Social Justice

Introduction

To function efficaciously and for social justice to prevail, democratic societies must insure that citizens acquire knowledge, attitudes, and skills to become civically engaged and to improve the common good (Flanagan & Levine, 2010). Citizens need to develop civic competencies, which are indispensable prerequisites for civic engagement (Amnå, 2012). Most previous research addressed the question of how young people develop civic qualities by investigating civic engagement in the transition from late adolescence to early adulthood, viewing this life stage as critical for upholding civic commitment into midlife (e.g., Jennings & Stoker, 2004; Finlay et al., 2011). Civic developmental theory posits that the development of civic competencies is a critical domain and integral part of human development, linked to the development of normative socio-cognitive and socio-emotional competencies (e.g., Lerner & Steinberg, 2009). More recently, research shifted attention to adolescence (e.g., Wray-Lake et al., 2014).

However, little is known about the systematic development of civic competencies and civic engagement during adolescence as most of the respective studies are based on cross-sectional data and longitudinal evidence is still scarce (for exceptions see for example Vézina & Poulin, 2019; Wray-Lake & Shubert, 2019; Zaff et al., 2011). Despite the claim that the development of civic competencies is embedded in multiple normative developmental processes in childhood and adolescence (Astuto & Ruck, 2010; Sherrod et al., 2010), longitudinal studies examining developmental precursors in childhood (i.e., developmental childhood covariates) for the development of civic competencies across adolescence are almost completely absent (for an exception, see for example, Wray-Lake et al., 2016). This study attempts to fill these research gaps by investigating the predictive role of a specific developmental competency, namely sympathy, during late childhood (i.e., age

9), early (i.e., age 12) and mid adolescence (i.e., age 15) for the development of civic competencies in mid to late adolescence (i.e., ages 15-18).

The Construct of Civic Competencies

Civic competencies and civic engagement both have been defined in quite different ways (Sherrod, 2015; Torney-Purta et al., 2015). Some authors differentiate between civic competencies and civic engagement, whereby civic competencies are seen as the ensemble of knowledge, skills, values, attitudes and desires "needed to be an active citizen" (Hoskins et al., 2015, p. 434). Early work on civic engagement strongly focused on behaviors reflecting active citizens, such as virtues of honesty, fairness, transparency, permeability, and social justice that are consistent with democratic principles (Lerner et al., 2014) or ways in which individuals and groups engage to address issues in society (Varela & Martínez, 2019). More recently, some scholars have argued that engagement entails more than just civic behavior, namely a set of prosocial values, civic beliefs and civic skills (Metzger & Smetana, 2009). However, while researchers agree that civic competencies and civic engagement reflect multidimensional constructs, differences in definitions led to different dimensions being investigated (e.g., Bobek et al., 2009; Wray-Lake et al., 2017).

Opportunities for civic behavior in adolescence are determined by legal restrictions and the roles associated with respective social environments (Metzger et al., 2019); therefore, the current study focuses on civic competencies that underlie adolescents' ability to participate in society, voice concerns, and ensure theirs and others rights (Hoskins et al., 2011). Assuming that civic competencies function as prerequisites for civic engagement, they have been a major agenda for educational practices in many countries (Amnå, 2012; Torney-Purta et al., 2015). In order to monitor learning outcomes related to democracy in adolescents across different countries, Hoskins et al. (2015) specified a model that comprises four components: social justice, knowledge and skills for democracy, citizenship value, and

participatory attitudes. The current research draws from this model and assumes that civic competencies are a complex multidimensional construct. In particular, the study focuses on a combination of four different qualities of a competent active citizen related to attitudes (i.e., attitudes about social justice), perceived agency (i.e., ability to take responsibility and political efficacy beliefs), and intended behavior (i.e., informal helping).

Attitudes about social justice. Attitudes about justice capture beliefs about equal opportunities and equal rights, with a focus on respect and diversity (Hoskins et al., 2015). Concepts of equal rights, freedom, and democratic participation emerge early in life and become more sophisticated throughout adolescence (Helwig et al., 2014). Moreover, attitudes about social justice include adolescents' social responsibility, their sense of obligation to benefit society at large (Wray-Lake & Syvertsen, 2011). Previous cross-sectional research has shown that social responsibility predicts adolescents' readiness to participate in legal protests and political interest (Schmid, 2012). Similarly, justice considerations predict volunteering and political participation in young adults (Neufeind, Jiranek, & Wehner, 2014).

Ability to take responsibility. In addition to adolescents' critical evaluation of social inequalities, agency, such as high efficacy and the ability to take autonomous decisions, is a skill required to become civically engaged (Haste et al., 2017; Hoskins & Deakin Crick, 2010). Adolescents not only perceive autonomy as a basic need, but are also expected to increase their responsibilities and independence (Helwig et al., 2014; Wray-Lake et al., 2017). In this respect, the ability to take responsibility, referring to one's consciousness about potential behaviors to achieve specific goals that benefit the common good, is seen as an important prerequisite for civic engagement (e.g., Flanagan et al., 2007; Grob & Maag Merki, 2001). A recent comparison of nine European countries showed that adolescents and young adults who believed that they can be responsible citizens were more likely to show high

levels of civic participation (i.e., conventional and nonconventional political and civic behaviors; Barret & Brunton-Smith, 2014).

Political efficacy beliefs. In addition to internal control beliefs that are captured in knowledge and skills for democracy, this study additionally focused on external control beliefs. These are adolescents' beliefs about the responsiveness of the political system and its institutions (e.g. Kahne & Westheimer, 2006). Research on the emergence of concepts related to democracy shows that even children perceive it as important that leaders are crucial for securing people's needs (Helwig et al., 2014) and that trustworthiness of political candidates is of concern to adolescents when reasoning about national elections (Rivers et al., 2018). Accordingly, confidence in the political system and institutions positively predict civic engagement and political interest (Schulz, 2005; Torney-Purta et al., 2008).

Informal helping. As fourth component, adolescents' participatory attitudes, defined as the intention to engage, were included. According to the model of Hoskins et al. (2015), these attitudes cover a range of activities including liberal activities, such as volunteering. Specifically, this study focused on the aspect of informal helping, representing intentions to volunteer in everyday forms of helping (e.g., Metzger et al., 2018). It has been argued that such prosocial behaviors include interest and welfare of others (Sherrod et al., 2002) and are thus similar to political behaviors (Penner, 2004). Longitudinal research suggests that volunteering in adolescence predicts political participation in adulthood (e.g., Youniss, 2006).

Multidimensionality of civic competencies. In addition to which components of civic competencies should be included, an important question is how these components relate to each other. Multidimensionality can be modeled in different ways: as a coherent whole or as distinct separate components. A recent study (Wray-Lake et al., 2017) compared three distinct models with different theoretical implications for civic engagement: a higher-order factor model, a correlated unidimensional factor model, and a bifactor model. These authors

found evidence for a correlated unidimensional model, in which civic engagement is conceived of multiple dimensions that fit the same construct, but reflect different components. This model allows for investigating different developmental trajectories on a more nuanced level, with different components having different developments. In contrast, a higher-order factor model, would allow for broad conclusions because the construct is captured at a global level, representing a multifaceted hierarchical construct. An example of such a model is the AEC model (i.e., active and engaged citizenship) composed of the four components of social cohesion, civic skills, civic duty, and civic action (Bobek et al., 2009). Lastly, a bifactor model represents civic engagement in terms of a general factor and specific parts, allowing for unique assumptions with regards to the general factor, but also the specific dimensions (Chen et al., 2012).

Since civic competencies are still emerging in adolescence (Flanagan & Levine, 2010), a multidimensional approach seems particularly significant for investigating developmental changes in adolescence. Moreover, previous findings posit different developmental pathways for specific components, whereby a single normative pattern seems unlikely (Wray-Lake et al., 2014; Zaff et al., 2011). The few existing longitudinal studies on the development of civic competencies during adolescence suggest different developmental patterns with mostly gradual, but modest changes. Different components had different growth rates: while some components showed gradual upward trends, other components had very few or no changes (e.g., Finlay & Flanagan, 2013; Zaff et al., 2011). These findings are in line with developmental life-span theories assuming that development is a multidirectional and multidimensional process (Baltes & Baltes, 1990).

