The Meaningful Identity: A Longitudinal Look at the Interplay Between Identity and Meaning in Life in Adolescence

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Identity formation in adolescence is closely linked to searching for and acquiring meaning in one's life. To date little is known about the manner in which these 2 constructs may be related in this developmental stage. In order to shed more light on their longitudinal links, we conducted a 3-wave longitudinal study, investigating how identity processes and meaning in life dimensions are interconnected across time, testing the moderating effects of gender and age. Participants were 1,062 adolescents (59.4% female), who filled in measures of identity and meaning in life at 3 measurement waves during 1 school year. Cross-lagged models highlighted positive reciprocal associations between (a) commitment processes and presence of meaning and (b) exploration processes and search for meaning. These results were not moderated by adolescents' gender or age. Strong identification with present commitments and reduced ruminative exploration helped adolescents in having a clear sense of meaning in their lives. We also highlighted the dual nature of search for meaning. This dimension was sustained by exploration in breadth and ruminative exploration, and it positively predicted all exploration processes. We clarified the potential for a strong sense of meaning to support identity commitments and that the process of seeking life meaning sustains identity exploration across time.

Keywords: identity, meaning in life, adolescents, longitudinal

It is we ourselves who must answer the questions that life asks of us, and to those questions we can respond only by being responsible for our existence.

—Viktor Frankl

Adolescence is a period of unique and complex encounters and changes, when "life," through its many agents (e.g., family, peers, teachers), asks adolescents many new questions (e.g., What do you want from life? How do you see your future?). As adolescents gain the cognitive capacity to process and operate with abstract concepts, they tend to assume more responsibility in defining who they are and more deeply engage in constructing their identity (Marcia, 1966). They gradually start to build a more coherent

worldview, being able to reflect on their goals for the future and to derive meaning from everyday experiences. Existing research has pointed out that both identity (e.g., Luyckx, Teppers, Klimstra, & Rassart, 2014) and meaning in life (e.g., Steger, 2012) are key components of coherent self-development in adolescence.

Theoretical tenets of identity (Erikson, 1968, 1975; Marcia, 1966) and meaning in life (e.g., Steger, Oishi, & Kashdan, 2009) emphasize that healthy identity formation in adolescence is closely linked to searching for and gradually acquiring meaning in one's life. Identity formation is important to the establishment of meaning and purpose in life, and conversely, meaning in life supports positive identity formation and consolidation. The identity capital model (Côté, 2002) brings forward that adolescents with an integrated sense of identity tend to interpret their life experiences in terms of the personal goals they hold and pursue. These adolescents perceive themselves as possessing agency and the capacity for self-direction in their everyday lives. A conceptualization of one's life as being organized around the pursuit of personal goals (i.e., identity commitments) helps youth derive meaning from their actions (Côté & Schwartz, 2002).

This sense of meaning contributes to the strengthening of current identity commitments as well, through active involvement in a thorough exploration of these present choices, which are judged as valuable and personally relevant. This complex interplay between personal identity and meaning in life has been linked to positive adaptation (e.g., well-being; Burrow & Hill, 2011), but to date little is known about the manner in which these two constructs may be related in this developmental stage. In order to shed more

light on these longitudinal links, we conducted a three-wave longitudinal study, investigating how identity processes and meaning in life dimensions are connected to each other throughout a school year.

Interplay Between Identity Development and Meaning in Life in Adolescence

Identity development in adolescence is associated with searching for and maintaining a sense of life meaning. Both constructs represent key personal assets when youth approach developmental tasks and transitions and can be viewed as core manifestations of an agentic, goal-oriented self (Côté, 2002). That is, the perception of a meaningful life helps adolescents actively take stock of opportunities and obstacles. Identity development is centered on finding answers to the question "Who am I?" as adolescents explore and gradually commit to specific life goals and values (Marcia, 1966). Recent models of identity formation (Crocetti, Schwartz, Fermani, Klimstra, & Meeus, 2012; Luyckx, Goossens, & Soenens, 2006; Luyckx, Goossens, Soenens, & Beyers, 2006) have unpacked identity exploration and commitment into a larger set of identity processes, allowing a finer grained analysis of identity development. One example is Luyckx and colleagues' (Luyckx, Goossens, & Soenens, 2006; Luyckx et al., 2008) model, which includes five separate but interrelated processes of identity development. Four of these processes are subsumed to two cycles of identity growth. The identity formation cycle focuses on *exploration in breadth* (i.e., the manner in which adolescents actively explore diverse paths for future development) and on *commitment making* (i.e., adherence to specific beliefs and principles). The identity evaluation cycle is centered on *exploration in depth* (i.e., the thorough appraisal of present commitments) and on *identification with commitment* (i.e., the assimilation of present commitments in one's sense of self). The fifth process, *ruminative exploration,* is marked by worry and indecisiveness, and it represents a maladaptive type of exploration that delays identity formation.

Another key personal asset in adolescence is the gradual quest for and attainment of a sense of meaning in one's life. Meaning in life integrates a coherent and purposeful comprehension of one's life, the world, and how one fits within this world (e.g., Dezutter et al., 2014). Steger, Frazier, Oishi, and Kaler (2006) distinguished two specific dimensions of meaning in life: *presence of meaning* (i.e., individuals' perception of their existence as being purposeful, significant, and valuable) and *search for meaning* (i.e., individuals' efforts aimed at exploring and increasing the significance of their life). Thus, having a sense of meaning in life suggests one has the ability to form coherent worldviews that explain why events occur and the ability to identify aspirations and goals that people may strive to achieve. Meaningful lives are judged to be valuable, worthwhile, understandable, and supportive of avenues for making an impact in the world.

