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This is a post-peer-review, pre-copyedit version of an article published in the *Journal of Youth and Adolescence*. The final authenticated version is available at: https://doi.org/10.1007/s10964-017-0806-1
How does School Experience Relate to Adolescent Identity Formation Over Time? Cross-Lagged Associations between School Engagement, School Burnout and Identity Processing Styles

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Authors' Contributions
Authors’ contributions: RE conceived of the study, participated in its design and implementation, and drafted the manuscript; RV participated in the design and implementation of the study, performed the statistical analysis, and contributed to drafting of the manuscript; IG participated in the design and implementation of the study, and contributed to drafting of the manuscript; SR participated in the design and coordination of the study and contributed to drafting of the manuscript. All authors read and approved the final manuscript.

Funding
This research was funded by the Erasmus+ Programme of the European Union, strategic partnership project “Innovative Curriculum for Strong Identities in Diverse Europe (INSIDE)”, No. 2016-1-LT01-KA203-023220 and the European Social Fund under the Global Grant measure, No. VP1-3.1-ŠMM-07-K-02-008.
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Abstract

The existing research findings still do not provide a clear understanding of the links between adolescent school experience and their identity formation. To address this gap, we analyzed the dynamic links between adolescent school experiences and identity formation by exploring the cross-lagged associations between school engagement, school burnout and identity processing styles (information-oriented, normative and diffuse-avoidant) over a two-year period during middle-to-late adolescence. The sample of this school-based study included 916 adolescents (51.4% females) in the 9th to 12th grades from diverse socio-economic and family backgrounds. The results from the cross-lagged analyses with three time points revealed that (a) school engagement positively predicted information-oriented identity processing over a two-year period; (b) school burnout positively predicted the reliance on normative and diffuse-avoidant identity styles across the three measurements; (c) the effects were stable over the three time points and across different gender, grade, and socio-economic status groups. The unidirectional effects identified in our study support the general prediction that active engagement in learning at school can serve as a resource for adolescent identity formation, while school burnout, in contrast, can hinder the formation of adolescent identity. This points to the importance of taking developmental identity-related needs of adolescents into account when planning the school curriculum.

Keywords: Identity Styles; School Engagement; School Burnout; Adolescence
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How does School Experience Relate to Adolescent Identity Formation Over Time? Cross-Lagged Associations between School Engagement, School Burnout and Identity Processing Styles

Introduction

Adolescents strive to form a personal identity through continual relations with their social and cultural environment (Erikson, 1968). The formation of identity means building a sense of personal uniqueness and continuity by integrating personal goals, ideals, values, and roles into a personally meaningful and coherent picture (Erikson, 1968). Though identity formation is often operationalized through individual-level processes of exploration (i.e., considering personal relevance of various alternatives) and commitment (personal investment in some of the available options) (Kroger & Marcia, 2011), it is increasingly emphasized that these individual-level processes should be studied as part of continuous person-context interactions (Bosma & Kunnen, 2008; Eichas, Meca, Montgomery, & Kurtines, 2015). A number of adolescent identity scholars stress the importance of the school context and its strong potential for developmental implications related to identity (Flum & Kaplan, 2006, 2012; Harrell-Levy & Kerpelman, 2010; Lannegrand-Willems & Bosma, 2006).

Indeed, certain aspects of school experience are related to adolescent identity formation. In particular, higher academic success at school was found to predict stronger educational commitments, while low achievement predicted difficulties in finding satisfactory commitments (Pop, Negru-Subtirica, Crocetti, Opre, & Meeus, 2016). Beyond the academic achievement, perceiving the teachers as role models and studies as meaningful was related to a higher identity exploration and more confidence in identity commitments in middle and late adolescence (Rich & Schachter, 2012). A more positive school experience in terms of a more favorable school self-image, better integration in the peer group and the use of active coping strategies was related to a stronger school identity over the course of the 8th grade (Lannegrand-Willems & Bosma, 2006). Perceptions of higher basic needs support and facilitation of identity exploration in school were also related to more advances in adolescent identity
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formation (Madjar & Cohen-Malayev, 2013). Taken together, these findings point to the importance of the school context for adolescent identity formation.

On the other hand, some aspects of adolescent personal identity may contribute to shaping their school experiences. Teaching methods based on students’ personal experiences and self-reflection stimulated adolescent identity exploration, while at the same time, strengthened the students’ academic motivation and engagement in learning at school (Sinai, Kaplan, & Flum, 2012). Similarly, consistent efforts to promote identity exploration among the students helped to better engage them in learning activities even in a challenging educational context (Faircloth, 2012). Thus, despite the predominance of the findings on the effects of adolescent school experience on their identity formation, the opposite direction of the link has also received some empirical support.

Taken together, the existing research findings point to a possibility of a reciprocal relationship between the school experience and identity formation in adolescence. However, the majority of the previous studies in the field did not take this possibility into account, hence, a clear answer regarding the extent and directionality of the links in focus is still missing. The main limitations of the studies in this field include the reliance on cross-sectional data, the use of unidirectional data analytical strategies, as well as a lack of tools (e.g., in qualitative and cross-sectional studies) to disentangle the potentially complex dynamic effects between adolescent identity and their school experience. In order to address these limitations, we employ a strategy, which enables to account for a possible dynamic reciprocal nature of the effects in focus. Particularly, we explore the longitudinal cross-lagged associations between the aspects of school experience (school engagement and school burnout) and identity formation in middle to late adolescence.

