

Are all identity commitments created equally? The importance of motives for commitment for late adolescents' personal adjustment

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Abstract

On the basis of self-determination theory it is proposed that adolescents' motives for forming and maintaining identity-relevant commitments can be either autonomous or controlled in nature. This study examined whether motives for identity commitments would add to the prediction of late adolescents' adjustment beyond the effect of strength of commitment per se. In addition, it was examined how late adolescents' identity-processing styles would relate to motives for commitment and whether motives for commitment would mediate between identity styles and adjustment. In a sample of 431 late adolescents it was found that autonomous and controlled motives were, respectively, positively and negatively related to adjustment even after taking into account the role of strength of commitment. Each of the three identity styles showed a specific pattern of associations with the motives for commitment, with an information-oriented style relating to the most autonomous and internalized motivational profile. Mediation analyses showed that at least part of the associations between identity styles and adjustment are mediated by motives for commitment. Directions for future research are discussed.

Keywords

commitment, identity, identity style, motivation, late adolescence, self-determination theory

During adolescence and continuing through young adulthood, individuals face the challenging task of determining a personal stance in a variety of life domains, including profession, romantic engagement, and ideology (Erikson, 1968). Ideally, the commitments youth make give direction to their life and as such contribute to their sense of adjustment. Many studies have addressed this hypothesis by examining associations between individuals' strength of identity commitment and their personal adjustment (Marcia, 1980). In addition, quite a lot of studies have examined how individuals' approach to the identity exploration process (i.e., their identity style) relates to the strength of their identity commitments and to subsequent adjustment (Berzonsky, 2003). However, due to its focus on the extent to which individuals adhere to and invest in their commitments (i.e., strength of commitment), research on identity has tended to neglect the quality of individuals' identity commitments. This quality can be conceptualized as the extent to which individuals have internalized their commitments (La Guardia, 2009; Ryan & Deci, 2003; Soenens & Vansteenkiste, in press) and thus are driven by different motives for commitment: whereas some commitments are made to meet pressuring external or self-imposed demands, other commitments reflect a person's abiding goals and values and are well aligned with other identity facets. We propose and test the idea that the quality of adolescents' motives for commitment contributes to adjustment beyond the strength of individuals' commitments. Further, we examine whether individuals' styles of identity exploration—as conceptualized in Berzonsky's (1990) social-cognitive model of identity formation—relate differentially to motives for commitments and whether these motives, in turn, mediate associations between identity styles and personal adjustment.

Commitment and identity formation

In the psychosocial theory of Erikson (1968), identity formation is considered a cornerstone of personality development. Identity formation was conceptualized by Erikson (1968) as a developmental process where children initially identify with important socialization figures (typically parents) and, during adolescence, gradually start to explore their identity in a more thorough and personal fashion. During this extended period of exploration, which Erikson (1968) referred to as a psychosocial moratorium, adolescents transform their childhood identifications into a coherent and personally meaningful identity. According to Erikson (1968), for identity formation to be successful, a process of internalization must occur where identifications are assimilated and integrated into a set of coherent and unique choices and commitments that adequately reflect “who one is.” Such a crystallized set of commitments would give direction to life and allow individuals to organize their behaviors and aspirations in a purposeful manner.

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Erikson's (1968) view was later made amenable to empirical research by Marcia (1966, 1980), who highlighted two aspects from Erikson's theory on identity formation, that is, commitment and exploration. Commitment was defined by Marcia (1966) as the extent to which individuals adhere to and invest in identity-relevant choices. Exploration refers to individuals' deliberate consideration of different options and possibilities before making choices or commitments. By crossing these two identity dimensions, four identity statuses can be discerned: achievement (high on commitment and exploration), foreclosure (high on commitment and low on exploration), moratorium (high on exploration and low on commitment), and diffusion (low on commitment and exploration).

Research inspired by Marcia's model has consistently confirmed the idea that commitment contributes to well-being and adjustment. Research on the identity statuses revealed that individuals in the two statuses characterized by high commitment (i.e., achieved and foreclosed) scored higher on direct measures of adjustment (e.g., high self-esteem and low anxiety) compared to individuals without commitments (i.e., those in the moratorium and diffusion statuses) (Marcia, 1980; Marcia & Friedman, 1970). Similarly, studies adopting a dimensional approach to identity—that is, studies using direct assessments of the exploration and commitment dimensions—have shown that commitment is related to a variety of adjustment outcomes and even appears to be more strongly related to well-being than the exploration dimension (Meeus, 1996; Meeus, Iedema, Helsen, & Vollebergh, 1999).