Experiencing the presence of meaning in life is conceived to be a beneficial psychological quality, and it is associated with numerous positive psychological outcomes, such as psychological well-being (e.g., Dezutter et al., 2014), adaptive personality traits (e.g., conscientiousness, agreeableness: Steger, Kashdan, Sullivan, & Lorentz, 2008), or health-related behaviors (e.g., healthy eating, engagement in physical activity: Brassai, Piko, & Steger, 2015). Search for meaning, on the other hand, has been conceptualized as

both a positive, adaptive process (Frankl, 1963) and a maladaptive, dysfunctional process (Baumeister, 1991). Its dual nature is supported by the mixed results of research studies, which link one's search for meaning to some positive outcomes (e.g., open-mindedness, curiosity: Schwartz et al., 2011; Steger, Kashdan, et al., 2008; healthy eating and physical activity: Brassai et al., 2015; school motivation: Kiang & Witkow, 2015) but also to negative outcomes (e.g., depressive symptoms: Kiang & Witkow, 2015; Schwartz et al., 2011; negative affect: Boyraz, Lightsey, & Can, 2013; rumination and negative thinking about the past: Steger, Kashdan, et al., 2008).

The strong link between identity and meaning in life was initially brought forward by Erikson (1968, 1975) in his work on youth identity development. He viewed fidelity as a protective factor for healthy identity formation, because youth with a strong sense of fidelity construct their identities in accordance with "the capacity to be loyal to a vision of the future" (Erikson, 1975, p. 209). This allegiance to a coherent worldview, which is conceptually similar to meaning in life, offers adolescents a sense of direction in life and helps them in exploring and negotiating social and age-graded requirements (e.g., choice of an occupation, choice of friends).

These relations are important assets for adolescent development in late-modern societies, where cultural destructuring leads to a decline in the role that traditions (i.e., values, norms, beliefs) play in guiding the development of new generations (Côté, 2005). When debating how individuals negotiate developmental transitions in unstructured late-modern societies, Côté (1996) delineated that "the active, agentic response is to develop strategies for dealing with these influences in terms of sustaining some sense of direction and meaning, and taking initiative in one's personal development" (p. 423). In this vein, recent cross-sectional studies have pointed out that adolescent purpose in life is structured along different levels of purpose commitment and exploration, replicating the identity statuses of achievement, foreclosure, moratorium, and diffusion (e.g., Burrow & Hill, 2011; Burrow, O'Dell, & Hill, 2010; Kiang & Fuligni, 2010).

Moreover, these relations are supported by existing research employing the identity process model proposed by Meeus and Crocetti (Crocetti et al., 2015, 2012). Cross-sectional (e.g., Crocetti, Sica, Schwartz, Serafini, & Meeus, 2013; Karaś, Cieciuch, Negru, & Crocetti, 2015; Morsünbül, Crocetti, Çok, & Meeus, 2014), and longitudinal (e.g., Pop, Negru-Subtirica, Crocetti, Opre, & Meeus, 2016) studies on youth samples brought forward the dual nature of identity in-depth exploration. These studies highlighted that, similarly to search for meaning, this identity process can be linked to positive psychosocial characteristics (e.g., adaptive personality traits, well-being) but also to negative psychosocial characteristics (e.g., anxiety and depressive symptoms). It can be that search for meaning and identity exploration are connected at a deeper seated personality level, because they may share similar underlying personality traits (e.g., openness to experience, curiosity: Schwartz et al., 2011; Steger, Kashdan, et al., 2008).

Additional proof for the complex relations between identity processes and meaning in life comes from narrative identity studies that have conceptualized meaning making in the context of the construction of a personal life story (e.g., McAdams, 1985). Due to the stages of progress involved in developing one's abstract reasoning ability (Habermas & Bluck, 2000), adolescence is viewed

as a key period in the development of life stories, by making meaning of past experiences. Research studies have linked changes in identity processes with changes in the complexity, depth, and content of narrative meaning making in adolescents (e.g., McLean & Pratt, 2006; McLean & Thorne, 2003). Adolescents who are actively involved in the exploration of identity alternatives and/or of present identity commitments tend to have richer and more comprehensive life stories.

Nevertheless, it is important to take into account not only similarities between meaning in life and identity but also their differences. Meaning in life refers to more global existential pre-occupations (Frankl, 1963; Steger, 2012; Steger et al., 2006), whereas identity pursuits encompass processes of exploration and commitment to specific life goals (Crocetti et al., 2012; Erikson, 1968; Luyckx, Goossens, et al., 2006). On the one hand, meaning in life dimensions (i.e., presence of meaning, search for meaning) capture the construction of a more coherent worldview and are anchored on personal reflections regarding the significance of one's life in general, with specific consideration of one's place in the broader scope of existence. On the other hand, identity re-volves around representations of the self, powered through the pursuit of personal goals in discrete life domains, and it is based on processes of becoming acquainted with possible goals that ideally then lead to the gradual allegiance to a specific goal. Another way of putting the differences is to say that identity is concerned with who the protagonist in a life story is, whereas meaning in life is concerned with the plot of the story and the broader significance of that protagonist's role. Hence, one's quest for meaning in life creates a fertile ground for the identification and then selection of core personal goals that define who one is in specific life domains.