The Importance of Supporting Adolescent Identity Formation

In adolescence, identity formation is enabled through such capacities as increasingly complex socio-emotional regulation and advanced cognitive functioning (Berzonsky, 2004, 2008, 2011; Crone
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& Dahl, 2012; Erikson, 1968). These developing capacities enable adolescents to engage in self-discovery (i.e., identify activities and choices, which resonate with one’s abilities, interests, and potential) and self-construction (i.e., testing hypotheses and making decisions related to identity) (Eichas et al., 2015). School context is the environment where the developing cognitive and emotional capacities, used in identity formation processes, can be advanced further, e.g., through curriculum-based academic activities or different forms of social engagement.

Despite the stimulating potential of the school context, identity formation is a challenging process for a substantial share of adolescents. For example, the adolescents with increased risk for externalizing and internalizing difficulties (Crocetti, Klimstra, Hale, Koot, & Meeus, 2013; Crocetti, Klimstra, Keijzers, Hale, & Meeus, 2009), or from schools with low socio-economic background (Lannegrand-Willems & Bosma, 2006), can struggle to develop a coherent system of goals, values and beliefs or avoid engaging in identity exploration entirely. Based on the meta-analysis by Kroger, Martinussen, and Marcia (2010), the majority of high school graduates leave school without clear identity commitments. While normative identity development is expected to continue into emerging adulthood and beyond (Arnett, 2014), the difficulties of engaging in identity exploration and failure to achieve certain identity commitments during adolescence may hinder favorable development and self-regulation (Eichas et al., 2015). The challenging choices that adolescents face during the late high-school years, such as choosing educational and occupational paths, starting romantic relationships, require at least some identity commitments in place in order to make the important life decisions personally meaningful, purposeful and self-directed.

In this context, the search for factors and mechanisms, which could serve as resources for adolescent identity formation in schools, remains highly relevant. The focus on particular resources depends on how the desirable outcomes of identity formation are defined, which, in turn, depends on the overall conceptualization of adolescent identity formation. From a variety of approaches used to
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study identity in the school context, we consider the social-cognitive perspective (Berzonsky, 1994, 2004, 2008, 2011) to be particularly relevant, since it can help to understand which, and how, identity-relevant capacities could be advanced at school and subsequently used by adolescents to facilitate their identity formation, in particular, their self-construction processes.

Social-Cognitive Perspective on Identity Formation

The social-cognitive perspective on identity formation proposed by Berzonsky (1989, 2011) builds on cognitive-experiential self-theory (CEST; Epstein, 2003), which postulates the existence of two fundamental parallel operating information-processing systems. According to Epstein (2003), the first, experiential system is a rapid information processing system that does it in a way that is holistic, automatic, affective, associative, and minimally demanding of cognitive resources. In contrast, the rational information processing system is a slow one and operates in a manner that is analytic, intentional, logical, abstract, and requires significantly more effort. The experiential system is more efficient and economical compared to a rational system, which makes it the one that people use more often in their daily lives. However, being automatic, the experiential system is more prone to cognitive bias and subjective distortions (Epstein, 2003).

Both of these processing systems play a role in identity formation (Berzonsky, 2011; Epstein, 2003), and the social-cognitive perspective on identity formation focuses on how individuals use these systems when dealing with identity conflicts and issues, when revising a sense of identity, processing self-relevant information, making identity-related decisions, etc. (Berzonsky, 2004, 2011). Identity styles refer to the different approaches to dealing with identity issues. Three identity content processing orientations or identity styles are distinguished: (1) information-oriented, (2) normative, and (3) diffuse-avoidant (Berzonsky, 1994, 2004, 2011).

An information-oriented style mostly reflects the use of rational processing system for dealing with identity issues, however, individuals who adopt this style may also use the experiential processing
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system (Berzonsky, 2008). Specifically, information-oriented style is characterized by an engagement in a process of identity explorations, i.e., individuals who use this strategy seek out, process and evaluate identity-relevant information prior to making committed decisions. They also show higher levels of cognitive complexity, engage in problem-focused coping, are open to new information, and are willing to revise aspects of their identity when faced with discrepant information (Berzonsky, 1994, 2004, 2011). As such, the information-oriented identity processing requires a lot of effort and resources.

A normative style mostly reflects the predominant use of the experiential processing system when dealing with identity issues (Berzonsky, 2008). Specifically, the normative style is characterized by internalization and reliance on goals, values, and prescriptions derived from significant others. Those who adopt this style deal with identity issues in a relatively automatic manner. They also tend to conform to traditional opinions, and their main goal is to conserve and maintain self-views and to guard against information that may threaten their values and beliefs (Berzonsky, 1994, 2004, 2011). The normative identity processing style reflects low proactive effort in building one's identity commitments, it is thus less demanding in terms of cognitive resources than the information-oriented identity processing style.

A diffuse-avoidant style also reflects the use of experiential processing system when dealing with identity issues, however, the diffuse-avoidant style also reflects the avoidance of using the rational processing system (Berzonsky, 2008). Diffuse-avoidant identity style is characterized by a reluctance to confront, as well as attempts to avoid and procrastinate when dealing with identity issues. When one is eventually faced with a need to make a decision, situational demands and consequences eventually will determine behavioral reactions (Berzonsky, 1994, 2004, 2011). Similarly to the normative identity style, the diffuse-avoidant processing is also minimally demanding in terms of cognitive resources.
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Numerous studies have established the links between identity styles and identity formation. A meta-analysis, which summarized 27 studies (n=6563) that addressed the links between styles and the strength of identity commitments, has indicated: a) a moderate positive association between identity commitments and information oriented style, b) a moderate-to-large positive association between commitments and normative style, and c) a moderate-to-large negative association between commitment and diffuse-avoidant style (Bosch & Card, 2012). These results indicate that information-oriented and normative styles play a key role in shaping personal identity commitments. Nevertheless, identity commitments built through active exploration and evaluation of alternatives (i.e., information-oriented processing) increase, while those based on normative identity processing decrease from adolescence to adulthood (Bosch & Card, 2012).