Although Marcia's operationalization of Erikson's theory initiated and stimulated abundant research on adolescent identity development, this research strand adopted a relatively narrow focus on commitment as an outcome of identity development (Berzonsky & Adams, 1999). Due to this focus on the strength of adolescents' commitments, the quality of the process of internalization behind identity formation became neglected. This is unfortunate because, as indicated previously, Erikson (1968) assumed that identity formation would be successful when individuals' commitments are well internalized, that is, integrated into a personally meaningful whole. Erikson (1968), however, did not provide an account of the internalization process sufficiently detailed to be empirically operationalized, nor did he provide specific criteria to define the quality of identity commitments. Herein, we argue that self-determination theory (SDT; Deci & Ryan, 2000) does provide such a detailed account.

Internalization and motives for commitment

SDT assumes that human development is characterized by an organismic growth-oriented tendency that drives people to increasingly function in a unified, authentic, and integrated fashion (Deci & Ryan, 2000; Vansteenkiste, Niemiec, & Soenens, 2010). The quality of individuals' motives for behavior represents one important instantiation of this growth tendency. When individuals' behavior is regulated by motives that reflect this growth tendency, individuals' functioning will be experienced as volitional and feelings of psychological freedom will ensue. Individuals may, however, also get alienated from this growth tendency if they are placed in adverse contexts. Rather than regulating their behavior on the basis of self-endorsed motives, people's behavior would then be driven by controlling forces that result in feelings of alienation and pressure (La Guardia, 2009; Ryan & Deci, 2003).

People define themselves in many different ways, for instance, as a hard-working student, an athlete, or a musician. Self-defining labels such as these are used by individuals to construct a personal identity, that is, a sense of who they think they are. Importantly, it is claimed in SDT that commitments made by individuals to define themselves and to construct their identity can be more or less consistent with their growth tendency, depending on whether identity commitments are based on self-endorsed and volitional motives or on pressuring forces that are alien to the self (Assor, Cohen-Malavey, Kaplan, & Friedman, 2005; Ryan & Deci, 2003; Soenens & Vansteenkiste, in press). Specifically, consistent with Erikson's (1968) view on identity development, SDT orders people's motives for identity commitments along a continuum of internalization, with motives further on the continuum increasingly reflecting integrated and volitional functioning.

At the lowest level of internalization, referred to as external regulation, commitments are adopted to meet pressuring external forces, obligations, and contingencies. As an example, a young adult may continue his parents' business (and consider his profession as an important element of his identity) because his parents pressured him to be loyal to the family history and traditions. One step further on the continuum, individuals make identity-relevant choices on the basis of internally pressuring forces, in which case their choice is regulated by introjection. Contrary to external regulation, motivation now resides within the person. Still, the behavior is performed with a sense of (internal) pressure as people attempt to avoid feelings of guilt and shame or, conversely, actively strive to bolster a sense of self-worth by defining themselves in particular ways. For instance, a girl who defines herself as a ballet dancer to prove to herself that she is a worthy and special person regulates her commitment on the basis of introjection. Because both external regulation and introjection represent motives that come with feelings of pressure and alienation and with a halfhearted enactment of one's identity, they can both be considered manifestations of controlled functioning.

A higher level of internalization is present when commitments and choices are regulated by identification. Identification involves commitments that one consciously values and endorses. Adolescents who decide to embark on a program of psychological study, and who realize how this identity-relevant commitment may contribute to their personal development, are acting on the basis of identification: they fully stand behind their choice. Although people may identify with a number of commitments, different identifications may coexist in an isolated or even conflicting fashion. Although a young mother may identify with both her role as parent and her role as a successful entrepreneur, she may often feel like these two identifications collide. Accordingly, an even higher level of internalization is achieved when individuals manage to align and synthesize their identifications with one another. This type of regulation, where identifications are experienced as harmonious rather than as compartmentalized and incompatible, is referred to as integration. For instance, when the young mother feels that she is able to realize a number of similar and deeply held values both in the way she raises her daughter and in the way she runs her business, she is said to function in an integrated manner. Because both identification and integration reflect a high level of volitional functioning and self-endorsement, they are both considered instantiations of autonomous functioning.