To our knowledge no longitudinal study has yet investigated the manner in which identity processes and meaning in life are asso-ciated in adolescence. On the basis of the results of existing cross-sectional research that links the two constructs, it may be that presence of meaning is longitudinally linked to commitment mak-ing and identification with commitment (Burrow et al., 2010). These longitudinal links may be reciprocal, because previous stud-ies have brought forward that identity commitments and presence of meaning tend to actively support each other (e.g., positive relations between ethnic identity commitment and presence of meaning: Kiang & Fuligni, 2010). A strong sense of life meaning may help adolescents in becoming more committed to their goals for the future and in internalizing these commitments because of the organizing role meaning is thought to play in helping people select and pursue long-term goals. Conversely, higher levels of identity commitment assist adolescents in maintaining meaning in their lives by providing a stable sense of self that facilitates a coherent worldview. These bidirectional links may adaptively fos-ter the acquisition of identity capital, viewed as what individuals "invest" in "who they are" (Côté, 1996, p. 425), which is a core strategy for successfully navigating the late-modern society.

Search for meaning may be associated with the three exploration processes (i.e., exploration in breadth, exploration in depth, and ruminative exploration) and vice versa. Adolescents' quest for meaning and purpose in their lives is greatly facilitated when they also tend to explore their options for the future. Also, diverse strategies of identity exploration aid one's search for meaning in life longitudinally. These links are supported by Burrow and colleagues' (2010) cross-sectional findings regarding the positive

association between purpose commitment and identity commit-ment and between purpose exploration and identity exploration in adolescents. Additional proof comes from research that has fo-cused on the relations between identity statuses and narrative meaning making from adolescence to emerging adulthood (e.g., McLean & Pratt, 2006; Syed & Azmitia, 2010). This line of research highlighted that higher identity exploration was related to more reflective narrative meaning making across time. These findings indicate that young people who focus more on exploring their identity alternatives also develop richer and more complex meaning in their life stories.

Ruminative exploration and search for meaning may also be positively linked, due to the dual nature of this meaning in life dimension. That is, one's search for meaning always encompasses elements of uncertainty. For instance, adolescents may question whether their efforts to explore the significance of their lives fit their current goals (e.g., "If the most important aspect for me is to have a strong Facebook identity, how am I supposed to search for something meaningful in my life?"), or they may be afraid they are not involved enough in finding a "common thread" in their lives. Therefore, this uncertainty can be processed with doubt, rumina-tion, and negative thinking about the past by those who seek a sense of meaning in their lives.

Overview of the Present Research

This longitudinal study examined reciprocal associations be-tween identity processes and meaning in life dimensions in ado-lescence. In this endeavor, we investigated their cross-lagged as-sociations, testing the moderating role of gender and age. Additionally, we analyzed their correlated changes (Klimstra, Blei-dorn, Asendorpf, van Aken, & Denissen, 2013; Neyer & Asendorpf, 2001). Correlated change (i.e., within-time correlations at Time 2 and Time 3 in the study's proposed cross-lagged framework) depicts whether change in one variable is accompanied by change in another variable in time. Time 2 and Time 3 within-time correlations in the study's proposed cross-lagged framework differ from Time 1 correlations in that the former reflect how changes in one construct are related to changes in another construct in time, whereas the latter depict how two variables are initially related, at onset (Klimstra et al., 2013; Neyer & Asendorpf, 2001). In the present study we focused on correlated change coefficients at the between-subjects level. Therefore, positive correlated change in-dicated that, for instance, if a person's score on identification with commitment increased relative to the scores of others, their scores on presence of meaning might also become relatively higher compared to others' scores on this dimension.[1]

In terms of cross-lagged associations, in line with existing findings (e.g., Burrow & Hill, 2011; Kiang & Fuligni, 2010; McLean & Thorne, 2003), we expected commitment processes to positively predict presence of meaning longitudinally and vice versa. Across the school year, adolescents with strong identity commitments would also have higher levels of presence of mean-ing in their lives, and increased presence of meaning would further enforce current commitments. Also, we expected exploration pro-cesses (i.e., exploration in breadth, exploration in depth, and ru-

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[1] We thank an anonymous reviewer for this suggestion on how to further clarify the correlated change coefficients.

minative exploration) to positively predict search for meaning in time and vice versa.

As the school year unfolds, stronger involvement in the examination of current life goals is expected to contribute to higher levels of search for meaning in one's life. Thus, we hypothesized that adolescents embarking on an active investigation of the meaning they attached to their lives would gradually report more exploration in depth and in breadth and also more ruminative exploration of their identity commitments. Additionally, we analyzed how adolescents' gender and age influence the relation between identity and meaning in life. Existing studies (e.g., Kiang & Witkow, 2015; Machell, Kashdan, Short, & Nezlek, 2015; Steger, Kashdan, et al., 2008; Steger, Kawabata, Shimai, & Otake, 2008) have tended to indicate that this relation may not be moderated by adolescents' gender or age. Nonetheless, this hypothesis still needs to be tested longitudinally.

In terms of correlated change between identity processes and meaning in life dimensions at Time 2 and Time 3 period, we hypothesized that changes in commitment processes (i.e., commitment making, identification with commitment) would be related positively to changes in presence of meaning. Additionally, we expected changes in exploration processes (i.e., exploration in breadth, exploration in depth, and ruminative exploration) to be related positively to changes in search for meaning at Time 2 and Time 3. These hypotheses are grounded on theoretical (e.g., Côté, 2005; Erikson, 1968; McAdams, 1985) and empirical (e.g., Burrow et al., 2010; Kiang & Fuligni, 2010) evidence on the links between identity and meaning in life.

Method

Participants and Procedure

Our study uses data from the ongoing longitudinal study entitled Transylvania Adolescent Identity Development Study (Negru-Subtirica & Pop, 2016; Negru-Subtirica, Pop, & Crocetti, 2015). We collected data from seven schools located in four towns in the North-West part of Romania. Students from the ninth to the 12th grades completed paper-and-pencil questionnaires at three measurement waves 3 to 4 months apart during one school year. Students completed all questionnaires in classrooms during school hours. Participation in the study was voluntary and anonymous. At all waves, students gave their informed consent for participating in the study and could choose not to fill in the questionnaires and become involved in other classroom activities. The study was approved by the Faculty of Psychology and Educational Sciences of the first author's university and by the schools' headmasters through a written collaboration protocol.