Since most academic tasks and activities at school require increasingly advanced rational processing, school experience may contribute to advances in information-oriented identity processing over time. However, as emphasized by Flum and Kaplan (2006), the students themselves have to be actively involved in exploring the academic tasks and their personal relevance in order to activate their identity processes. Based on these considerations, we suggest that the students’ school functioning may, to a certain extent, contribute to shaping their identity processing.

The Role of School Engagement and School Burnout in Identity Formation

School engagement can be seen as one aspect of effective functioning in the school context. Engagement can be considered as commitment and investment in schooling or the qualities of a student’s active participation in learning activities in the classroom (Fredricks, Blumenfeld, & Paris, 2004). Most researchers define it as a multidimensional construct that consists of behavioral, emotional and cognitive components (Fredricks et al., 2004). In other words, school engagement refers to behaviors, emotions and mental efforts that reflect a motivation to master the academic material. All dimensions of school engagement share a common feature of an observable outward expression. For
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example, emotional reactions to schoolwork can be observed as verbal and nonverbal expressive signs, strategic learning can be implied from a purposeful approach to academic materials, agentic engagement is seen in students’ voicing their preferences. With regard to this commonality of all aspects of school engagement, Hospel, Galand, and Janosz (2016) consider the behavioral component of engagement as a key construct in school engagement studies. The behavioral component of engagement can be described as observed behaviors of classroom involvement including effort, persistence, concentration, attention, and contributing to the class discussion.

In contrast to engagement being an indicator of an effective functioning, ineffective functioning at school can be described by school burnout, which is experienced as a result of a discrepancy between individual resources and study demands (Upadyaya & Salmela-Aro, 2013). As such, burnout represents difficulties to cope with achievement pressures. Its symptoms include feeling exhausted, having a cynical or distal attitude towards studies and a sense of incompetence at school (Parker & Salmela-Aro, 2011; Upadyaya & Salmela-Aro, 2013). School burnout can be analyzed as an indicator of emotional disengagement or disaffection at school (Tuominen-Soini & Salmela-Aro, 2014).

Although negatively related, school engagement and school burnout are not the opposite sides of the same construct. Overall, the more burnout symptoms students experience, the less engaged in school they are, but the absence of burnout symptoms does not automatically lead to an increase in engagement. Tuominen-Soini & Salmela-Aro (2014) found that some high school students were engaged in school and showed symptoms of burnout at the same time. In a study by Wang, Chow, Hofkens, & Salmela-Aro (2015), engagement and school burnout had different longitudinal associations with academic and psychological well-being. Thus, negative emotional processes involved in school burnout have distinct psychological mechanisms in development of school related outcomes.

The outcomes of school engagement and burnout have received a lot of research interest. The positive effect of engagement on school achievement has been well documented in cross-sectional (e.g.
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Appleton, Christenson, Kim, and Reschly, 2006) and longitudinal studies (e.g. Wang & Eccles, 2012). School burnout was found to be negatively associated with academic achievement (Kiuru, Aunola, Nurmi, Leskinen, & Salmela-Aro, 2008; Tuominen-Soini & Salmela-Aro, 2014) and indicators of academic well-being (Wang et al., 2015).

In addition to academic effects, school engagement has cognitive benefits for learning, as it enhances student capacity for self-regulation and meta-cognition (Larson & Rusk, 2011; Lawson & Lawson, 2013). Engaged students have opportunities to learn to manage emotions, keep sustained and goal-directed attention, process information at a deeper level, plan, monitor, and evaluate their personal progress during the learning process. By eliciting more positive interactions and support from teachers, engagement also serves as a source of interpersonal attachments (Skinner & Pitzer, 2012). As a student engages in school, he or she also develops a sense of belonging or connectedness to the school community, as well as the skills that will carry through all of the life tasks and challenges.

Strong cognitive skills and supportive interpersonal relations play an important role in processing identity-relevant information and enable to deal with identity conflicts and issues (Berzonsky, 2011). Thus, we propose that positive benefits of school engagement extend to processing information related to self and making identity choices. Particularly, we expect that school engagement can contribute to facilitating more active identity exploration and, thus, to shaping information-oriented identity processing style. In contrast, school burnout can be seen as an energy depleting experience that diminishes possibility to use developmental resources. Thus, it should reduce active identity exploration and prompt the reliance on less demanding identity processing (such as normative and diffuse-avoidant identity styles), since in the face of high stress and pressures it may be more adaptive to use the resources more sparingly.

Considering that school engagement and school burnout are both malleable through interactions in academic and interpersonal contexts (Kiuru, et. al., 2008; Skinner & Pitzer, 2012), it is also
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important to understand whether these aspects of school functioning respond to the changes in identity processing. As suggested by Flum and Kaplan (2006), engagement in school can be facilitated by triggering and supporting safe adolescent identity exploration in the school context. Thus, more active identity exploration (i.e., the use of information-oriented identity processing) should strengthen the students’ school engagement over time.

The Present Study

The existing literature does not yet provide a satisfactory understanding of the extent and directionality of the links between adolescent school experience and their identity formation. Most of the findings emphasize the effects of the school context on adolescent identity formation, but the opposite links have also been supported. In our study, we aim to analyze the dynamic reciprocal links between adolescent school experiences and identity formation by exploring the cross-lagged associations between school engagement, school burnout and identity processing styles (information-oriented, normative and diffuse-avoidant) over a two-year period during middle-to-late adolescence.

We investigated these links in a sample of Lithuanian adolescents in the grades 9th to 12th. The structure of the Lithuanian educational system determines the students’ need for a choice of future educational and vocational goals as early as the 10th grade. At that time the students have to decide which educational track they would continue - upper secondary education (if so, then what kind of curriculum they would like to choose) or vocational education and training. Making a personally meaningful and self-directed choice requires an adolescent to be involved in identity exploration and commitment making. Consequently, it is important to analyze students’ identity formation in the high school context.