According to SDT, autonomous and controlled motives are related differentially to individuals' adjustment and well-being because these motives relate differentially to the satisfaction of the

basic psychological needs for autonomy, competence, and relatedness (Deci & Ryan, 2000). That is, individuals with an autonomous motivation are relatively more likely to experience a sense of volition and psychological freedom in their activities (i.e., autonomy), to become skilled at what they do (i.e., competence), and to relate to other people in a cooperative and mutually satisfying fashion (i.e., relatedness). Conversely, individuals with a controlled motivational orientation would be relatively more likely to feel compelled to behave in certain ways (resulting in low autonomy-need satisfaction), to approach activities in an outcome-focused and rigid fashion (leaving little room for the development of skills and a sense of competence), and to relate to others in a more conditional and antagonistic fashion (resulting in decreased feelings of relatedness). Consistent with this reasoning, research has systematically shown that when people regulate their behaviors on the basis of autonomous rather than controlled motives, they are more likely to function optimally and to experience a positive sense of adjustment and well-being (Deci & Ryan, 2000; Ryan & Connell, 1989; Vansteenkiste, Sierens, Soenens, Luyckx, & Lens, 2009). For instance, Sheldon and Kasser (1995) asked participants to generate a number of personal goal strivings and indicate their reasons for pursuing these goals. It was found that a more internalized regulation of personal goal strivings was related to higher self-actualization, vitality, and self-esteem as well as to more positive affect and less conflict in interpersonal roles (Sheldon & Kasser, 1995).

The notion that the quality of identity commitments matters for individuals' adjustment is consistent with the work of Waterman on personal expressiveness (Waterman, 1992, 2004, 2007). Personally expressive identity commitments are experienced as reflecting one's "true self," an experience that is likely to ensue feelings of volition and psychological freedom. In line with the idea that high-quality identity commitments, that is, commitments based on self-endorsed motives, contribute to personal adjustment, personal expressiveness has been found to relate to adaptive outcomes and processes such as intrinsic motivation, flow, self-actualization, and vitality (e.g., Waterman, 2007).

There is some other indirect evidence in the identity literature that a more internalized regulation of identity-relevant choices relates to better adjustment. Luyckx, Goossens, Soenens, and Beyers (2006), for instance, proposed a distinction between commitment making and identification with commitment. Commitment making pertains to the act of deciding on identity-relevant choices as such and merely reflects whether one has made commitments and how strongly one adheres to these commitments. Identification with commitment deals with the degree of certainty about, identification with, and internalization of choices (Luyckx et al., 2006, 2008). As such, it is analogous to the SDT-based concept of identification. It has been found that commitment making and identification with commitment contribute independently to the prediction of adjustment (Luyckx et al., 2006).

The current study expands on these findings by examining the internalization of one's commitments in a more comprehensive fashion, thereby tapping into both autonomous and controlled motives rather than focusing on identification only. On the basis of Erikson's (1968) theory and SDT, we propose that the strength of commitment and the motives for commitment (i.e., autonomous vs. controlled motives) are both important in predicting late adolescents' adjustment. Specifically, we hypothesize that the quality of motives for commitment will add to the prediction of adjustment above and beyond the effect of strength of commitment, with autonomous motives relating positively to adjustment and controlled motives relating negatively to adjustment.

Identity-processing styles and internalization of commitment

A second aim of this study is to examine how individual differences in identity exploration relate to motives for commitment. Individuals' styles of exploring identity are conceptualized in this study on the basis of Berzonsky's (1989, 1990) model, which distinguishes between three social-cognitive styles of processing and exploring identity-relevant information. An informational style is characteristic of adolescents who actively seek out information and reflect upon their choices. They are open to alternatives and deal with identity-relevant information in a flexible fashion. A normative style is characteristic of adolescents who tend to more automatically adopt expectations upheld by significant others rather than to personally explore identity alternatives. They hold on to these adopted self-beliefs in a rather rigid and closed-minded fashion, thereby mainly assimilating potentially discrepant social information into their cognitive structures. A diffuse-avoidant style is characteristic of adolescents who fail to thoroughly explore identity options and who instead procrastinate decisions until situational demands dictate their behavior. These adolescents continuously accommodate their self-beliefs to often volatile situational and interpersonal circumstances, without arriving at a stable and coherent set of commitments (Berzonsky, 1990).