The Role of Sympathy for Civic Competencies in Adolescence

In addition to investigating the multidimensionality of civic competencies during mid to late adolescence, it is important to shed light on potential developmental precursors. This

study specifically focuses on sympathy because developmental theory posits and evidence documents that this socio-emotional competence is pivotal for adolescents' capabilities to satisfactorily engage in social relationships. Sympathy implies the understanding of the emotional states and perspective of others accompanied by feelings of concern for another (Eisenberg et al., 2010; Zuffianò et al., 2018). Evidence documents that sympathy in late childhood and early adolescence is associated especially with those adolescent civic competence components that include prosocial and helping components (Bekkers, 2005; Vézina & Poulin, 2019). Similarly, research documents the protective role of sympathy for externalizing problem behavior (Eisenberg et al., 1996), whereby sympathy is linked to the capacity to regulate emotions and effortful control, not only in young children (Eisenberg et al., 2007). For these reasons, sympathy may positively predict adolescents' internal and external control beliefs. Along similar lines, sympathy is considered as the earliest developmental precursor for social responsibility (Wray-Lake & Syvertsen, 2011) and longitudinal evidence shows the associations between sympathy and social justice values (Malti et al., 2017). Lastly, sympathy has also been linked to improved intergroup relations (e.g., Grütter et al, 2018), which are related to the concept of social justice.

Casting adolescent civic competencies in a developmental framework, a central prediction of this study was that sympathy in late childhood (i.e., age 9), early (i.e., age 12), and mid adolescence (i.e., age 15) reflects a normative precursor of civic competencies in mid (i.e., age 15) and late adolescence (i.e., age 18). This assumption is based on the developmental task theory (Havighurst, 1948; Roisman et al., 2004), according to which the human life course is composed of age-salient developmental tasks that need to be solved in order to successfully progress through subsequent developmental periods (Obradović & Masten, 2007). Competencies developed in one period are assumed to lay the foundation for the development of successive competencies and for subsequent success (Roisman et al.,

2004). Accordingly, if children and early adolescents have developed higher levels of sympathy they may develop elaborate civic competencies by mid and late adolescence. Moreover, the few existing longitudinal studies regarding the development of sympathy showed that sympathy forms early, grows substantially in late childhood and stabilizes in early adolescence (Eisenberg et al., 2015). Therefore, growing stability of sympathy during early adolescence may render this period as a more critical phase for the development of civic competencies than mid adolescence (i.e., the age of 15). Still, even during later adolescence (i.e., 15-18 years), developmental changes may still be interrelated. The normative growth hypothesis predicts that developmental changes in civic competencies during adolescence are related to normative developments in other competencies (Wray-Lake et al., 2014). For example, an increase in attitudinal components of civic competence may be based on normative increases in autonomy and identity. With regards to sympathy, adolescents who increase in their sympathy may also increase in their civic competencies.

Current Study

The first goal of this study was to investigate the multidimensionality of civic competencies during mid and late adolescence (i.e., ages 15-18). Since civic competencies are still emerging during adolescence, they may not yet be a consolidated general factor. Therefore, the first hypothesis of this study was that civic competencies during mid and late adolescence are best captured by correlated unidimensional factors, representing different dimensions of civic competence (hypothesis 1). To investigate this hypothesis, the study compared different measurement models and extended previous work that relied on cross-sectional data (Wray-Lake et al., 2017) with longitudinal data from a different societal context. The second goal of this study was to shed light on the role of sympathy as a developmental antecedent of civic competencies in adolescence. Based on the developmental task theory (Roisman et al., 2004), the study assumed that earlier development of sympathy

would provide the foundation for later development of civic competencies. Specifically, hypothesis 2a stated that sympathy in late childhood (i.e., age 9) reflects an early predictor of civic competencies in mid adolescence (i.e., age 15). In addition, hypothesis 2b assumed that sympathy in early adolescence (i.e., age 12) is more predictive of civic competencies in late adolescence (i.e., age 18) than sympathy in mid adolescence (i.e., age 15). This hypothesis was based on the finding that sympathy stabilized in early adolescence, rendering adolescents who have developed higher levels of sympathy before the age of 12 at higher levels, while adolescents with lower levels at the age of 12 would likely remain at lower levels.

Lastly, this study focused on developmental change and addressed questions of whether developmental patterns were interrelated. Specifically, the study assumed that civic competence development is not only multidimensional but also multidirectional. In line with the hypothesized correlated unidimensional factor model, the study hypothesized moderate, but significant correlations between change in the four civic components (hypothesis 3a). In addition, based on the normative growth hypothesis (Wray-Lake et al., 2014), change in different components of civic competence was expected to be positively correlated with change in sympathy from mid- to late adolescence (hypothesis 3b). With regards to the specific context, the study was conducted in Switzerland, a direct democracy which requires high participation of all interest groups. Therefore, civic competencies constitute an important agenda for education (Biedermann et al., 2010).

Methods

Participants and Design

The data of this study were collected within the Swiss Survey of Children and Youth (COCON), an ongoing multicohort panel research project on the interplay between contextual determinants and developmental processes from childhood to young adulthood.

The data used here refer to the *child cohort* and are based on a representative sample for the German- and French-speaking parts of Switzerland, drawn in a two-step sampling procedure. In the first step, 131 communities, stratified by type and size, were selected, and in the second step, 1905 households were randomly drawn from official community registers. However, since some of the participants were not fluent in German or French, some children had serious health issues, and some of the contacts provided were not correct, only 1685 households were finally considered. The response rate of those households was 78%. To control for potential biases in the design and non-response, a weight was included in all analyses.

To date, participants of the COCON child cohort have been followed over eight time points, from age six to age 18. The predictors of interest for this specific study have been assessed at four waves, starting at the age of nine, with an interval of three years; therefore, this study was based on data from those four specific waves. At the first measurement time relevant to this study (T1), participants were 1118 older children (51% females, $M_{age\ T1} = 9.26$ years, $SD_{age\ T1} = 0.20$ years, $range_{ageT1} = 8.50 – 9.67$ years). At the second measurement time (T2), there were 1038 early adolescents ($M_{age\ T2} = 12.14$ years, $SD_{age\ T2} = 0.21$ years), at T3 930 mid adolescents ($M_{age\ T3} = 15.32$ years, $SD_{age\ T3} = 0.20$ years) and at T4, 792 late adolescents ($M_{age\ T4} = 18.30$ years, $SD_{age\ T4} = 0.21$ years). Among the participants, 28% of the children had a migration background (Italy: 25%, Germany: 13%, France: 10%, former Yugoslavian states: 7%, Spain: 6%). Regarding parental education, in 37% of the sample at least one parent held a university degree.

This study was conducted in accordance with ethical standards of the American Psychological Association and the Helsinki Declaration. In addition, the study's adherence to the Human Research Act was monitored by the Swiss National Science Foundation. The Human Research Act is based on the Swiss Federal Constitution with the purpose to protect

the dignity, privacy, and health of human beings involved in research (Swiss Federal Council, 2020). Before each interview, caregivers provided their informed consent (i.e., written consent for the first survey wave, followed by detailed written information and oral consent before each subsequent survey wave). In addition, oral assent of the child was requested and they were able to withdraw from the study at any time. Parents and their children were informed that this study addressed the development of children in different life situations and their educational tracks. All participants were interviewed by trained research assistants in face-to-face interviews in their homes. After completing each interview, participants received a small gift (e.g., board game, cinema voucher).

Information regarding sample attrition and missing data analysis are reported in the online appendix S0. In short, the results showed that children from parents with higher parental education (odds ratio = 0.68, $p = .008$) and children without a migration background (odds ratio = 0.51, $p < .001$) were significantly more likely to remain in the study than children from parents with lower education and migration background. Therefore, Missing at Random (MAR; i.e., the missingness was related to observed variables) was supported (see Enders, 2010 for an in depth discussion) and missing data were accounted for with full maximum-likelihood estimation (method: FIML) in *Mplus 8.2* (Muthén & Muthén, 2017). FIML results in unbiased parameter estimates under the assumption of MAR, particularly when the variables predicting study attrition are included in model estimation, since all information is used to inform parameter values and standard errors (Enders, 2010).

Measures

A full description of each scale can be found in the supplementary file S0 and descriptive statistics are shown in Tables 2 A & B.

Sympathy (T1, T2, T3 & T4). Participants rated five items (e.g., "When I see another child who is hurt or upset, I feel sorry for them." on a six-point scale (1 = totally disagree to 6 =

totally agree; Zhou, Valiente, & Eisenberg, 2003). Higher scores represented higher sympathy.