Schools can facilitate their students’ identity formation by academic tasks, which trigger and support the students’ safe exploration of the personal meanings and experiences (Flum & Kaplan, 2006). However, a positive effect is possible only if students’ are actively engaged in learning at school
and deliberately reflect on the academic tasks and their personal meaning (Flum & Kaplan, 2006). Moreover, higher students’ engagement in school stimulates their meta-cognitive, self-regulatory, and interpersonal skills (Lawson & Lawson, 2013), necessary for active exploration of identity issues. We thus hypothesized that higher students’ school engagement would predict, over time, a more intensive and deliberate exploration of identity-related issues (i.e., a higher use of information-oriented identity processing style).

On the other hand, experiences of exhaustion, disengagement from studies and a sense of incompetence in school (i.e., school burnout) can limit the students’ potential to use their personal and school-based resources for dealing with academic and personal challenges (Tuominen-Soini & Salmela-Aro, 2014). Accordingly, we hypothesized that higher school burnout would predict a less intensive use of information-oriented identity style and stronger reliance on ready-made solutions for identity dilemmas (i.e., the use of normative identity processing style) or avoidance to engage with identity issues (i.e., the use of diffuse-avoidant identity processing style).

Finally, an active exploration of the personal meanings in the school context can facilitate an in-depth involvement in the learning process itself and promote a more complex and deeper learning (Faircloth, 2012; Sinai et al., 2012). Thus, we hypothesized that higher use of information-oriented identity style would predict stronger school engagement among adolescents.

Method

Participants and Procedure

The data come from the research project on positive youth development (POSIDEV) conducted in Lithuania (Žukauskienė et. al., 2015). The study was based on a community sampling approach: all students in the grades 9th to 12th from all five high schools in one municipality were invited to participate. This municipality is medium sized and shares the same school system as the rest of the country. The study is school-based, i.e., the participants were recruited and the data were collected in
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five high schools, which participated in the three assessment waves, collected with a one-year interval. The first assessment took place in 2013.

During the first meeting with study participants, they were informed about the purposes of the study and that participation was voluntary. The parents were informed about the study through a written letter and asked to contact the school or the investigators if they did not want their children to participate. The questionnaires were administered by the researchers and research assistants at the schools and were completed in classes during regular class hours. Participants were not paid for participation, but all students who completed the questionnaires were eligible for a lottery reward. More information about the procedures is provided in Crocetti, Erentaitė, & Žukauskienė (2014) and an in-depth description of the procedures is provided in Žukauskienė et al., (2015).

The two older cohorts (11th and 12th graders at T1) have had the school finished at the time of the later assessments and did not receive the instruments that were used for this study. Therefore, for this study, only the two younger cohorts were selected (9th and 10th graders at T1), i.e., 916 participants (51.4% girls; M_{age}=15.65, SD_{age}=0.73, range 14-17 years at T1). No further exclusions were made. The response rate for these participants was 95.3% at T2, and 85.6% at T3. The sample was diverse in terms of socioeconomic background, but ethnically more homogeneous than the overall Lithuanian population (see Table 1). The sample was also diverse in terms of family structure. Specifically, the majority of the participants lived with both biological parents (69%), while the rest lived with a mother (18%), with a mother and a stepfather (7%) or in other family settings. Those not living with both parents indicated that it was due to either a divorce (67%) or one of the parents was working and living in a different country (15%), or had passed away (17%). Most of the participants (83%) indicated that they had at least one sibling. In-depth description of the sample is provided in Žukauskienė et al., (2015).

**Measures**
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**Identity processing styles.** The Identity Style Inventory (ISI-4; Luyckx, Lens, Smits, & Goossens, 2010; Smits, et. al., 2009) was used to measure identity styles. The items were scored on a scale ranging from 1 (not at all like me) to 5 (very much like me). Cronbach’s alphas were .80, .84, and .84 for the information-oriented style (7 items; e.g., “When facing a life decision, I take into account different points of view before making a choice”); .60, .67, and .65 for the normative style (8 items; e.g., “I prefer to deal with situations where I can rely on social norms and standards”); .71, .78 and .76, for the diffuse-avoidant style (9 items; e.g., “I’m not really thinking about my future now; it’s still a long way off”), at T1, T2, and T3, respectively. More details about the translation procedures and psychometric features of the Lithuanian version of ISI-4 are provided in Crocetti, Erentaitė, and Žukauskienė (2014).

**School engagement.** A behavioral school engagement subscale of the Engagement vs. Disaffection in School questionnaire (Ryzin, Gravely, & Roseth, 2007) was used to measure school engagement. The subscale consists of 10 items (e.g., “In school, I work as hard as I can”), which were scored on a scale ranging from 1 (not at all true) to 4 (very much true). Cronbach’s alphas were .81 at T1, .80 at T2, and .80 at T3. The Lithuanian version of this scale was prepared by one of the co-authors of this article and had already been used in several earlier longitudinal studies. During preparation, a back-translation was also made to reveal any inconsistencies, which were then corrected. More details about the psychometric features of the Lithuanian version of this instrument are provided in Žukauskienė et. al., (2015).

**School burnout.** The School Burnout Inventory (SBI; Salmela-Aro, Kiuru, Leskinen, & Nurmi, 2009) was used to measure burnout. The items were scored on a scale ranging from 1 (completely disagree) to 6 (completely agree). The scale consists of 10 items measuring exhaustion at school (e.g., “I feel overwhelmed by my schoolwork”), cynicism toward the meaning of school (e.g., “I feel that I am losing interest in my schoolwork”), and a sense of inadequacy at school (e.g., “I often have feelings
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of inadequacy in my schoolwork”), which reflect an overall school burnout. In this study, we were interested only in the overall school burnout score and for this Cronbach’s alphas were .84 at T1, .86 at T2, and .87 at T3. The Lithuanian versions of the School Burnout Inventory was also prepared by one of the co-authors, using the same procedures as for school engagement scale. More details about the psychometric features of the Lithuanian version of this instrument are provided in Raižienė, Pilkauskaitė-Valickienė, & Žukauskienė (2014) and Žukauskienė et al., (2015).