Each of these three styles has been shown to be related to a specific profile of adjustment variables (Berzonsky, *in press*). An information-oriented style has been shown to relate to an adaptive pattern of outcomes, including experiential openness, problem-focused coping, and high self-esteem (Berzonsky, 1992, *in press*; Soenens, Duriez, & Goossens, 2005). Similarly, a normative style has been found to be positively related to personal well-being (Beaumont & Zukanovic, 2005; Nurmi, Berzonsky, Tammi, & Kinney, 1997). Yet it has also been found to relate to rather immature cognitive functioning (e.g., need for closure) and intolerant and prejudiced interpersonal attitudes (e.g., right-wing authoritarianism and racism) (Soenens, Duriez, et al., 2005). A diffuse-avoidant style is related to a maladaptive pattern of functioning, including avoidant coping, depressive reactions, ineffective decisional strategies (Berzonsky, 1992; Berzonsky, Nurmi, Kinney, & Tammi, 1999), and low levels of well-being (Beaumont & Zukanovic, 2005; Wheeler, Adams, & Keating, 2001). Given these differential associations between identity styles and adjustment variables, it is important to identify variables that may mediate between identity styles and adjustment. Herein, we argue that commitment and motives for commitment represent theoretically plausible candidate mediating variables.

Research has shown that the identity styles are related differentially to the strength of commitment, with an informational style and a normative style relating positively and a diffuse-avoidant style relating negatively to commitment (Berzonsky, 2003). Further, Berzonsky (2003) argued that strength of commitment may mediate between identity styles and adjustment. Herein, we elaborate on this hypothesis by arguing that the identity styles also relate differentially to the motives for commitment and that these motives may also mediate between identity styles and adjustment.

Generally speaking, we expected that adolescents' motives for commitment (i.e., autonomous and controlled) would be a function of their style of exploring identity-relevant information. Specifically, the open attitude and personal search for identity alternatives characteristic of the information-oriented identity style would allow late adolescents to have better access to their own interests,

preferences and values such that their identity commitments would be a better reflection of their values and preferences (Soenens & Vansteenkiste, in press). Therefore, we hypothesize that an informational style will relate positively to autonomous motives for commitment and negatively to controlled motives for commitment. Conversely, the rather rigid and norm-based orientation of normative individuals would, on average, lead them to adopt and defensively adhere to identity commitments that comply with external expectations and rewards or that follow from internal pressure (e.g., avoiding feelings of guilt or pursuing feelings of superiority). Thus, we anticipated a positive association between a normative style and controlled motives for commitments. Finally, because diffuse-avoidant individuals do not engage in effortful exploration of identity-relevant information, they would not arrive at personally endorsed commitments. Moreover, as they procrastinate until situational demands force particular choices upon them, they would feel pressured to, at least temporarily, adopt particular commitments. Thus, a diffuse-avoidant style would relate negatively to autonomous motives for commitment and positively to controlled motives for commitment.

Given that the three identity styles would relate differentially to commitment and the motives for commitment, and that both the strength of adolescents' commitments and their motives for commitment would relate to adjustment, we hypothesized that strength of commitment and motives for commitment may play a mediating role between identity styles and personal adjustment. In this mediational sequence, identity styles are viewed as antecedents of commitment and motives for commitment. This direction of effects is consistent with theories on identity development stressing that the way one approaches or avoids the process of exploration plays an important role in the commitments one holds (Erikson, 1968; Marcia, 1980). As such, it seems plausible to consider identity styles, which reflect different ways of dealing with identity issues and conflicts, as antecedents of commitment and the motives underlying commitment.