Civic competencies (T3 & T4). Civic competencies were operationalized as a multidimensional construct, including attitudes about social justice, informal helping, perceived efficacy to take responsibility, and political efficacy beliefs. All measures were drawn from existing longitudinal surveys on the development of civic engagement (i.e., the "German Youth Survey", Gille et al., 2006; the longitudinal study "Learning Processes, Educational Careers and Psychosocial Development in Adolescence and Young Adulthood", Baumert et al., 1997; and the "Young Adult Survey in Switzerland", Grob & Maag Merki, 2001). All items were finally assessed on a six-point scale (1 = totally disagree, 6 = totally agree).

Attitudes about social justice. This scale included five items, three items from the German Youth Survey (Gille et al., 2006; e.g., "It is important to reduce social inequalities.") and two items from the project of Grob and Merki (2001; e.g., "Wealth should be divided equally world-wide, even if I need to abstain from certain luxury goods.").

Informal helping. This construct was operationalized with five items (e.g., "I often volunteer to help others (parents, teachers, children)."; Goodman, 1997).

Perceived efficacy to take responsibility. This dimension of civic competence was measured with two items (e.g., "I am usually able to take responsibility for a certain task."; Grob & Maag Merki, 2001).

Political efficacy beliefs. These specific beliefs were operationalized with three items (e.g., "If things should change, one needs to personally act, rather than relying on politics."; Baumert et al., 1997). In order to have all dimensions of civic competence coded in the same direction (i.e., higher values reflect higher competencies), all items of the scale were recoded.

Control variables. All control variables were entered in the analyses at all time points.

Gender. Male was coded as 0 and female as 1.

Socio-economic background (i.e., SES). SES was operationalized by parents' highest education (1 = at least one parent has completed a university degree),

Migration background. Participants had a migration background when at least one of their parents was not born in Switzerland.

Data Analytic Approach

To analyze the specific hypotheses, a three steps-procedure was chosen. First, to determine the factor structure of civic competencies (i.e., hypothesis 1), a set of separate confirmatory factor analyses (CFA) was conducted, starting with the least complex model and testing for more complex structures: 1) unidimensional model (Model 0), correlated unidimensional factor model (Model 1), higher-order factor model (Model 2), and bifactor model (Model 3). Since the four models are non-nested in nature and represent different compositions of variance, different aspects and measures for model comparison were considered: the five model fit statistics, the chi-square difference test using the Satorra-Bentler scaled method (Satorra & Bentler, 2010), the CFI and the AIC change. For each of the four models, residuals were allowed to correlate between the two measurement times. Figure 2 shows all models and their factor structure.

Second, in order to analyze the hypotheses regarding antecedents of civic competencies (i.e., hypotheses 2a & 2b), an autoregressive model including all stability paths for the dependent variables (from T3 to T4) and for the independent variable (T1 to T2, T2 to T3, and T3 to T4) was specified. Autoregressive models allow for predictions while controlling for the stability and within-time correlations of the variables of interest; therefore, stronger inference about the direction of causation can be drawn (Cole & Maxwell, 2003; Selig & Preacher, 2009). The data did not allow controlling for autoregressive effects in civic competencies at the age of 15 (since it was not measured earlier). Civic competencies at 15

were therefore predicted with sympathy at the age of 9 in order to test the hypotheses regarding the predictive value of sympathy during late childhood (with the six-year gap between the two time points reflecting the most stringent test possible for the data available). In order to test the hypotheses about the predictive value of sympathy during early and mid-adolescence, civic competencies at the age of 18 were predicted with sympathy at the age of 12 and 15 since the dependent variable was measured at T3 and T4. Thereby, the model controlled for autoregressive effects of civic competencies. In addition, intercorrelations between the latent constructs measured at the same time points (i.e., within-time correlations) were specified, as well as correlated residual variances of the same items across the different time points (Little, 2013). In this way, predictive effects of sympathy were investigated while the relations between the variables within the different measurement times were held constant.

Moreover, to enhance the robustness of the model, it included three control variables identified by the literature to be relevant for civic competencies, namely sex, SES, and migration background (e.g., Finlay et al., 2011; McFarland & Thomas, 2006). These control variables were included as correlations for each variable at each time point. In order to keep the model parsimonious, the final model only included significant relations of a given construct with the control variables (following recommendations by Little, 2013).

In a third step, latent difference scores for all variables were computed, modeling interindividual differences in the development from 15 to 18. This procedure allowed for testing the specific assumption that changes in one component in civic competence were significantly related to changes in other components of civic competence (i.e., hypothesis 3a) and to changes in sympathy (i.e., hypothesis 3b). Latent difference score models consist of two latent random factors: Intercept (i.e., initial level at the age of 15) and slope (i.e., change over time from 15 to 18). Both factors are represented with a mean and variance component.

This means that intra-individual development (i.e., mean component: mean-level changes across the sample) and interindividual differences in development (i.e., variance component: differences in the change between individuals) can be modeled simultaneously (Selig & Preacher, 2009).

Before testing any of the hypothesized models, measurement invariance (MI) across time was established. In a stepwise procedure, the results of different confirmatory factor analyses were compared for each latent construct, with increasing constraints on the factor loadings and intercepts of the items of each scale. MI is required in order to allow for a proper interpretation of the longitudinal findings, since it reveals the consistency with which the constructs of interest were measured over time. Since mean-level changes were of interest for this study, scalar invariance was a requirement (Widaman et al., 2010). Scalar invariance requires the intercepts (i.e., means) to be constrained over time. If this condition holds, one can assume that the mean differences in the items across time are due to mean differences in their respective latent factors, allowing for a reliable comparison of mean-scores. The findings of the MI analyses revealed that for all scales, except for sympathy, the criteria for scalar invariance were met. For sympathy, partial scalar invariance was met, whereby one or more of the intercepts could not be constrained to equality over time (Cheung & Rensvold, 2002). In this case, modification indices were used to identify sources of differences. The respective indicator(s) that were not invariant over time was / were kept in the model, but the constraints was / were relaxed for this / these indicator(s) (Little, 2013). The detailed procedure for identifying the measurement models and a detailed description of the results of the MI procedure are reported in the supplementary file in S1. Therefore, in addition to all study measures, all manipulations are reported.

All analyses were conducted in M*plus* 8.2, using with full information maximum likelihood (FIML) estimation with robust standard errors (i.e., MLR) in order to account for

missing data and because a sampling weight was included in all analyses (i.e., to control for potential biases due to non-response; Muthén & Muthén, 2017). The models were evaluated based on the Santora-Bentler scaled χ^2 difference test, their comparative fit index and the Tucker-Lewis Index (i.e., CFI & TLI; acceptable fit ≥ .90), their root mean square error of approximation (RMSEA; acceptable fit <.08) with the 90% confidence interval and with their standardized root-mean-square residual (SRMR; acceptable fit < .08; Little, 2013).

Results

Development of Civic Competencies and Sympathy

In order to better understand the mean development of each aspect of civic competence and the predictor over time, their means at each time point were plotted (see Figures 1a & b). All aspects of civic competence slightly increased over time, with attitudes about social justice having the highest means. Moreover, sympathy slightly increased from 9 to 12 years and after that remained stable.

Multidimensionality of Civic Competencies

The different models were evaluated based on the five model fit statistics (i.e., χ^2, TLI, CFI, RMSEA, SRMR), and models were compared based on the chi-square difference test using the Satorra-Bentler scaled method (Satorra & Bentler, 2010), and CFI change (ΔCFI was considered with a threshold of .01 according to Cheung & Rensvold, 2002). Additionally, since the four models are non-nested in nature, the AIC change was considered (for details see Table 1). The details for each step of the model comparison were as follows:

Unidimensional model (Model 0, see Figure 2). In this model, all 11 indicators that were measured at the same time were loaded onto a single latent variable (i.e., civic competencies), operationalizing civic competencies as a one-dimensional global construct, defined solely by the shared variance among all indicators. The fit indices for this model

were very poor (see Table 1), with standardized factor loadings ranging from .22 to .63 at T1 and T2.

Correlated unidimensional factors (Model 1, Figure 2). In a next step, the unidimensional model was compared to the model of correlated unidimensional factors, in which civic competencies are operationalized as a multidimensional construct that is correlated with each other at each respective time point. In other words, civic competencies are reflected by distinct, but related components. A CFA with four latent factors was conducted, allowing for the correlations between the factors at each time point. The indicators that reflected each dimension of civic competence at each time point solely loaded on that specific factor. This model provided a good fit to the data (see Table 1), with positive correlations among the four dimensions of civic competence in the mid-range (for details, see Table S2 in the supplementary file; the within time correlations of the final model are provided in Table 3). In this model, standardized factor loadings ranged from .54 to .72 for attitudes about social justice, from .50 to .73 for informal helping, from .71 to .88 for the efficacy to take responsibility, and from .35 to .53 for political efficacy beliefs (for details, see Tables 2A-B). Findings from model comparisons in Table 1 revealed that this model fit the data better than the unidimensional model.