The participants were also asked to provide demographic information including their age (“how old are You?”), sex (“please indicate Your sex”; coded 0 = males, 1 = females), grade (“please indicate Your grade”; values 9 and 10), free nutrition at school (“do you receive free meal at school?; coded 0 = no, 1 = yes) and ethnicity (“What is your ethnicity?”). In this study, “receives free nutrition at school” variable was used as an SES status indicator.

Analytic Strategy

Structural equation modeling (SEM) analyses using Mplus 7.4 with Maximum Likelihood Robust (MLR) estimator were conducted to address our research questions. The Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) were used to assess the model fit. CFI higher than .90, RMSEA and SRMR lower than .08 indicated acceptable fit and CFI higher than .95, RMSEA and SRMR lower than .05 indicated good fit (Little, 2013). The statistically significant difference between the nested models was tested using the Scaled \( \chi^2 \) Difference test (Satorra & Bentler, 2001) and the practically significant – using model fit statistics. We used \( \Delta \text{CFI} \geq -.01 \) as an indicator of a substantial decrease in model fit (Little, 2013).

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1 In general, we focused on running analyses with latent variables. However, to avoid our models being overly complex in terms of free parameters, we used item parcels instead of items as indicators of latent variables. Three parcels were formed to represent each latent variable using item-to-construct balance approach, based on corrected item-total score correlations (Little, 2013). Latent variables were scaled using effects coding method (Little, Slegers, & Card, 2006).
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Full Information Maximum Likelihood (FIML) estimation was used to deal with missing data and to avoid a loss of power and other drawbacks associated with a list-wise deletion (Enders, 2010). Little’s MCAR test indicated that a pattern of missing data was at least somewhat related to existing data ($p < .001$), although a normed version of the index indicated that the relationship was small ($\chi^2/df = 1.08$). Nevertheless, to avoid any parameter bias that could occur due to the missing values, we screened the complete dataset for variables that were related to missingness (Asendorpf, Schoot, Denissen, & Hutteman, 2014). Once we selected them, we reduced the number of variables by extracting 13 principal components (PCs) (Howard, Rhemtulla, & Little, 2015) using Quark (Lang, Chesnut, & Little, 2016) in R software, and included extracted PC’s in all of our models using a “saturated correlates” approach (Graham, 2003).

In addition, we calculated intra-class correlation coefficients (ICC) to evaluate the amount of variance in school burnout, school engagement and identity styles accounted by the nested structure of our data, i.e., between-class variability compared to total variability. The results indicated that the effects of clustering were quite low\(^2\). Nevertheless, in all of our analyses, we used a "type = complex" option in Mplus, indicating class as a cluster variable (Muthén & Muthén, 2012), to control for the effects that clustering may have on the standard errors.

Results

Preliminary Analysis and Analysis of Longitudinal Measurement Invariance

Means, standard deviations and correlations between identity styles and school engagement and burnout are presented in Table 2. As a preliminary step to cross-lagged panel model analyses, we examined if measurement models for constructs in our study were invariant across time. We conducted

\(^2\) Specifically, ICCs for school engagement were .03 for T1, T2, and T3. ICCs for low for school burnout were .03 for T1, .04 for T2, and .06 for T3. ICCs for information-oriented identity style were .04 for T1, .06 for T2 and .05 for T3. ICCs for normative identity style were .07 for T1 and T2, and .08 for T3. ICCs for diffuse-avoidant identity style were .08 for T1, .04 for T2 and .05 for T3. Small clustering effects also indicated that multilevel analyses were not appropriate in this study.
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these analyses for the three constructs of our study taken together in one model.\(^3\) Taken together, the results clearly established measurement invariance at different levels (see Table 3). An unconstrained (configural) model had a good fit and adding equality constraints for loadings across time did not produce any statistically or practically significant change of model-data fit, i.e., neither was \(\Delta\text{MLR} \chi^2\) significant \((p = .741)\), nor did \(\Delta\text{CFI}\) indicate a substantial decrease in model fit \((\Delta\text{CFI} = .001)\). Adding intercept constraints did produce statistically significant change \((p < .001)\) of model-data fit, however, \(\Delta\text{CFI}\) indicated that this change was only trivial \((\Delta\text{CFI} = -.003)\). Similarly, adding residual error constraints did produce a significant change of fit \((p = .012)\), however, this change was small \((\Delta\text{CFI} = .001)\). Finally, adding variance equality constraints did not produce any significant changes to model-data fit \((p = .305)\), which indicated that variances of latent variables were equal across time. Summing up, the results indicated that the measurement models for our constructs were equivalent across the measurement waves.

Cross-Lagged Panel Model Analyses

Next, we focused on cross-lagged panel model analyses. To begin with, we tested if a strict invariance measurement model, in which three additional covariates (grade, gender, and SES) were included and were allowed to freely correlate with all latent variables, had a good fit. Alternative model fit indices indicated an acceptable fit with data (see M0 in Table 3), therefore, we used this model as a baseline for the cross-lagged model.