However, within SDT, it is maintained that individuals' motivational orientation might also lead them to process information in particular ways (Hodgins & Knee, 2002; Soenens & Vansteenkiste, in press), such that late adolescents' quality of commitment and their processing of identity-relevant information are reciprocally related. For instance, individuals with a controlled orientation would be highly concerned with protecting and enhancing their self-worth (Hodgins & Knee, 2002). Indeed, according to SDT, people who are driven by attempts to enhance their self-esteem or to avoid lowered self-esteem are functioning on the basis of an introjected regulation, which represents one specific type of controlled motivation (Deci & Ryan, 2000). Such an active pursuit of self-worth is likely to invoke ego-involved concerns and a fragile, conditional sense of self-worth (Ryan & Deci, 2003; Soenens & Vansteenkiste, in press). This fragile and easily threatened type of self-worth may lead people to conform to existing norms and to adopt a normative style as a way to gain social approval and to protect one's self-worth. In contrast, an autonomous orientation would involve a comparatively more stable, secure, and authentic sense of self-worth (Ryan & Deci, 2003). Also, it provides more opportunities for need satisfaction and, as such, enhances individuals' vitality and energy. As such, an autonomous orientation may increase the likelihood of using an open, information-oriented identity style, where individuals perceive experiences accurately and with a willingness to flexibly adjust their beliefs to changing circumstances. Because motives for commitment may also represent

antecedents of identity styles (rather than the other way around), we also aimed to examine an alternative sequence of mediation, where identity styles mediate between motives for commitment and adjustment.

The current study

This study has two aims. First, it is examined whether the quality of late adolescents' motives for commitment (i.e., autonomous and controlled) contributes to adjustment beyond the strength of their commitments. Second, we examined (a) associations between late adolescents' identity styles and motives for commitment, and (b) the mediating role of motives for commitment and strength of commitment in associations between identity styles and adjustment. In addressing these hypotheses, we also examined the possible role of gender. Past research has documented mean-level gender differences in at least some variables included in this study. For instance, females have been shown to score lower on a diffuse-avoidant style compared to males (Berzonsky, in press). More importantly, we wanted to examine whether our hypothesized model holds for both males and females. Most research to date has shown that the correlates and outcomes of both the identity styles (e.g., Soenens, Berzonsky, Vansteenkiste, Beyers, & Goossens, 2005) and the SDT-based motivational regulations (e.g., Vansteenkiste, Niemiec, & Soenens, 2010) are consistent across genders. Thus, we expected that gender would not moderate the associations in our hypothesized model.

Method

Participants. A total of 431 (309 females, 117 males, and 5 participants failing to report gender) undergraduate students from a large southern university participated in the research for extra course credit. The age of participants ranged from 17 to 25 years ($M = 19.03$, $SD = 1.44$). The sample included 244 Caucasians, 68 Blacks, 33 Asian Americans, 19 Hispanics, 12 marking "other," and 55 participants failed to report race/ethnicity.

Measures

Identity-processing style. Participants were administered a revised version of the Identity Style Inventory (ISI-4; Berzonsky et al., 2011). This revision addressed a number of problems with the ISI-3 (Berzonsky, 1992), which has been the most commonly used measure of identity styles in investigations over the past two decades. For instance, the ISI-3, like a number of measures of identity (e.g., Balistreri, Busch-Rossnagel, & Geisinger, 1995), includes a mixture of items that refer to various specific life domains (e.g., religion, occupation) and a mixture of items worded in the present and past tense. In this revision, all of the items were worded in the present tense and referred to one's current identity-processing style. The items were also designed to tap the processing of identity-relevant information in general (e.g., values, goals, standards, beliefs, and personal problems) independent of a specific identity domain. Sample items include: "I handle problems in my life by actively reflecting on them" for the informational scale; "I automatically adopt and follow values I was brought up with" for the normative scale; "When I have to make a decision, I try to wait as long as possible in order to see what will happen" for the diffuse-avoidant scale. Items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The internal

structure of the scales was established via exploratory and confirmatory factor analyses, and estimates of internal reliability for the three style scales were found to be higher than .70 (Berzonsky et al., 2011). In addition, the scales were found to be correlated in theoretically expected ways with measures of identity status, identity content, and cognitive functioning. In the current study, Cronbach's α for the three identity style scales was .76 (informational style), .75 (normative style), and .71 (diffuse-avoidant style).

Strength of commitment. Like the ISI-3, the ISI-4 also contains a scale measuring commitment, and this 9-item scale (e.g., "I know basically what I believe and don't believe") was used in the present study as a measure of strength of commitment. Items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Cronbach's α was .84.