Higher-order factor model (Model 2, Figure 2). The next step was to investigate whether the shared variance among the subdimensions of civic competence shared enough common variance (i.e., were correlated) that a higher-order factor structure could best reflect the construct of civic competencies. In this case, the subdimensions of civic competence would be less relevant than the overarching construct. A second-order factor was included for each time point in the CFA, with the four latent factors and the manifest variable from Model 1 as indicators of the second-order latent construct civic competencies. The model fit for this model was acceptable, except for the low CFI and TFI values (<.90), with standardized factor

loadings of the first-order constructs, ranging from .54 to .72 for attitudes about social justice, from .50 to .72 for informal helping, from .71 to .86 for the efficacy to take responsibility, and from .35 to .51 for political efficacy beliefs. Thus, the subdimensions of civic competence shared enough common variance (i.e., were correlated) that a higher-order factor structure could reflect the construct of civic competencies. The higher-order factor mostly represented shared variance among attitudes about social justice (i.e., $.85_{T3}$ and $.70_{T4}$) and informal helping (i.e., $.87_{T3}$ and $.80_{T4}$) while efficacy to take responsibility (i.e., $.41_{T3}$ and $.41_{T4}$) and political efficacy beliefs (i.e., $.50_{T3}$ and $.48_{T4}$) only moderately loaded on the higher-order factor. However, compared to the unidimensional correlated factors model, the higher-order model fit the data worse (see Table 1).

Bifactor model (Model 3, Figure 2). As an extension of Model 2, the next step was to investigate whether the shared variance among the seven unidimensional first-order factors associated with the second-order construct of civic competencies could be captured when the loadings of the first-order factors still allowed for unique variance of each construct. Thus, the indicators of the four components loaded on each specific component at each time point and all 11 indicators of each time point also loaded on a general civic competencies factor at each time point. In this model, the first-order constructs extract all the variance from the specific indicators while the higher-order factor extracts all the remaining variance that is shared among the first-order constructs. In this model, the secondary constructs are independent of the primary constructs; thus, correlations with primary factors were not allowed.

The results showed that, except for the low CFI and TLI values, this model had an acceptable model fit, similar to the higher-order factor model (see Table 1). The standardized factor loadings on the secondary factor were smaller than in the higher-order model and ranged from .34 to .49 for attitudes about social justice, from .48 to .59 for informal helping,

from .29 to .37 for the efficacy to take responsibility, and from .17 to .25 for perceived political efficacy. The shared variance with the overarching construct was lower for efficacy to take responsibility and perceived political efficacy, which reflects that these variables had higher unique variances than the other two subcomponents. Table 1 shows that compared to the more parsimonious higher-order model, fit indices were similar. Thus, there was not a significant gain in model fit when the various dimensions of civic competence were allowed to share unique variance aside from the overarching factor. Lastly, compared to the model of the unidimensional correlated factors, the model fit indices were much lower and fit significantly worse.

Taken together and supporting hypothesis 1, the findings from the model comparisons suggest that the four-component model of civic competencies reflects a multidimensional construct with distinct, but related dimensions that are correlated with each other at each respective time point in mid and late adolescence. This may be due to the nature of components included, such as the combination of attitudes, intended behavior and perceived internal and external efficacy, which reflects different, but related theoretical constructs. Consequently, these results support the procedure to investigate the chosen predictor of civic competencies separately for each aspect.

Autoregressive Model: The Role of Sympathy for Civic Competencies in Mid and Late Adolescence

The hypothesized model (see Figure 3) fit the data well, $\chi^2(548) = 909.01, p < .001$, CFI = .94, TLI = .94, RMSEA = .02 [90% CI: .02 – .03, $p = 1.00$], SRMR = .06. The results showed that the various civic competence dimensions remained highly stable from mid to late adolescence, with the aspect of political efficacy beliefs having the highest stability during that period. Moreover, the stability of sympathy increased from 9 to 18 years. Due to the strong within-time correlations of sympathy and civic competencies at T3 (i.e., $r = .19 – .72$,

see Table 3), the stability coefficient in the final model decreased; however, in the measurement model, the standardized parameter estimates for the stability of sympathy across time were T2 = .34, T3 = .40, T4 = .47.

With regards to hypothesis 2a, sympathy at the age of 9 showed significant associations with all components of civic competencies six years later (see Figure 3). In addition, findings partially supported the central hypothesis (i.e., 2b), namely that sympathy at the age of 12 rather than at the age of 15 is more predictive of civic competencies in late adolescence. Accordingly, sympathy at the age of 12 significantly positively predicted attitudes about social justice and informal helping; however, it did not predict the efficacy to take responsibly and political efficacy beliefs. These effects can be interpreted above and beyond the high stability of civic competencies from 15 to 18. In contrast, sympathy in mid adolescence (i.e., age 15) did not predict any aspects of civic competence in late adolescence.

With regards to control variables, no significant correlations emerged with parental education. Thus, to keep the model as parsimonious as possible, this variable was not included in the final model. Significant sex differences emerged for sympathy and most aspects of civic competence (i.e., attitudes about social justice, informal helping, and political efficacy beliefs), with boys, as compared to girls, reporting lower levels of sympathy (r_{T1} = -.17***, r_{T2} = -.19***, r_{T3} = -.21***), attitudes about social justice (r_{T1} = -.21***), and informal helping (r_{T1} = -.22***), and higher levels of political efficacy beliefs (r_{T1} = .15**). Lastly, participants with a migration background reported lower levels of attitudes about social justice (r_{T1} = -.10**) than participants without migration background.

Latent Difference Score Model: Associations Between Changes in Sympathy and Changes in Civic Competencies During Adolescence

The hypothesized model (i.e., the autoregressive model including latent difference scores between measures at 15 and 18 years) fit the data well, $\chi^2(531) = 906.05$, $p < .001$, CFI

= .94, TLI = .93, RMSEA = .03 [90% CI: .02 – .03, p = 1.00], SRMR = .06. There was significant variance in the latent change scores of all civic competence dimensions (i.e., attitudes about social justice: $\zeta^2 = 0.86$, $SE = 0.12$, $p < .001$; informal helping: $\zeta^2 = 0.80$, $SE = 0.11$, $p < .001$; perceived efficacy to take responsibility: $\zeta^2 = 0.78$, $SE = 0.09$, $p < .001$; perceived political efficacy: $\zeta^2 = 0.73$, $SE = 0.19$, $p < .001$). This means that there were significant differences between individuals in their intraindividual change in civic competencies between 15 and 18. In addition, there were also significant inter-individual differences in the development of sympathy from 15 to 18 ($\zeta^2 = 0.20$, $SE = 0.03$, $p < .001$).

Confirming hypothesis 3a, the findings also showed moderate significant positive intercorrelations between changes in the dimensions of civic competence over time. Except for change in attitudes about social justice with efficacy to take responsibility, and change in informal helping and political efficacy beliefs, changes in all four components were significantly intercorrelated (see Table 4). These findings further strengthen the assumption of correlated subdimensions of an overarching construct (i.e., the correlated unidimensional factor model). Lastly, supporting hypothesis 3b, change in sympathy from mid to late adolescence was significantly correlated with changes in all civic competence dimensions, whereby the weakest (and only partially significant) association was found with the efficacy to take responsibility (see Table 4).

With regards to the control variables, significant differences were only found for changes in the perceived efficacy to take responsibility, whereby males changed more from 15 to 18 years of age than females.

Discussion

Civic competencies describe a set of attitudes and skills to become civically engaged and to improve the common good (Flanagan & Levine, 2010). However, despite a strong focus on how such competencies may be promoted in education (e.g., Torney-Purta et al.,

2008), longitudinal research on civic competence development is still scarce, whereby most empirical studies on civic engagement focused on the transition from late adolescence to early adulthood. Thus, little is known about the systematic development of civic competencies during adolescence, and less is known about normative developmental antecedents in childhood and early adolescence (Sherrod et al., 2010).

The current study aimed at filling these research gaps by first, investigating how civic competence development during mid- and late adolescence (i.e., ages 15-18) can be operationalized from a multidimensional perspective; and second, by examining the developmental role of sympathy during late childhood (i.e., age 9), early (i.e., age 12) and mid adolescence (i.e., age 15) for the development of civic competencies in mid to late adolescence (i.e., ages 15-18). Therefore, this longitudinal research provides important insights into different developmental pathways and evidence of how and when civic competencies can be promoted. Particularly, the findings of this study contribute to developmental theory of civic competencies by extending previous work on the multidimensionality of civic competence in adolescence with longitudinal data.