Next, we specified a cross-lagged panel model to investigate the bidirectional effects between school engagement, school burnout and identity styles. Our model included: a) autoregressive

\(^3\) Following Little (2013), we tested for configural, weak, strong and strict longitudinal invariance. Although strong (loadings and intercepts constrained to be equal across waves) and strict (loadings, intercepts, and residuals constrained to be equal across waves) invariance was not necessary for our research questions (we did not address mean level or reliability change across waves), we tested it anyway, to see if more parsimonious models could fit to the data. In addition, we tested if variances of our latent variables were equal across time, as a preliminary step to testing the equivalence of cross-lagged paths between different waves (Newsom, 2015).
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(stability) paths for all constructs between adjacent time points (T1 and T2, and T2 and T3); b) cross-lagged paths between all constructs between adjacent time points (no cross-lagged paths were included between T1 and T3 variables); c) within-time associations (correlations between latent variables at T1 and correlations between disturbances at T2 and T3); d) covariates and their links to latent variables, i.e., latent variables at T2 and T3 were regressed on covariates and latent variables at T1 were allowed to correlate with covariates. This model was significantly different ($p = .004$) from the baseline model, however, change in alternative model fit indices indicated only a small difference (see M1 in Table 3).

Before inspecting the results of this model, we checked if a more parsimonious model had a similar fit with data. First, we constrained autoregressive paths, to check if stability between different waves was the same. Fixing these coefficients did not have any statistical ($p = .330$) or practical (ΔCFI = .000) effect on the model fit. Next, we constrained cross-lagged paths to be time-invariant, to evaluate if the causal effects were the same between different waves. Again, the model fit change statistics did not indicate any statistically or practically significant change ($p = .398; \Delta \text{CFI} = .000$). Finally, we constrained within-time associations, indicative of correlated relative change, as well as disturbance variances to be time invariant. These constraints also did not worsen model fit either ($p = .568; \Delta \text{CFI} = .000$) and we turned to the inspection of parameter estimates.

In terms of reciprocal longitudinal links (cross-lagged effects), the results of the cross-lagged model analyses were mostly in-line with our expectations (Figure 1 presents the results). Specifically, we found that school engagement positively predicted an increase of information-oriented identity style and school burnout positively predicted an increase of normative and diffuse-avoidant styles. In addition, school burnout negatively predicted the level of school engagement. Identity styles did not
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predict any change in school engagement or school burnout. Findings were not sensitive to gender, grade and SES status.

In terms of cross-sectional associations, results were also similar: school engagement had a medium sized (Cohen, 1988) link with information-oriented style (positive) and diffuse-avoidant style (negative); school burnout had a medium-sized link with diffuse-avoidant style (negative) and a strong negative link with school engagement. Normative identity style was not associated with both school engagement variables. Finally, results indicated that some significant correlations exist between disturbance variances of school engagement and identity styles (positive for information-oriented and negative for diffuse-avoidant) and disturbance variances of school burnout and identity styles (positive for diffuse-avoidant and negative for information-oriented). These correlations indicate that at least some change of identity styles and school engagement during these intervals may be affected by other common factors, which were not assessed in this study.

Discussion

The school context is seen as the environment where the capacities and resources, important for adolescent identity formation, can be developed (Flum & Kaplan, 2006, 2012; Harrell-Levy & Kerpelman, 2010; Lannegrand-Willems & Bosma, 2006). However, the existing literature does not yet

4 We checked if exclusion of covariates in this model had any effect on reciprocal relationships. Specifically, we ran the same model, but without inclusion of covariates. Exclusion of covariates had small effect of the size of relationships, thus indicating the need to include the covariates, however, the paths that were significant and those that were not with covariates included, remained to be the same. In addition, we checked if the links we found were moderated by groups based on gender, grade and SES. Specifically, we tested if these variables moderate the structural associations between the study variables, using multiple-group (MG) analyses. We conducted these analyses with factor scores (calculated using a measurement model with strict invariance constraints). To test for the moderation effects we compared the constrained model (in which the cross-lag associations were set to be equivalent across groups) with an unconstrained model (in which the cross-lag associations were allowed to vary across groups). The differences between the unconstrained and constrained models were not significant in the case of gender ($\Delta \chi^2_{(20)} = 21.31, p = .379; \Delta CFI = .000$), grade ($\Delta \chi^2_{(20)} = 20.35, p = .436; \Delta CFI = .000$) and SES ($\Delta \chi^2_{(20)} = 29.91, p = .071; \Delta CFI = -.004$). Thus, the results indicated that gender, grade, and SES did not moderate the relationships between the study constructs.
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provide a satisfactory understanding of the extent and directionality of the links between adolescent school experience and their identity formation. Few attempts exist to disentangle the potentially complex dynamic effects between adolescent identity and their school experience. We address this gap by analyzing the longitudinal cross-lagged associations between adolescent school experience (school engagement and school burnout) and identity processing styles (information-oriented, normative and diffuse-avoidant) in middle to late adolescence. The results of our analyses reveal the unidirectional pattern of the effects and support the general prediction that active engagement in learning at school can serve as a resource for adolescent identity formation, while school burnout, in contrast, can hinder the formation of adolescent identity over time. While the two aspects of the adolescent school functioning (engagement and burnout) are closely negatively related, their patterns of predicting identity processing in adolescence are quite distinct. Below we discuss the specific findings from our study in more detail.

The Effects of School Engagement and Burnout on Identity Processing Styles

Based on our findings, the adolescents who are actively involved in learning activities at school become more inclined to use the information-oriented identity processing style over time (i.e., to actively seek out, analyze, discuss, and critically evaluate self-relevant information). This effect is stable over a two-year period from middle to late adolescence and applies regardless of gender, grade or socio-economic status of an adolescent. This finding complements the previous studies, which have shown that a number of characteristics of adolescent-school interactions, for example, positive student perceptions of teaching (Rich & Schachter, 2012), positive school experiences (Lannegrand-Willems & Bosma, 2006), and perceived support for the basic needs at school (Madjar & Cohen-Malayev, 2013), can facilitate favorable aspects of youth identity formation, such as achieved commitments and in-depth examination of existing commitments. Taken together, the findings from our and the previous
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studies suggest that different (and mostly interrelated) aspects of adolescent-school interactions could be the components of a stimulating, yet safe school context for adolescent identity formation.