Motives for identity commitment. To assess participants' motives for making and holding on to identity commitments, we selected a number of items from the Self-Regulation Questionnaire (SRQ; Ryan & Connell, 1989) and translated these items to the context of identity commitment. The SRQ has been frequently used and validated as a measure of autonomous and controlled motivation (Ryan & Connell, 1989). For instance, the SRQ scales for autonomous and controlled motives have been found to relate in theoretically predicted ways to measures of performance, behavior, social-cognitive functioning, and well-being in a wide variety of life domains, including academic functioning (e.g., Vansteenkiste et al., 2009), prosocial behavior (e.g., Ryan & Connell, 1989), and religion (Neyrinck, Vansteenkiste, Lens, Hutsebaut, & Duriez, 2006). Participants in this study were presented with three item stems probing participants' identity commitments. The first item stem read: "Think of the goals that you have for your life. I hold the life goals I do because..." The second stem read: "Envision the values that you use when you make personal decisions. I use the values I do because..." The third stem read: "Think about the ideals that you would like to accomplish in your life. I hold these particular ideals because..." Each stem was followed by four motives, one for external regulation (e.g., "because my family and friends pressured me to do so"), one for introjection (e.g., "because I would feel bad about myself if I didn't hold them"), one for identification (e.g., "because I think these life goals are personally meaningful"), and one for integration (e.g., "because these goals define who I am"). This resulted in 12 items tapping into motives for participants' identity commitments. Items were rated on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

A principal factor analysis (PFA) on these 12 items yielded three factors with an eigenvalue larger than 1 (i.e., 3.91, 2.48, and 1.07, respectively). The scree-plot, however, clearly indicated a two-factor solution. After rotation (Varimax), these two factors could be identified as autonomous and controlled motives for commitment. Each of the items for identification and integration had substantial loadings on the first component ($> .50$), without cross-loadings. Accordingly, we computed a scale score for autonomous motivation by computing the mean of these six items ($\alpha = .86$). The second factor had substantial loadings ($> .50$) of two items measuring external regulation and the three items measuring introjection. One item intended to measure external regulation ("because they enable me to earn respect from others") did not load on any of the factors. Accordingly, this item was not included in the scale score for controlled motivation, which thus consisted of five items ($\alpha = .75$).

The external validity of this measure was supported in an independent study with 151 high school students. On the basis of SDT, it can be expected that a perception of parents as autonomy supportive relates to autonomous motives and that a perception of parents as controlling relates to controlled motives (Deci & Ryan, 2000). Consistent with this expectation, we found a positive correlation between a measure of parental autonomy support (Grolnick, Ryan, & Deci, 1991) and autonomous motives ($r = .34, p < .001$) and between a measure of parental psychological control (Barber, 1996) and controlled motives ($r = .33, p < .001$).

Personal adjustment. Participants completed three measures tapping into psychological adjustment. First, participants completed the 10-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), which is one of the most widely used and well-validated measures of self-esteem. Items were rated on a 4-point scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Cronbach's α was .88. Second, we used the 4-item agency scale from Snyder et al.'s (1991) Hope Scale. This scale measures the extent to which individuals expect to successfully pursue and accomplish personal goals (e.g., "I energetically pursue my goals," "I meet the goals I set for myself"). Thus, it provides an indication of the extent to which participants expect to be able to effectively pursue and accomplish the goals and aspirations they possess. Items were rated on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. The agency scale was found to correlate positively with self-efficacy, optimism, and general well-being (e.g., Magaletta & Oliver, 1999). In the present study, Cronbach α was .77. Third, they were administered a revised version of Beck's Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979). This revised scale includes 13 items selected from the original set of 21 second mild-est statements that measure depressive tendencies within normal populations (Nurmi & Salmela-Aro, 2002). Participants rated each statement (e.g., "I often feel sad") on a 1 (*strongly disagree*) to 5 (*strongly agree*) scale. The BDI has been shown to have good reliability and validity (Beck, Steer, & Garbin, 1988). The revised scale was found to correlate .84 with the full scale and to discriminate between samples of individuals who were and were not clinically depressed (see Eronen & Nurmi, 1999). Cronbach's α in the present study was .90.