Civic Competencies as a Multidimensional Construct

The findings of this study provide longitudinal evidence for a multidimensional construct of civic competence during adolescence, consisting of specific dimensions that reflect a coherent whole. The data suggests that the four specific dimensions of civic competence operationalized in this study, namely attitudes about social justice, ability to take responsibility, political efficacy beliefs and informal helping, fit together conceptually, but are best measured and investigated as separate components. The operationalization of this construct was based on the model of civic competencies defined by Hoskins et al. (2015) and the specific components reflected attitudes (i.e., attitudes about social justice), political and efficacy-related dimensions (i.e., efficacy to take responsibility, political efficacy beliefs),

and intended civic behavior (i.e., informal helping), describing qualities of civically active citizens. Moreover, the comparison of different statistical models was based on a prior cross-sectional study conducted with a U.S. sample and provided similar evidence for the multidimensionality of the construct (Wray-Lake et al., 2017). The dimensions chosen for the current study were similar; with the exception that civic behaviors were not included as the current study focused on the aspect of competence. Model comparisons within both studies revealed that the best fitting model was the correlated unidimensional factor structure with mostly moderate correlations among the latent factors. Consequently, constructs were significantly correlated; however, scoring high on one component of civic competence did not imply scoring high on the other dimensions.

Importantly, evidence for representing civic competencies as a multidimensional construct suggests that investigating specific age-related changes in developmental processes may shed light on specific antecedents and applied recommendations. Different aspects of the overall construct may not only follow specific age-related changes, but may also be preceded by different developmental competencies that could be sensitive to different developmental periods. This may reflect variations in the significance of actions, contexts, and opportunities available to different individuals during adolescence. Thus, in order to advance civic developmental theory in adolescence, future work can shed light on assumptions about specific processes and their significance for the development of specific components. While previous research has investigated separate dimensions (e.g., Crocetti et al., 2012; Metzger & Smetana, 2009), integrative approaches of how these developments interrelate are still scarce. Because the different correlated components reflect a coherent whole, more insights into cohesive measures of civic competencies and the development of specific components are needed (for examples with cross-sectional data, see Hoskins et al., 2015; Metzger et al., 2018; Wray-Lake et al., 2017).

One way the current study contributes to addressing this research gap is by taking an integrative approach and investigating mean-level changes in different components of civic competence from mid to late adolescence and the correlations of changes over time. With the exception of the correlation in change between attitudes about social justice and efficacy to take responsibility, which was not significant, mean-level changes between the components at the latent level were moderately correlated. This result provides further evidence for conceptualizing civic competencies during mid to late adolescence as a multidimensional construct.

In addition, as predicted by the normative growth hypothesis (Wray-Lake et al., 2014), most aspects of civic competence slightly increased from mid to late adolescence. This finding extends previous cross-sectional evidence (Metzger et al., 2018; Wray-Lake et al., 2017) whereby adolescents in high school had higher values in informal helping, political beliefs, and civic skills as compared to younger participants. However, evidence from longitudinal data (e.g., Vézina & Poulin, 2019; Zaff et al., 2011) as well as the results of the current study point to significant interindividual differences in how civic competencies develop during adolescence. Thus, in addition to explaining mean-level differences, more recent research focused on explaining variance in developmental trajectories. The few existing studies have highlighted different trajectories within various domains of civic engagement and tried to identify factors that explain variation in civic competence development over time. For example, young adults who expressed higher altruistic orientation, higher civic attitudes, and high prosocial and vocational activity involvement were more likely to remain among groups with high sustained engagement (Vézina & Poulin, 2019). However, this work focused on young adults and there is only limited evidence regarding the period of adolescence showing that adolescents engaged in youth development programs and adolescents who held frequent civic discussions with friends and parents were

more likely to remain among the engaged groups (Wray-Lake & Shubert, 2019; Zaff et al., 2011). Still, the mechanisms of how such contextual factors and programs may be effective remain to be determined, pointing to the importance of identifying developmental precursors of civic engagement. The current study aimed at filling this research gap by providing insights into the differential role of sympathy as developmental precursor of civic competence in adolescence.

Sympathy as a Central Developmental Precursor of Civic Competencies

Assuming that adolescent civic competencies do not abruptly materialize in this life stage, the present study highlights the role of sympathy as a developmental precursor for civic competencies during mid and late adolescence. The early association of sympathy at the age of 9 with civic competencies six years later, during mid adolescence, suggests that children with higher abilities in understanding emotional states and perspectives of others are more likely to report higher levels in all four aspects of civic competence at the age of 15. In accordance with the developmental task theory (Havighurst, 1948; Roisman et al., 2004), developing higher levels of sympathy during late childhood might reflect an age-salient developmental task for understanding civic issues, such as aspects of social justice, for expressing higher capabilities to help in everyday situations, perceiving oneself as capable to take on responsibilities and apprehending the political system as responsive and effective.

The association between sympathy and the civic components related to internal and external control beliefs (i.e., perceived efficacy to take responsibility, political efficacy beliefs) might be explained by higher levels of effortful control and emotion regulation: Children with higher levels of sympathy may also develop higher levels of effortful control and thus express higher control beliefs related to civic activities later on. There is previous evidence that sympathy during adolescence is linked to effortful control during early school years (Eisenberg et al., 2007). Thus, when considering that this association might be

bidirectional, sympathy in late childhood may positively relate to control beliefs at later stages in development. Moreover, the capability of perspective taking inherent in sympathy may positively underlie the association with political efficacy beliefs. Perspective taking may help children and adolescents to form trust not only in other people (Rubin et al., 2007) but also institutions, implying that children would become trustful in governmental and institutional responsiveness (Rotenberg, 2010). To test the validation of these ideas, future research on specific mechanisms through which children with higher levels of sympathy become civically competent adolescents is needed.

Furthermore, the current findings extend prior cross-sectional research which documents that sympathy is positively associated with attitudes about social justice and informal helping (Metzger et al., 2018). For these two specific components of civic competencies, sympathy not only reflected an early predictor but also seemed to be of high relevance in early adolescence. The study provides strong evidence that sympathy in early adolescence (i.e., age of 12) constitutes a central predictor of these civic competencies in late adolescence (i.e., age of 18). Importantly, the effects of sympathy in early adolescence on attitudes about social justice and informal helping at the age of 18 were manifested above and beyond the observed stability from age 15 to 18. Providing additional evidence that sympathy may play a pivotal role in early adolescence, sympathy at the age of 15 was not associated with civic competencies at the age of 18.

These findings highlight time specific associations between sympathy and civic competencies that can eventually be explained with the increasing stability of sympathy observed from late childhood to early adolescence (Eisenberg et al., 2015; Zuffianò et al., 2018), also documented in the current study. Thus, if individuals change less in their rank order from one point in time to the next, their associations with civic competencies at subsequent time points may become stronger.

Moreover, the findings resonate well with previous research showing that the growth of other-oriented concern constitutes an important developmental root of those specific dimensions of civic engagement that are prosocial in nature, such as whether adolescents engage in informal helping and how they reason about social issues (e.g., Bekkers, 2005; Metzger et al., 2018). Informal helping may be conceived as an ordinary civic behavior in everyday life, whereby higher levels of sympathy help in effectively being part of social interactions and perceiving needs of others within the domains of family, school and peers (Eisenberg et al., 2015; Metzger et al., 2018).

This finding also undergirds the argument that other-oriented concern developed in childhood represents one of the crucial foundations for social responsibility (Wray-Lake & Syversten, 2011). Thereby, social responsibility captures a moral sense of care and justice and how individuals position themselves in relation to the welfare of others (Syvertsen et al., 2011). Besides the right for other's welfare, a central component is how adolescents evaluate social inequalities (Helwig et al., 2014). Therefore, attitudes about social justice were defined as beliefs about justice, with a focus that not only captured others' welfare but also equal opportunities and equal rights (Hoskins et al., 2015).

The findings of the current study show that, if individuals experience higher concern for others, they may be better able to evaluate unfair treatment of others as wrong and experience a sense of responsibility for the welfare of others (Daniel et al., 2014). This may also involve a change in the focus on oneself that expands to unfamiliar others (Eisenberg et al., 2007). Regarding developmental differences, previous work suggests that mid adolescence may be a sensitive period for adolescents' justice consideration: While most adolescents judge discrimination of minority groups as wrong, younger adolescents express more concerns about equality when it conflicts with civil liberties than older adolescents (Helwig et al., 2014). Consequently, sympathy may be of particular importance for social

justice development in adolescence, whereby future work could investigate their co-development within a longitudinal framework.