Despite the positive effect on the use of information-oriented identity processing style, increased levels of school engagement do not directly discourage the reliance on the other two identity processing styles (normative and diffuse-avoidant). This result is consistent with the social-cognitive perspective on identity, which suggests that the three distinct styles of approaching the self-relevant information are based on two fundamentally different information processing systems: a rational and an experiential (Berzonsky, 2011). While the active involvement in school learning activities can contribute to the development of the first (rational) system, mostly used in the information-oriented identity processing, apparently, it does not impair the experiential system of information processing used in normative and diffuse-avoidant identity styles. In turn, we see no links between school engagement, as assessed in our study, and the use of normative and diffuse-avoidant identity styles.

Instead, as expected, these two styles of identity formation (normative and diffuse-avoidant) are positively related to the experiences of school burnout. Higher levels of school burnout predict an increasing reliance on automatic cognitive processing, that is, either making unreflected identity commitments (normative identity processing style) or avoiding considerations of identity issues at all (diffuse-avoidant style). Being based on intuitive, automatic cognitive processes (Berzonsky, 1994, 2004, 2008), these two identity formation styles require relatively low mental resources and efforts on behalf of an adolescent. It is reasonable that these identity processing styles become increasingly used in the situation of a school burnout, since burnout indicates that the mental resources of a person are exceeded by the existing demands (Upadyaya & Salmela-Aro, 2013).

On the one hand, such resource-saving strategies as reliance on normative and diffuse-avoidant identity processing styles may seem helpful from a short-term perspective, since they can help to deal with identity issues in a fast way or postpone considering them entirely and thus reduce the total amount
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of stressful demands faced in a particular life situation. On the other hand, from a long-term perspective, their utility is questionable, since over-reliance on these strategies can lead to suboptimal outcomes for adolescents. This is particularly relevant in the case of predominantly diffuse-avoidant processing of identity issues. First of all, this style is substantially negatively related to identity commitment (Bosch & Card, 2012), which means that a meaningful and coherent system of personal goals, values, roles and life scenarios is incompatible with diffuse-avoidant identity processing. Moreover, a number of studies have shown that the reliance on a diffuse-avoidant style is consistently linked to the “dark side of identity development” (Crocetti, Beyers, & Çok, 2016): a higher reconsideration of the existing commitments (Negru-Subtirica, Pop, & Crocetti, 2017), a diffused identity status (Adams, Berzonsky, & Keating, 2006), and low scores on self-regulating identity functions (Crocetti, Sica, Schwartz, Serafini, & Meeus, 2013). The diffuse-avoidant identity style, as well as its identity correlates, are consistently linked to maladjustment and low well-being in adolescence. Particularly, the diffuse-avoidant identity style is negatively related to psychological well-being (Berzonsky & Cieciuch, 2016), psychological resources (Adams et al., 2006), self-esteem, optimism/efficacy and some other aspects of well-being and adjustment (Phillips & Pittman, 2007). Thus, predominant reliance on diffuse-avoidant identity processing can have certain costs for adolescents in terms of their adjustment and well-being.

This can partly also be the case with the normative identity processing style. While the reliance on normative identity style is linked to higher scores on a number of well-being indicators (Berzonsky & Cieciuch, 2016; Phillips & Pittman, 2007), at the same time, it is related to low scores on such aspects of adolescent functioning as autonomy and personal growth (Berzonsky & Cieciuch, 2016), as well as broader developmental outcomes, such as civic engagement (Crocetti et al., 2014). Thus, the reliance on normative identity processing style can have both benefits and costs for adolescent development.
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From the applied perspective, our findings suggest that the school demands and the developmental tasks faced by adolescents may contribute to building a cumulative pressure, which can lead to a burnout situation due to discrepancies between the individual resources and demands. If a greater emphasis is placed on dealing with the academic demands, the students may start “saving resources” in the sphere of developmental tasks, for example, by increasingly avoiding or automatically processing the newly arising identity-related issues. From a developmental perspective, such tendency can have undesirable effects on adolescent self-regulation and motivational functioning (Eichas et al., 2015), well-being (Berzonsky & Cieciuch, 2016), and other aspects of psycho-social functioning (see Crocetti et al., 2016). Thus, the developmental needs of adolescents, in particular, the need to form a coherent sense of personal identity, have to be taken into account when planning the requirements, the content and the format of the academic and other school activities and tasks. A number of authors emphasize that schools should consistently foster their students’ identity exploration skills and orient the whole educational process towards their students’ identity development (Flum & Kaplan, 2006; Harrell-Levy & Kerpelman, 2010; Schachter & Rich, 2011). This includes providing safe spaces and opportunities for adolescent identity exploration, offering academic tasks and activities based on the students’ personal experiences and meanings, supporting student autonomy, focusing on the process of learning, encouraging interaction with peers and experts and building a continuous dialogue with students on the personal purpose and meaning of learning (Flum & Kaplan, 2006).

Taken together, our findings on the longitudinal effects of school engagement and school burnout on adolescent identity processing suggest that these two closely negatively related aspects of adolescent-school interactions may have quite distinct roles in adolescent identity formation. While school engagement only contributes to the information-oriented style, which is primarily based on the rational processing, school burnout only predicts the two identity styles primarily based on experiential processing. This points to a relative independence of the two cognitive systems underlying the identity
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processing styles, as well as to a different nature of school engagement and school burnout, as measured in our study. Even if, in some cases, school burnout can be considered as an indicator of school disengagement (Tuominen-Soini & Salmela-Aro, 2014), in the case of adolescent identity formation both factors have to be considered to understand their distinct role over time.