Results

Descriptive statistics and correlations

Means, standard deviations, and associations between the study variables can be found in Table 1. To examine gender differences in the study variables, a multivariate analysis of variance (MANOVA) was performed with gender as the independent variable and all of the study variables as the dependent variables. A significant multivariate effect was obtained (Wilk's $\lambda = 0.96; F(9, 417) = 2.18; p < .05; \eta^2 = .01$) and follow-up univariate analyses of variance revealed significant gender differences in strength of commitment ($F(1, 425) = 7.78; p < .01; \eta^2 = .02$) and diffuse-avoidant identity style ($F(1, 425) = 4.92; p < .05; \eta^2 = .01$). Female participants scored higher on strength of commitment ($M = 3.98; SD = 0.66$) and lower on diffuse-avoidance ($M = 2.21; SD = 0.56$) compared to male participants ($M = 3.78; SD = 0.69$ and $M = 2.35; SD = 0.63$, respectively). Given the two significant gender differences obtained, it was decided to statistically control for gender in the primary analyses.

Table 1. Descriptive statistics and correlations

Variable	M	SD	1	2	3	4	5	6	7	8
1. Strength of commitment	3.93	0.67								
2. Autonomous motives	4.16	0.70	.45***							
3. Controlled motives	2.71	0.88	.02	.12*						
4. Information-oriented style	3.83	0.61	.33***	.34***	.19***					
5. Normative style	2.69	0.66	.27***	.14**	.32***	.04				
6. Diffuse-avoidant style	2.25	0.58	-.41***	-.23***	.14**	-.17***	.22***			
7. Depressive symptoms	2.13	0.82	-.36***	-.31***	.18***	-.05	-.09	.33***		
8. Self-esteem	3.89	0.74	.35***	.41***	-.14**	.17***	.12*	-.25***	-.69***	
9. Agency	4.04	0.72	.54***	.49***	-.01	.34***	.20***	-.27***	-.47***	.52***

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

Table 2. Hierarchical regression analyses regressing adjustment on strength of commitment and motives for commitment

Predictor	Depressive symptoms		Self-esteem		Agency	
	Step 1	Step 2	Step 1	Step 2	Step 1	Step 2
Gender	.05	.06	-.08	-.09*	.02	.01
Strength of commitment	-.38***	-.29***	.37***	.22***	.54***	.40***
Autonomous motives		-.21***		.35***		.32***
Controlled motives		.20***		-.19***		-.04
R ² change	.14***	.07***	.13***	.12***	.29***	.08***

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

Correlations between the study variables show that strength of commitment was positively related to autonomous motives for commitment and unrelated to controlled motives. Autonomous and controlled motives were only slightly positively related. Thus, it seems that, on average, commitments were made more often for autonomous than for controlled motives and this is also reflected in the higher mean score for autonomous motives ($M = 4.16$; $SD = 0.70$) compared to controlled motives ($M = 2.71$; $SD = 0.88$), $t(436) = 28.67$, $p < .001$. Both strength of commitment and autonomous motives for commitment were negatively related to depressive symptoms and positively related to self-esteem and agency. In contrast, controlled motives for commitment were positively related to depressive symptoms and negatively to self-esteem.

The informational style was positively related to strength of commitment and to autonomous motives and, to a lesser extent, also to controlled motives. The normative style was positively related to strength of commitment and to controlled motives and, to a lesser extent, also to autonomous motives. Although both the informational style and the normative style were related to the two types of motives, the correlation between the informational style and autonomous motives was stronger compared to the correlation between the normative style and autonomous motives ($z = 3.50$, $p < .001$). Conversely, the correlation between the normative style and controlled motives was stronger compared to the correlation between the informational style and controlled motives ($z = 2.28$, $p < .05$). The diffuse-avoidant style was negatively related to strength of commitment and to autonomous motives and was positively related to controlled motives. Both the information-oriented and normative styles

were related to higher self-esteem and agency. The diffuse-avoidant style was positively related to depressive symptoms and negatively related to self-esteem and agency.

Predicting adjustment on the basis of strength of commitment and motives for commitment

To examine whether motives for commitment add to the prediction of adjustment beyond the effect of strength of commitment, a series of hierarchical regression analyses was performed. Regression analyses were performed separately for each of the three adjustment outcomes. In Step 1, gender and strength of commitment were entered as predictors and in Step 2, autonomous and controlled motives for commitment were added to the prediction. The results are displayed in Table 2.