The current study provided first insights into such a co-development from mid- to late adolescence, however, only within a correlation approach. Novel insights of this study were associations between changes in sympathy and changes in civic competencies from mid to late adolescence. The study findings suggest that adolescents who change in their level of sympathy also change in their level of civic competencies. For example, adolescents who increased in their attitudes about social justice, informal helping and perceived political efficacy were significantly more likely to increase in their sympathy. These correlations in change provide additional evidence to the developmental associations between sympathy and civic competencies. However, due to the correlative nature, assumptions about directionality are not possible. Thus, future research may look into whether there are bidirectional associations. For example, research on young adults shows that individuals who help others and act prosocially may further expand their concern for others and their empathic self-efficacy beliefs (Caprara et al., 2012).

However, the correlation between changes in sympathy and efficacy to take responsibility was not significant. Similarly, sympathy in early adolescence did not predict the efficacy to take responsibility and perceived political efficacy. These findings resonates with Metzger et al. (2018), where cross-sectional age comparisons revealed weaker effects between sympathy and political beliefs and sympathy and civic skills in mid and late adolescence compared to earlier adolescence. Thus, there may be time sensitive periods in which having higher levels of sympathy might be beneficial for civic competencies at later stages in development, as presumed in the developmental task theory (Roisman et al., 2004).

There could also be methodological explanations, namely that after controlling for the stability in internal and external control beliefs, sympathy was not significant anymore. Thus,

a large part of the variance in these variables in late adolescence was explained by high stability. Since there was only data from two measurement points available for the civic competence variables, the stability at earlier time points was not controlled for. It is thus also possible that the early associations with sympathy could turn out to be weaker if previous measurements of civic competencies were controlled for. Still, revealing these associations over a time lag of six years is meaningful.

Limitations

This study is not without limitations. First, the findings regarding multidimensionality suggest that depending on the conceptualization of civic competence, there may be different conclusions for civic developmental theory. Although this study included attitudinal, agentic, and intended behavior, the model is not completely saturated. For such a saturated model, additional components would be important to consider. For example, civic attention, an individual's interest in public affairs (e.g., reading newspaper or interest in politics; Varela & Martínez, 2018), civic knowledge; specific civic skills, and future expectations (e.g., Flanagan et al., 2007; Zaff et al., 2010); reasoning about equality and injustice (e.g., Metzger & Smetana, 2009); and measures related to social cohesion and belongingness (e.g., Zaff, et al., 2010).

An additional methodological limitation is that within- and between group variance could not be distinguished. This approach would have enabled us to differentiate between stable (i.e., trait like) aspects of civic competence and changes taking place within adolescents (i.e., state like aspects; Hamaker et al., 2015). Thus, it is not possible to discuss whether the results regarding civic competencies could reflect stability in individuals' rank order (i.e., at the between-group level; e.g., children with higher levels of sympathy as compared to the rest of the sample at an earlier time point have higher levels in civic competencies as compared to the rest of the sample at a later time point). Or whether changes

in sympathy within individuals could have affected changes within their civic competencies over time (i.e., at the within-group level; e.g., children with higher levels in sympathy than usual at an earlier time point have higher levels in civic competencies than usual at a later time point). However, in order to reliably estimate a cross-lagged panel model with a random intercept (RI-CLPM), a minimum of three measurements would have been required (Hamaker et al., 2015). This would have been available for sympathy, but not for the dependent variables. Thus, the authors decided not to mix predictions at the within-and between-group levels of the independent variable with the non-decomposed variance in the dependent components.

Next, even though the study accounted for the possibility of interindividual differences in changes in civic competencies from 15 to 18, there may be different profiles of civic competencies with different trajectories (e.g., Vézina & Poulin, 2019; Wray-Lake & Shubert, 2019). Recent studies suggest that there may be different profiles with individuals that score high on one dimension, but not on another, and those different profiles may have different trajectories. Similar thoughts apply to early predictors of civic competencies; there may be a combination of precursors predicting trajectories of different civic competencies. Thus, future research on the role of precursors could benefit from a person-centered approach. However, the focus of this study was to gain insights in the specific role of sympathy for different aspects of civic competence in adolescence; therefore, this study was based on a variable centered approach.

Lastly, there may be additional individual developmental antecedents not considered in this study as well as important contextual influences, such as peers, parents, and school that influence adolescents' civic engagement (Metzger & Smetana, 2009; Wray-Lake & Sloper, 2016). Previous research has shown that parents may implicitly or explicitly encourage adolescents to become involved in community-oriented activities in early

adolescence (Zaff et al., 2008). Moreover, peer group values and activities play a powerful role in motivating civic engagement, whereby peers are likely to select other peers with similar political behavior (e.g., Dahl & van Zalk, 2014; Youniss et al., 2001). Finally, democratic and participatory school climates positively predict civic engagement (Rivers et al., 2018; Torney-Purta et al., 2008).

Conclusion

With increasing societal inequalities and threats towards democracy, adolescents who critically reflect on issues of social justice, understand and engage in practices related to politics and the common good are indispensable for sustainable and inclusive societies. Despite the claim that the development of civic engagement is embedded in multiple normative developmental processes in childhood and adolescence (Astuto & Ruck, 2010), longitudinal studies examining developmental antecedents of civic engagement are scarce (Zaff et al., 2011). Therefore, the current study aimed at investigating the systematic development of civic competencies during adolescence and shed light on the role of sympathy as a normative developmental antecedent in childhood and early adolescence. The findings of this study thus advance developmental civic theory in adolescence by showing that civic competencies reflect a multidimensional construct of different correlated components with correlated, but most likely multidirectional pathways. In line with the developmental task theory, this study demonstrates that sympathy represents an important precursor that could explain why some children become more civically competent adolescents than others. Specifically, children with higher abilities in understanding emotional states and perspectives of others at the age of 9 are more likely to report higher levels in understanding civic issues. They are also more likely to perceive themselves as capable to take on responsibilities, to apprehend the political system as responsive and effective, and to expressing higher capabilities to help in everyday situations at the age of 15.

Moreover, sympathy during early adolescence (i.e., at the age of 12) seems to be a central predictor of attitudes about social justice and informal helping in late adolescence (i.e., at the age of 18). This indicates that early adolescence may reflect a particular sensitive developmental window to encourage the promotion of sympathy.

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Authors' Contributions

JG participated in the design of the study, performed the statistical analysis and the interpretation of the data, drafted the manuscript, and revised it critically for important intellectual content; MB conceived of the study, participated in its design and coordination, acquisitioned the data, participated in the interpretation of the data and draft of the manuscript, and revised it critically for important intellectual content. Both authors read and approved the final manuscript.

Data Sharing Declaration

The datasets generated and/or analyzed during the current study are available in the FORSbase repository, https://forsbase.unil.ch/project/study-public-overview/14366/1/.

Conflicts of Interest

The authors report no conflict of interests.

Compliance with Ethical Standards

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Ethical Approval

This study was conducted in accordance with ethical standards of the American Psychological Association and the Helsinki Declaration. In addition, the study's adherence to the Human Research Act was monitored by the national funding agency, the Swiss National Science Foundation. The Human Research Act is based on the Swiss Federal Constitution with the purpose to protect the dignity, privacy, and health of human beings involved in research (Swiss Federal Council, 2020).

Informed Consent

Before each interview, caregivers provided their informed consent (i.e., written consent for the first survey wave, followed by detailed written information and oral consent before each subsequent survey wave). In addition, oral assent of the child was requested and they were able to withdraw from the study at any time. Parents and their children were informed that this study addressed the development of children in different life situations and their educational tracks. They were informed that their data were being used for scientific purposes and published in scientific journals, with a focus on the complete sample instead of individual data points and their personal information being anonymized.