A total of 1,062 adolescents (59.4% female) participated in the study, of which 35.2% were early to middle adolescents (age range = 13–15 years) and 64.8% were middle to late adolescents (age range = 16–19 years). Mean age was 16.64 (*SD* = 1.29; range = 13–19). The parents of 81.6% of youth were married, whereas 13.4% came from one-parent households. As for living arrangements, 91.7% of adolescents lived with one or both parents, whereas 8.3% lived with other students or relatives. The large majority of adolescents were fully financially supported by their parents (88.3%), and few reported having some personal income

(i.e., state-provided student allocation) that supplemented the parental financial support (9.2%).

Overall, 23.55% of data were missing at Times 1–3. The range of missing items varied from 16.1% to 30.7% across the three waves. Little's (1988) missing completely at random test on the variables of interest yielded a normed chi-square of 1.17. According to guidelines by Bollen (1989), this indicates that data were probably missing at random. Thus, we employed the full-information maximum-likelihood (FIML) procedure in Mplus 6.2 (Muthén & Muthén, 2002). FIML uses all available information (including information from participants with missing data) to estimate the model parameters (Enders, 2010).

Measures

Measures were translated from English to Romanian through the back-translation method. A team of four academics independently translated the measures from English to Romanian. All discrepancies among the four versions were discussed until a consensus was met for a final Romanian form of each measure. Then, two bilingual translators back-translated the Romanian versions to English. This final back-translation procedure provided English versions identical to the original forms of each scale.

Identity processes. Identity processes were measured with the Dimensions of Identity Development Scale (DIDS; Luyckx et al., 2008). The DIDS assesses identity processes regarding future plans and possible life paths. It consists of 25 items, divided equally into five subscales, which appraise specific identity processes, namely commitment making (e.g., "I have decided on the direction I want to follow in my life"), identification with commitment (e.g., "I sense that the direction I want to take in my life will really suit me"), exploration in breadth (e.g., "I regularly think over a number of different plans for the future"), exploration in depth (e.g., "'I regularly talk with other people about the plans for the future I have made for myself"), and ruminative exploration (e.g., "It is hard for me to stop thinking about the direction I want to follow in my life"). Participants respond to each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Table 1 presents Cronbach's alphas for the subscales from Time 1 to Time 3. We performed confirmatory factor analysis (CFA) with the maximum-likelihood robust estimator (MLR; Satorra & Bentler, 1994) in Mplus 6.2 to check the factor structure of the Romanian version of the DIDS. In line with the validation studies (Luyckx, Klimstra, Duriez, Van Petegem, & Beyers, 2013; Luyckx et al., 2008) and studies conducted in other European cultures (e.g., Italy: Crocetti, Luyckx, Scrignaro, & Sica, 2011), findings indicated an acceptable fit of the five-factor model (including two error covariances between similarly worded items patterning on the same latent factor) to the data, Satorra–Bentler (SB) $\chi^2(263) = 1,001.527$, comparative fit index (CFI) = .913, root-mean-square error of approximation (RMSEA) = .057, standardized root-mean-square residual (SRMR) = .083.

Meaning in life. Meaning in life was measured with the Meaning in Life Questionnaire (MLQ; Steger et al., 2006), an instrument that has been successfully used in European cultures (e.g., Turkey: Boyraz, et al., 2013; Hungarian ethnics in Romania: Brassai, et al., 2015). The MLQ comprises two dimensions—presence of meaning (e.g., "I understand my life's meaning") and search for meaning (e.g., "I am always looking to find my life's

Table 1
Descriptive Statistics and Reliability for Identity Processes and Meaning in Life Dimensions at Times 1–3

Variable	Descriptive statistics: M (SD)			Reliability (α)		
	Time 1	Time 2	Time 3	Time 1	Time 2	Time 3
Commitment making	3.75 (.92)	3.66 (.91)	3.66 (.86)	.89	.90	.89
Identification with commitment	3.76 (.84)	3.70 (.87)	3.67 (.81)	.86	.89	.86
Exploration in breadth	3.76 (.85)	3.62 (.78)	3.52 (.81)	.82	.78	.81
Exploration in depth	3.38 (.82)	3.31 (.80)	3.35 (.80)	.76	.78	.80
Ruminative exploration	2.72 (1.04)	2.74 (1.00)	2.91 (.98)	.85	.87	.86
Presence of meaning	3.62 (.82)	3.60 (.83)	3.59 (.79)	.76	.79	.76
Search for meaning	3.72 (.85)	3.54 (.84)	3.47 (.85)	.76	.78	.79

Note. M = Mean; SD = Standard Deviation; α = Cronbach's Alpha.

purpose.")— each measured by five items. Participants respond to each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The search for meaning dimension for the present study comprised four items.[2] Cronbach's alphas for the presence of meaning and search for meaning scales are detailed in Table 1. For the Romanian version of the MLQ, we performed confirmatory factor analysis with the maximum-likelihood robust estimator (Satorra & Bentler, 1994) in Mplus 6.2 to check the factor structure. For the version of the MLQ employed in this study we found a good fit of the original two-factor structure (Steger et al., 2006) to the current data, $\chi^2_{SB}(26) = 103.438$, CFI = .949, RMSEA = .058, SRMR = .048.