Limitations and Suggestions for the Future

The findings of our study have to be considered in the light of its strengths and limitations. To operationalize the construct of school engagement we have used its behavioral component, which is considered central for analyzing students’ involvement with school (Hospel et al., 2016). The behavioral engagement covers such school conduct as being attentive, listening to teachers, participating in class discussions, and working hard at school. Even though these behaviors reflect the extent of involvement in learning, they do not directly cover emotional, cognitive and agentic aspects of school engagement. Since these components are related, adding all aspects of school engagement in predictions of identity processing styles could provide a more accurate and comprehensive picture. Future studies on adolescent identity formation in the school context should explore the links of all four aspects of school engagement with identity.

Another limitation is related to the partial perspective on identity formation used in our study. While identity formation includes two aspects – self-discovery and self-construction (Eichas et al., 2015) – our study only focused on the latter by applying the social-cognitive perspective on identity. Thus, the aspect of self-discovery was left out of the analysis. This could explain the absence of reciprocity in the links between school engagement and burnout with identity processing styles in our study. While we found no effects of identity processing on the level of school engagement and burnout, some previous studies have documented such effects. For example, Faircloth (2012) has shown, in a sequence of qualitative studies, that by strengthening the identity components of the learning content (i.e., encouraging students to share their personal perspectives and discover the personal meaning of the
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academic tasks) it is possible to strengthen students’ active participation and emotional responsiveness to learning. A similar pattern was discovered in Sinai and colleagues’ (2012) study, where school activities intended to promote identity exploration facilitated engagement in learning. The seeming contradiction between these findings and ours can be resolved when considering the two aspects of identity formation – self-discovery and self-construction. While our study focused on the latter, the two previous studies included a very salient self-discovery component. Taken together, these findings and ours suggest that the links between identity formation and school engagement and burnout may vary depending on the self-discovery vs. self-construction perspective on identity. In future studies, this assumption could be tested by analyzing both aspects of identity formation in the context of adolescent-school interactions.

Finally, our findings are bound within the measurement intervals designed for our longitudinal study. Year-long intervals could be considered rather long in a study on identity formation in middle to late adolescence, since this developmental period is very intensive with regard to identity development. Some studies have documented intensive adolescent identity dynamics even on a daily basis (Klimstra et al., 2010). Some of the effects between school engagement, school burnout and identity processing styles may be overlooked when using long periods between assessments. Future longitudinal studies on the subject should carefully consider the optimal period between assessments.

Conclusion

Our findings extend the literature on the links between adolescent-school interactions on identity development. School engagement supports the adolescent identity formation by facilitating information-oriented processing of identity issues. School burnout, in contrast, leads to the reliance on normative and diffuse-avoidant identity styles, based on experiential, automatic, non-reflective ways of cognitive processing. Thus, while school engagement can serve as a resource for adolescent identity formation, school burnout can hinder the development of adolescent identity. These tendencies are
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robust in middle to late adolescence and apply regardless of gender, grade, or socio-economic status of an adolescent. These findings suggest that the schools should respect the developmental needs of adolescents, particularly the need to form a coherent sense of personal identity, by supporting adolescent engagement in school activities, preventing school burnout and offering safe opportunities for identity exploration in the school context.
References


https://doi.org/10.1016/j.paid.2007.09.024
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Table 1
The Main Socio-Demographic Characteristics of the Study Sample (N = 916) and Country-Wide Data for Comparison

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<th>SES²</th>
<th>Ethnicity³</th>
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<tr>
<td></td>
<td>Women</td>
<td>Men</td>
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<td>Study sample</td>
<td>51%</td>
<td>49%</td>
<td>22%</td>
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<tr>
<td>Country-wide data</td>
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Notes.
### Table 2
**Means, Standard Deviations, and Correlations Among Study Variables (N = 916)**

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<td>.09** .11*** .19*** .39*** .53***</td>
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<td>13. School burnout</td>
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<td><strong>Mean</strong></td>
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<td><strong>SD</strong></td>
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**Note.**
* - p < .05;  ** - p < .01;  *** - p < .001.
Table 3

Results of Longitudinal Measurement Invariance and Cross-Lagged Panel Model Analyses (N = 916)

<table>
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<th>Model fit statistics</th>
<th>Model fit change statistics</th>
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<td>df</td>
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<td>Longitudinal invariance tests</td>
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<td>M1</td>
<td>1989.978***</td>
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<td>M2</td>
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<tr>
<td>M4</td>
<td>2028.648***</td>
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</table>

Note.

CFI - Comparative fit index; RMSEA – Root mean square error of approximation. SRMR – Standardized Root Mean Square Residual; CI – Confidence interval. \( n_{\text{par}} \) – number of free parameters in the model. M0: Measurement model with covariates; M1: Cross-lagged panel model without any constraints; M2: Cross-lagged panel model with stability coefficients constrained to be equal across waves; M3: Cross-lagged panel model with stability and cross-lag coefficients constrained to be equal across waves; M4: Cross-lagged panel model with stability, cross-lag, disturbance variances and residual correlation coefficients constrained to be equal across waves.

* - \( p < .05 \); ** - \( p < .01 \); *** - \( p < .001 \).
Figure 1. Standardized results of the cross-lagged model linking identity styles, engagement in learning and school burnout. Since the models with time-invariant structural paths were retained as the final ones, we present only two time-points (T and T+1), and all coefficients displayed (except for correlations between latent variables at T1) represent the averaged standardized coefficients over three-time intervals. Although not displayed for reasons of clarity, this model includes non-significant cross-lagged paths between all variables, observed indicators of latent variables (parcels) and three covariates (gender, SES, grade).