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Table 1

Model fit indices and model comparisons of the hypothesized models

	χ^2 (df), *p*	CFI	TLI	RMSEA (90% CI)	SRMR	AIC	BIC	MC	S-BΔ χ^2	Δ df	*p*	Δ CFI	*Δ AIC*
Mod 0: UD	1319.48 (218), < .001	.65	.63	.07 (.07, .08)	.08	39612.36	39888.58						
								0 vs. 1	965.53	33	<.001	.30	1110.20
								0 vs. 2	832.60	14	<.001	.24	891.17
								0 vs. 3	845.92	15	<.001	.25	912.36
Mod 1: Correlated UD	331.29 (185), < .001	.95	.94	.02 (0.2, 0.3)	.04	38502.16	38938.29						
								1 vs. 2	-197.37	19	<.001	.06	-219.03
								1 vs. 3	-179.17	18	<.001	.05	-197.84
Mod 2: Higher-order	543.43 (204), <.001	.89	.88	.04 (.04, .05)	.06	38721.19	39065.25						
								2 vs. 3	18.51	1	<.001	.01	21.19
Mod 3: Bifactor	524.12 (203), <.001	.90	.88	.04 (.04, .05)	.06	38700.00	39048.90						

Note. UD = Unidimensional. df = degrees of freedom. CFI = Comparative fit index. TLI = Tucker-Lewis index. RMSEA = Root mean square error of approximation. SRMR = Standardized root mean square residual. MC = model comparison. AIC = Akaike information criterion. BIC = Bayesian information criterion. S-B Δ χ^2 = Santora-Bentler scaled χ^2 difference test. *Δ* CFI = Change in CFI. *Δ* AIC = Change in Akaike information criterion; *Δ* CFI and *Δ* AIC were computed by subtracting the CFI resp. AIC value of the alternative model from the AIC value of the null-model (see MC).

Table 2-A

Descriptive statistics and correlations among the indicators of civic competencies at T3 (for the correlated unidimensional factor model)

	M (SD)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1. ASJ 1	4.99 (0.64)											
2. ASJ 2	5.47 (0.56)	.39***										
3. ASJ 3	4.85 (1.00)	.26***	.37***									
4. IH 1	4.86 (0.73)	.26***	.29***	.21***								
5. IH 2	4.78 (0.66)	.29***	.38***	.20***	.37***							
6. IH 3	4.89 (0.66)	.30***	.35***	.20***	.33***	.49***						
7. ETR 1	4.37 (0.96)	.14***	.18***	.12***	.15***	.25***	.20***					
8. ETR 2	4.54 (0.76)	.10**	.14***	.11***	.18***	.24***	.18***	.62***				
9. PE 1	4.84 (0.89)	.17***	.10**	.11***	.01	.11***	.12***	.03	.05			
10. PE 2	4.24 (0.98)	.16***	.06†	.14***	.05	.07*	.11**	.07*	.07*	.25***		
11. PE 3	4.97 (0.81)	.17***	.08*	.09**	.13***	.14***	.14***	.13***	.13***	.15***	.16***	
12. CRI T4		.34***	.42***	.25***	.37***	.31***	.38***	.43***	.40***	.25***	.27***	.16***

Note. ASJ = Attitudes about Social Justice. IH = Informal helping. ETR = Efficacy to take responsibility. PE = Political efficacy beliefs. CRI T4 = correlation with the respective item at the fourth measurement time.

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

Table 2-B

Descriptive statistics and correlations among the indicators of civic competencies at T4 (for the correlated unidimensional factor model)

	M (SD)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. ASJ 1	5.06 (0.68)										
2. ASJ 2	5.50 (0.52)	.33***									
3. ASJ 3	4.99 (0.92)	.34***	.50***								
4. IH 1	4.81 (0.74)	.28***	.27***	.24***							
5. IH 2	4.83 (0.59)	.21***	.29***	.22***	.35***						
6. IH 3	4.94 (0.61)	.28***	.32***	.20***	.37***	.53***					
7. ETR 1	4.57 (0.89)	.06	.05	.05	.14***	.25***	.17***				
8. ETR 2	4.66 (0.72)	.06	.05	.06	.15***	.27***	.22***	.62***			
9. PE 1	5.00 (0.87)	.21***	.11**	.10**	.09**	.10**	.08*	.09**	.12***		
10. PE 2	4.47 (0.87)	.23***	.10**	.11**	.09**	.04	.05	.06	.09*	.27***	
11. PE 3	5.02 (0.75)	.09*	.06†	.04	.12***	.13***	.13***	.13***	.13***	.17***	.18***

Note. ASJ = Attitudes about Social Justice. IH = Informal helping. ETR = Efficacy to take responsibility. PE = Political efficacy beliefs.

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

Table 3

Within-time correlations of the latent variables at T3 and T4 for the final model

	(1)	(2)	(3)	(4)	(6)	(7)	(8)	(9)
1. SYM T3								
2. ASJ T3	.68***							
3. IH T3	.72***	.70***						
4. ETR T3	.11†	.24***	.35***					
5. PE T3	.27**	.43***	.24***	.19**				
6. SYM T4								
7. SJV T4					.65***			
8. IH T4					.68***	.44***		
9. ETR T4					.11†	-.03	.28***	
10. PE T4					.38***	.44***	.22*	.27**

Note. SYM = Sympathy. ASJ = Attitudes about social justice. IH = Informal helping. ETR = Efficacy to take responsibility. PE = Political efficacy beliefs. T3 = third measurement time. T4 = fourth measurement time.

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

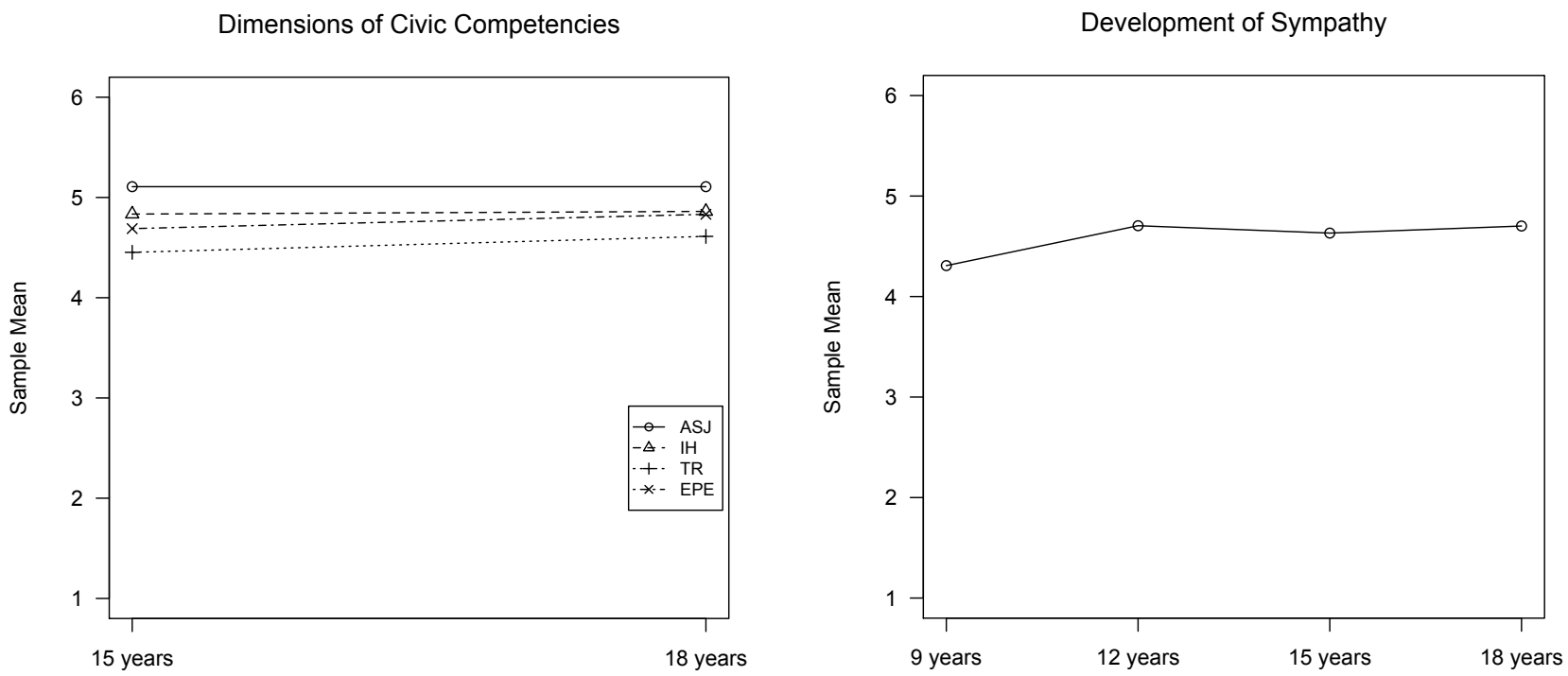
Table 4

Correlations of the latent difference scores

	(1)	(2)	(3)	(4)
1. D-SYM				
2. D-ASJ	.58***			
3. D-IH	.59***	.51***		
4. D-ETR	.12†	.05	.21*	
5. D-PE	.37**	.43**	.24†	.26**

Note. SYM = Sympathy. ASJ = Attitudes about social justice. IH = Informal helping. ETR = Efficacy to take responsibility. PE = Political efficacy beliefs. T3 = third measurement time, D = latent difference score.