Results

Preliminary Analyses

Mean scores and standard deviations for study variables from Time 1 to Time 3 appear in Table 1. Correlations between study variables at Time 1 appear in Table 2. We used Cohen's (1988) benchmarks for interpreting the magnitude of correlation coefficients. These benchmarks refer to the magnitude of effect sizes (Hemphill, 2003) and indicate that correlation coefficients around the value of .10 are "small," those around .30 are "medium," and those of .50 are "large."

In a set of preliminary analyses, we examined mean-level changes in the five identity processes and in the two meaning in life dimensions over time. We conducted latent growth curve (LGC) analyses with the MLR. LGC analyses provide mean levels (i.e., intercepts) and mean change rates (i.e., slopes) that are based on individual growth trajectories of all participants. Results are detailed in Table 3. We evaluated the fit of linear models through multiple indices (Byrne, 2012): CFI, with values higher than .90 indicating an acceptable fit and values higher than .95 suggesting an excellent fit; RMSEA; and SRMR, with values below .08 indicating an acceptable fit and values less than .05 representing a good fit.

Model fit indices showed adequate to excellent data fit for all linear growth models. An analysis of growth factors indicated that commitment making, identification with commitment, and exploration in breadth significantly decreased over time. Ruminative exploration showed a statistically significant increase during the school year. Exploration in depth remained stable from Time 1 to

Time 3. For meaning in life, presence of meaning remained stable over time, whereas search for meaning significantly decreased.

Cross-Lagged Analyses

In order to examine reciprocal longitudinal associations between adolescent identity processes and meaning in life in one school year, we conducted cross-lagged analyses in Mplus 6.2, using MLR (Satorra & Bentler, 2001). Specifically, we tested cross-lagged paths and Time 2–Time 3 correlated changes (i.e., within-time correlations in our cross-lagged framework) from identity processes to meaning in life and vice versa (e.g., commitment making predicting presence of meaning and presence of meaning predicting commitment making). In this endeavor, we controlled for (a) first-order autoregressive paths (e.g., identity processes at Time 1 predicting identity processes at Time 2), (b) second-order autoregressive paths (e.g., identity processes at Time 1 predicting identity processes at Time 3), and (c) within-time correlations among all variables. We used multigroup tests to examine the potential moderating effects of gender and age.

In order to model the reciprocal associations between identity processes and meaning in life as parsimoniously as possible, we tested whether cross-lagged paths and Time 2–Time 3 within-time correlations between identity and meaning in life were time-invariant. Hence, we compared the baseline unconstrained model (Model 1) with the model assuming the time invariance of cross-lagged paths and Time 2–Time 3 within-time correlations among identity processes and meaning in life dimensions (Model 2). To determine significant differences between these models, we had to match at least two out of these three criteria: $\Delta\chi^2_{SB}$ significant at $p < .05$, ΔCFI $\geq -.010$, and ΔRMSEA $\geq .015$ (Chen, 2007; Cheung & Rensvold, 2002).

Results indicated that the model with time-invariant cross-lagged paths and Time 2–Time 3 within-time correlations was not significantly different, $\Delta\chi^2(30) = 48.968$, $p = .015$, ΔCFI $= -.003$, ΔRMSEA $= .002$, from the model in which these effects were allowed to vary across time. Therefore, we could retain as the final model the most parsimonious model (Model 2), with time-invariant cross-lagged paths and Time 2–Time 3 within-time cor-

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[2] Initial analyses indicated that the item "I am searching for meaning in my life" of the search for meaning dimension cross-loaded on the presence of meaning dimension. Hence, we decided to exclude this item from the scale for the present study.

Table 2
Correlations Between Identity Processes and Meaning in Life Dimensions at Time 1

Variable	1	2	3	4	5	6	7
Identity processes							
1. Commitment making	—	.73***	.03	.27***	−.37***	.56***	.06
2. Identification with commitment		—	.14***	.36***	−.29***	.52***	.16***
3. Exploration in breadth			—	.57***	.47***	−.05	.54***
4. Exploration in depth				—	.28***	.16***	.41***
5. Ruminative exploration					—	−.33***	.30***
Meaning in life							
6. Presence of meaning						—	.07*
7. Search for meaning							—

* p < .05.   *** p < .001.

relations. This model fit the data very well, $\chi^2_{SB}(72) = 106.592$, CFI = .994, RMSEA = .021, 90% confidence interval [.012, .029], SRMR = .025. Significant cross-lagged paths are reported in Figure 1.

Findings of cross-lagged path analyses revealed bidirectional relations among identity processes and meaning in life. Identification with commitment positively predicted presence of meaning across the school year. Additionally, ruminative exploration was a negative predictor for presence of meaning during the school year. Presence of meaning positively predicted identification with commitment and commitment making. Exploration in breadth and ruminative exploration were positive predictors of search for meaning longitudinally. Search for meaning positively predicted all three exploration processes (i.e., exploration in breadth, exploration in depth, and ruminative exploration).

We conducted multigroup analyses to test whether cross-lagged paths from identity processes to meaning in life and vice versa were significantly moderated by gender and age. Results indicated that, for gender, $\Delta\chi^2_{SB}(30) = 41.104$, $p = .085$, ΔCFI = −.002, ΔRMSEA = −.001, and age, $\Delta\chi^2_{SB}(30) = 36.629$, $p = .188$, ΔCFI = −.002, ΔRMSEA = 0, the unconstrained model in which parameters were free to vary across groups was not significantly different from the constrained model in which the parameters were fixed across groups. Therefore, the pattern of results displayed in Figure 1 applied equally to boys and girls and to early to middle and middle to late adolescents. Table 4 presents the correlated changes between identity processes and meaning in life dimensions at Time 2 and Time 3. As hypothesized, at Time 2 and Time

3 we found medium to large correlated change between commitment processes (i.e., commitment making, identification with commitment) and presence of meaning. As detailed in Table 4, changes in ruminative exploration were related negatively to changes in presence of meaning. Additionally, in line with our hypotheses, we found medium to large correlated change between all exploration processes (i.e., exploration in breadth, exploration in depth, ruminative exploration) and search for meaning at Time 2 and Time 3.

Discussion

Constructing identity and meaning in life represent central developmental tasks throughout adolescence (Luyckx et al., 2014; Steger, 2012). They contribute to the manner in which young people define themselves as active agents of their own development, by projecting, exploring, and committing to personal goals and gradually acquiring a sense of meaning in their lives (Côté, 2002; Côté & Schwartz, 2002). Identity and meaning in life are considered to be interconnected (Erikson, 1968; Marcia, 1966; Steger et al., 2009), although these assumed longitudinal links remain mainly theoretical. To date, existing literature has mainly focused on cross-sectional studies to investigate these relations (e.g., Burrow & Hill, 2011; Steger, Kashdan, et al., 2008; Steger, Kawabata, et al., 2008). The present three-wave longitudinal study set out to investigate how identity processes and meaning in life dimensions are linked across one school year. We highlighted multiple longitudinal associations between identity processes and meaning in life.

Table 3
Latent Growth Curve Analyses for Identity Processes and Meaning in Life Dimensions

Variable	Growth factors			Model fit indices				
	Intercept: M (σ^2)	Slope: M (σ^2)	r	χ^2	df	CFI	RMSEA	SRMR
Commitment making	3.73*** (.28***)	−.04** (−.05)	.05	1.771	1	.997	.027	.013
Identification with commitment	3.75*** (.28***)	−.04** (−.00)	.02	.428	1	1.000	.000	.006
Exploration in breadth	3.75*** (.35***)	−.12*** (.01)	−.03	1.374	1	.999	.019	.011
Exploration in depth	3.36*** (.39***)	−.02 (.04)	−.06*	5.524*	1	.985	.066	.021
Ruminative exploration	2.69*** (.79***)	.09*** (.17***)	−.23***	6.183*	1	.983	.071	.019
Presence of meaning	3.62*** (.40***)	−.02 (.07***)	−.05	.366	1	1.000	.000	.005
Search for meaning	3.71*** (.45***)	−.13*** (.06*)	−.08*	4.155*	1	.990	.055	.016

Note. M = Mean; σ^2 = Variance; χ^2 = Chi-Square; df = degrees of freedom; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual.
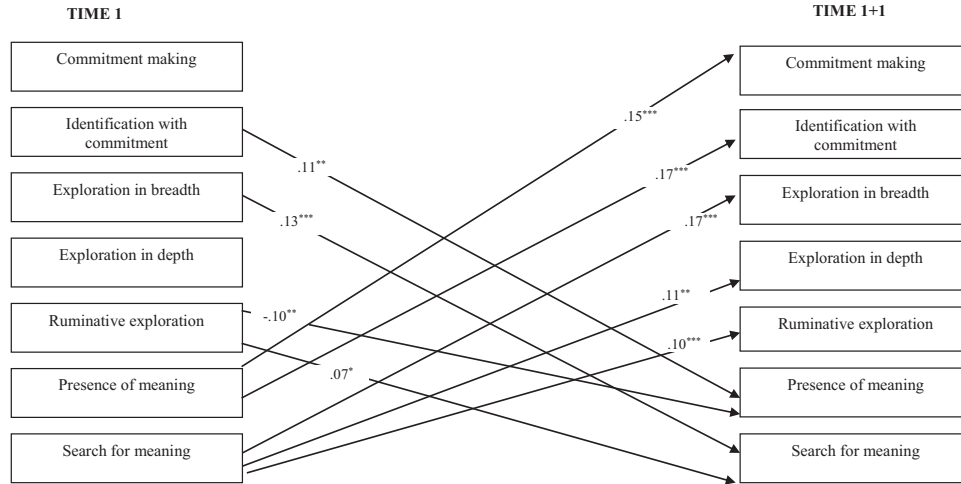** p < .05.   ** p < .01.   *** p < .001.*

Figure 1. Significant standardized results for the cross-lagged model linking identity processes to meaning in life dimensions. For the sake of clarity, stability paths and correlations between identity processes and, respectively, between meaning in life dimensions are not reported. Because the model with time-invariant coefficients was retained as the final one, we present only two time points (T and T+1). All coefficients displayed for T+1 represent the averaged standardized coefficients at Time 2 and Time 3. * $p < .05$. ** $p < .01$. *** $p < .001$.

Before we analyze these temporal relations, we note that preliminary analyses indicated that across the school year adolescents tended to report decreases in the identity formation cycle (i.e., commitment making and exploration in breadth) and also in their identification with present commitments. As an exception, exploration in depth remained stable across the school year. Additionally, in the total sample we found an increase in ruminative exploration. For meaning in life dimensions, in the global sample presence of meaning remained stable, whereas search for meaning had a decreasing trend in the course of one school year.

Longitudinal Links Between Identity Processes and Meaning in Life

We found, in line with our hypotheses, a pattern of reciprocal associations between identity processes and meaning in life dimensions that was consistent over time. This pattern applied equally to boys and girls and to early to middle and middle to late adolescents. Our results bring forward an important demonstration

of the theoretical assumptions regarding the strong links between identity and meaning in life. Findings revealed statistically significant correlated changes between identity processes and meaning in life dimensions across time. Changes in commitment processes (i.e., commitment making, identification with commitment) were positively related to changes in presence of meaning across time. Also, changes in exploration processes (i.e., exploration in breadth, exploration in depth, and ruminative exploration) were positively related to changes in search for meaning. Identification with present commitments positively predicted presence of meaning over time, whereas ruminative exploration was a negative predictor. Exploration in breadth and ruminative exploration were positive predictors of search for meaning longitudinally.