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



a) b)

Figure 1a and b. Mean development of the dimensions of civic competence from 15 to 18 years (i.e., ASJ = Attitudes about social justice, IH = Informal helping, TR = Efficacy to take responsibility, EPE = Perceived political efficacy) (a) and mean development of sympathy from 9 to 18 years (b).

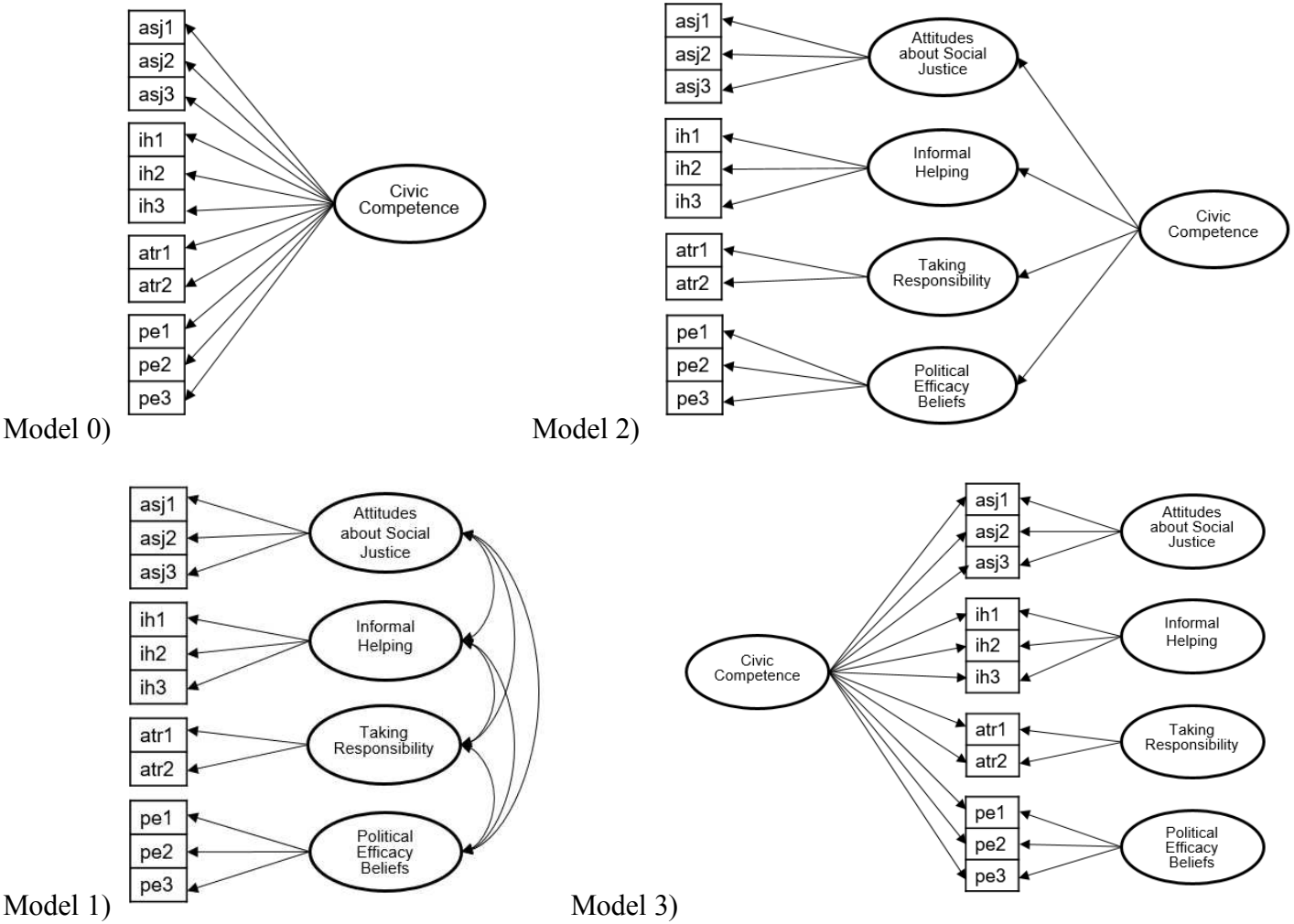


Figure 2. Factor structure of civic competencies, from left to right: 1) unidimensional model (Model 0), correlated unidimensional factor model (Model 1), higher-order factor model (Model 2), and bifactor model (Model 3). For reasons of simplicity, the graphs only show the model structure for one measurement time. However, all models were fitted for both measurement times (i.e., T3 and T4 within the same model).

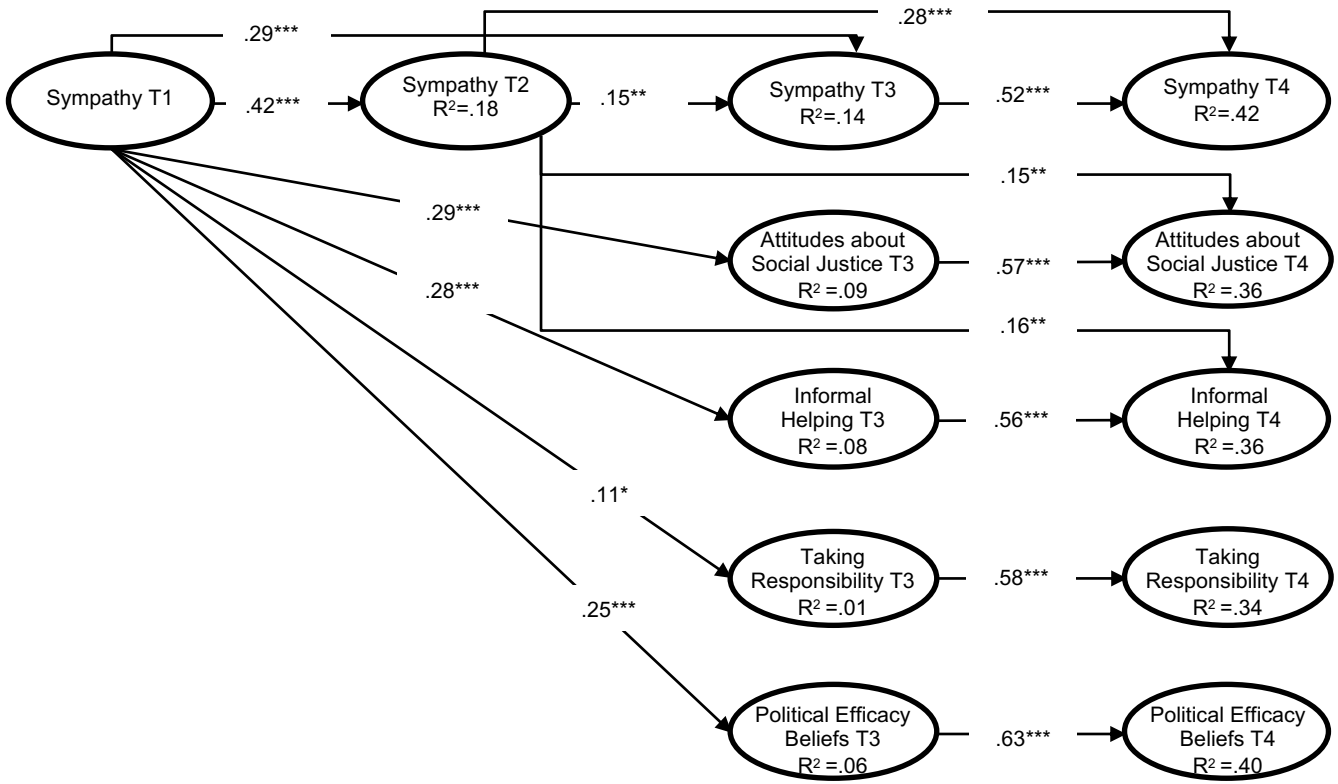


Figure 3. Autoregressive paths of the final model with sympathy at the ages of 9 (T1), 12 (T2), 15 (T3) predicting the four dimensions of civic competence at 15 (T3) and 18 years (T4). For the sake of parsimony, only the significant paths are shown in the figure. Within-time correlations are not shown, but are reported in Table 2. Associations with the control variables sex, SES and migration background are reported in the text.