On the one hand, it appears that strong internalization of life goals and values, doubled by reduced doubt over present choices, helped adolescents in having a clear sense of meaning in their lives. Thus, in line with evidence from cross-sectional studies (e.g., Burrow et al., 2010), when adolescents were highly committed to their goals, they also had a strong sense of their life meaning and vice versa. This finding points out that, in line with the tenets of the identity capital model (Côté, 2002), during a school year adolescents who were invested in following their personal goals (i.e., high level of agency) also derived more meaning from their daily pursuits. These relations can foster young people's identity capital and can help them in resisting the cultural destructuring of late-modern societies in an agentic manner. Thus, adolescents can develop "authorship over their own biographies, taking responsibility for their life choices, and creating meaningful and satisfying lives" (Côté, 2005, p. 226).

On the other hand, our results further highlighted the dual nature of search for meaning (cf. Steger, Kawabata, et al., 2008). The present results suggest that this dimension was sustained by investigation of diverse paths for development (i.e., exploration in

Table 4

Correlated Change Between Identity Processes and Meaning in Life Dimensions at Times 2 and 3

Variable	Presence of meaning		Search for meaning	
	Time 2	Time 3	Time 2	Time 3
Commitment making	.34***	.46***	.18***	.21***
Identification with commitment	.34***	.45***	.17***	.21***
Exploration in breadth	.06	.07	.46***	.46***
Exploration in depth	.08*	.08*	.34***	.33***
Ruminative exploration	−.26***	−.29***	.22***	.22***

* $p < .05$. *** $p < .001$.

breadth), detailed examination of current choices (i.e., exploration in depth), and doubts regarding the adequacy of present options (i.e., ruminative exploration). When adolescents explored various alternatives or deepened the choices they already made, they were also engaged in a process of search for meaning in their lives and vice versa. Changes in ruminative exploration were found to be negatively related to changes in presence of meaning and positively related to changes in search for meaning during one school year. Across the school year, adolescents' uncertainty about identity choices went in tandem with uncertainty about their meaning in life and also with an increased search for life meaning. These are important findings regarding the longitudinal relations between identity exploration processes and search for meaning: They indicate that not all searches for meaning are adaptive, though search for meaning does stimulate a diverse array of identity exploration pursuits. These exploration pursuits are central to healthy identity development throughout adolescence, because they will then ground strong but flexible commitments to personal goals in different life domains (Luyckx, Goossens, & Soenens; Luyckx, Goossens, Soenens, & Beyers, 2006).

Additionally, as our study pointed out, all exploration strategies were stimulated by high levels of search for life meaning. These results support the findings of narrative identity studies, which also highlighted that active identity exploration fostered coherent and complex meaning making in the construction of one's life story (e.g., McLean & Pratt, 2006; McLean & Thorne, 2003). Unfortunately, because not all exploration processes are created equal, high levels of ruminative exploration may increase a more maladaptive search for meaning, and conversely search for meaning may also activate worry and indecisiveness regarding one's current personal goals. In this regard, our study is a first attempt to analyze the "dark side" of search for meaning in relation to ruminative exploration. These findings can be also linked to the research studies conducted in the Meeus and Crocetti identity process model (Crocetti et al., 2015, 2012), which also pointed out the debilitating role of reconsideration of current commitments for adaptive functioning and, as previously detailed, the dual nature of in-depth exploration of present commitments. As people detach themselves from current personal goals (i.e., reconsideration of commitment) and/or focus on thorough analyses of specific goals (i.e., in-depth exploration), they generally tend to experience some distress and uncertainty, due to the novelty and complexity of these pursuits (see Crocetti, Beyers, & Çok, 2016, for an overview of research on the dark side of identity).

We depicted unidirectional cross-lagged relations from presence of meaning to commitment making, whereas the relation between identification with commitment and presence of meaning was bidirectional. It may be that the integration of present identity commitments into one's sense of self (i.e., identification with commitment) fosters adolescents' coherent and purposeful view of their lives more efficiently. The differential role of commitment making versus identification with commitment in adolescence was also brought forward in previous research on adolescent identity. These studies also found that identification with commitment plays a more important role in relation to positive adaptation indicators (e.g., self-esteem: Luyckx, Klimstra, Duriez, Van Petegem, Beyers, Teppers, & Goossens, 2013; well-being: Luyckx et al., 2008; the interaction between an information-oriented style and autonomous orientation: Luyckx et al., 2007).

Also, the fact that ruminative exploration was negatively linked to presence of meaning highlights the debilitating effect this identity process has on maintaining presence of meaning in one's life. This result deepens the understanding of how ruminative exploration negatively impacts adaptive functioning by reducing the coherence of life experiences. Similarly, other studies have highlighted that ruminative exploration negatively predicts conscientiousness and vice versa (e.g., Luyckx et al., 2014), and that relatedness satisfaction is a negative predictor of this identity process (Luyckx, Vansteenkiste, Goossens, & Duriez, 2009).

As previously detailed, presence of meaning was a strong positive predictor of commitment making and identification with present commitments. Search for meaning positively predicted all exploration processes (i.e., exploration in breadth, exploration in depth, and ruminative exploration). These findings clarify the potential for a strong sense of meaning to support the formation of identity commitments, whereas the process of seeking meaning in one's life sustains identity exploration across time. The link between presence of meaning and commitment processes was previously highlighted only in cross-sectional studies (e.g., Burrow et al., 2010; Kiang & Fuligni, 2010). From a developmental point of view, our findings bring forward the positive impact that a purposeful worldview can have on making personal choices and in integrating these choices into one's sense of self. We bring longitudinal proof for existing assumptions (e.g., Côté, 1996, 2005; Erikson, 1968, 1975) regarding the protective role a coherent perspective on life has for healthy identity formation in adolescence, by channeling and guiding strong identity commitments in accordance with a personal vision of the future.

The fact that search for meaning was longitudinally linked to all exploration processes underscores that this meaning in life dimension supports both adaptive and maladaptive identity exploration (Steger, Kashdan, et al., 2008). When adolescents are in the process of searching for meaning in their lives, their endeavors are complex and sometimes unpredictable, because numerous questions arise. Their questions can refer to the need to extend their searches beyond already available options (i.e., exploration in breadth), to the importance of better understanding a goal that they already follow (i.e., exploration in depth), or to the doubts about the appropriateness of present alternatives (i.e., ruminative exploration). Hence, in the quest for a "common thread" in their lives, adolescents may employ complex and diverse processes of identity exploration in order to find answers to their existential dilemmas. These findings bring important support to theoretical assumptions of meaning in life literature, which highlight that search for meaning is more of a process that people go through, rather than a discrete endpoint they achieve and maintain (e.g., Dezutter et al., 2014; Steger, 2012). To summarize, our results indicate that identity commitment promotes presence of meaning and vice versa, whereas identity exploration promotes search for meaning and vice versa. These are important empirical findings that bring longitudinal proof to existing assumptions regarding the close links between identity and meaning in life (e.g., Burrow & Hill, 2011; Côté & Schwartz, 2002; Erikson, 1968; Kiang & Fuligni, 2010).

Implications for Applied Interventions

From an applied perspective, our findings highlight that interventions aimed at increasing adaptive identity development should also capitalize on the manner in which adolescents develop their worldviews and subsequently derive meaning from these worldviews. The fact that identity commitments are a strong source for a coherent and meaningful life and vice versa can be actively used in the promotion of applied programs aimed at enhancing commitment to important life goals (e.g., choice of a university or an occupation). Adolescents who actively adhere to life goals (i.e., identification with commitment) that are in accordance with their coherent worldview will be better prepared to navigate a late-modern society characterized by social disintegration and high levels of consumerism (Côté, 2005).

Additionally, the strong bidirectional links between exploration processes and search for meaning are strong levers for tackling which types of exploration facilitate an adaptive search for meaning and which may lead to a time-consuming, maladaptive search for meaning. When assessing the manner in which adolescents explore their personal goals to derive a path for the future, practitioners can include appraisals of how they employ these exploration strategies for seeking significance in their lives and, conversely, how their search for life meaning may stimulate multiple, yet diverse, identity exploration strategies. For instance, adolescents attending high school may examine possible career choices by analyzing multiple alternatives (i.e., exploration in breadth), by focusing on a detailed investigation of one alternative (i.e., exploration in depth), or by extensively lingering on the fear of possibly making a bad choice (i.e., ruminative exploration). As our results indicate, these exploration processes are positively linked to their search for meaning in life.

Extensive involvement in ruminative exploration may feed a more dysfunctional search for meaning and vice versa, whereas the other types of identity exploration can be related to a search for meaning that gradually amounts to finding meaning in life. Hence, a focus on the differential developmental outcomes of the bidirectional relations between exploration processes and search for meaning can greatly assist adolescents on the road to coherent self-development in this time frame. Also, by capitalizing on the results of narrative identity studies (e.g., McLean & Pratt, 2006; McLean & Thorne, 2003), the complex pattern of relations we depicted may also foster the construction of a more coherent life story in adolescence, integrating life experiences through a complex interaction of identity exploration and meaning-making processes.

Limitations and Suggestions for Future Research

The present study should be analyzed in light of several limitations. First, we investigated reciprocal associations in the study variables only during one school year. In this time frame, development is strongly dependent on school-based experiences, and we may not have captured experiences that adolescents had between school years. Hence, future studies could investigate patterns of relationships between identity and meaning in life across several school years and educational cycles (e.g., middle school to high school), while maintaining several assessments during a school year.

Second, we relied exclusively on self-report questionnaires, which may not capture the complexity of adolescent identity and meaning in life pursuits. Because both constructs we investigated reflect existential preoccupations, narrative approaches (e.g., McLean & Pratt, 2006; Syed & Azmitia, 2010) and diary studies (e.g., Kiang & Fuligni, 2010) could offer a more nuanced picture of adolescents' strivings for identity and meaning in life.

Third, we did not specifically appraise cultural factors (e.g., individualist vs. collectivistic orientations: Phinney, 2000; religious background and religious commitments) that may mediate the relation between identity processes and meaning in life (e.g., Boyraz et al., 2013; Steger, Kawabata, et al., 2008). Nevertheless, a strength of this study consists in the fact that it was conducted in Romania, a culture that has been less analyzed in psychological research. Romania has been considered a collectivistic culture according to Hofstede's (2001) indicators, though recent studies have tended to indicate an increase in more individualistic value orientations in younger generations (Damian, Negru-Subtirica, Pop, & Baban, 2016; Fülöp & Ross, 2005; Negru, 2012). Future studies could investigate how culture-sensitive factors influence identity and meaning in life longitudinally (e.g., extrinsic and intrinsic aspirations: Negru, Subţiricǎ, & Opre, 2011; religiosity: Negru, Haragâş, & Mustea, 2014).

Conclusions

This study has shed additional light on two indicators of adaptive development in adolescence: identity and meaning in life. We investigated and showed for the first time bidirectional longitudinal relations between identity processes and meaning in life. We underscored that identity and meaning in life mutually support each other across time through phases of exploration and commitment.

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