Commitment was significantly related to each adjustment outcome in Step 1, with commitment negatively predicting depressive symptoms and positively predicting self-esteem and agency. In Step 2, the motives for commitment significantly added to the prediction of each adjustment outcome. Autonomous motives for commitment were related negatively to depressive symptoms and positively to self-esteem and agency. Controlled motives for commitment were positively predictive of depressive symptoms, negatively predictive of self-esteem, and unrelated to agency. In Step 2, commitment still significantly predicted each of the outcomes, indicating that strength of commitment and the quality of motives for commitment independently contributed to the prediction of personal adjustment.

The mediating role of commitment and motives for commitment

To examine whether commitment and motives for commitment would mediate associations between the identity styles and adjustment, a series of models was tested using structural equation modeling (SEM) with latent variables. Analysis of the covariance matrices was conducted using LISREL 8.54 (Jöreskog & Sörbom, 1996) and solutions were generated on the basis of maximum-likelihood estimation. Eight latent constructs were modeled (i.e., gender, the three identity styles, strength of commitment, autonomous and controlled motives for commitment, and personal adjustment). Gender was indexed by a single indicator with the error variance fixed to zero. To model the identity styles and strength of commitment as latent constructs, three parcels were computed for each of these constructs. Each parcel consisted of two or three

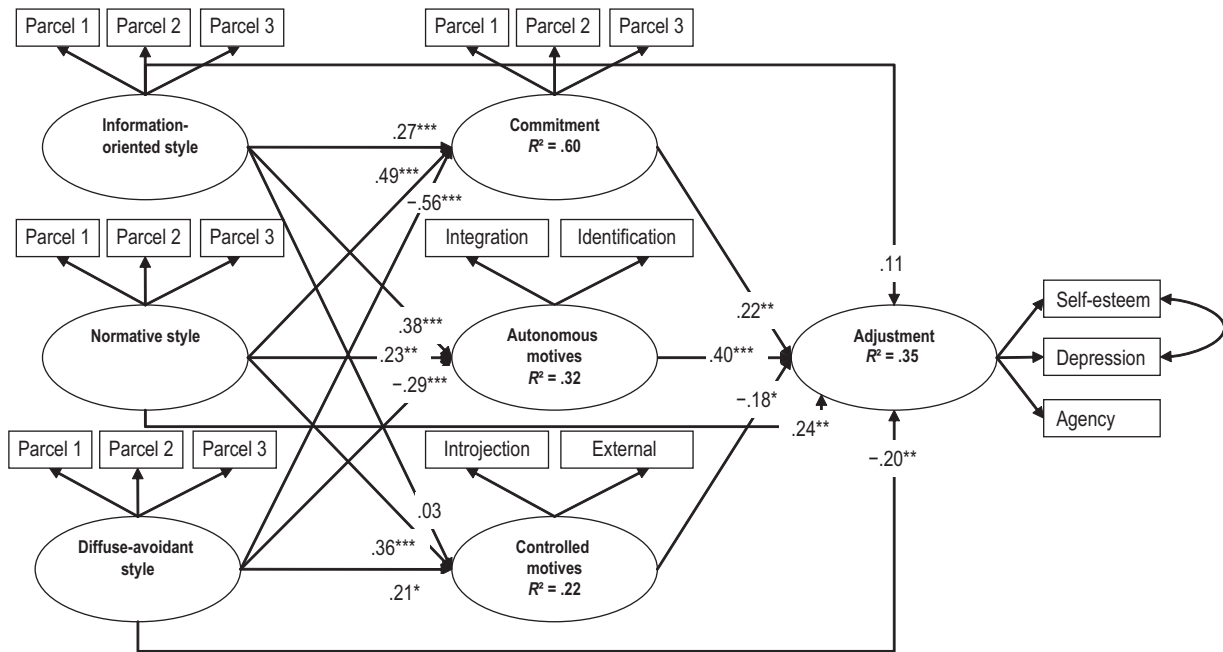


Figure 1. Structural model of the relationships between identity styles, commitment, motives for commitment, and adjustment. All coefficients shown are standardized coefficients. For ease of presentation, the effects of gender are not shown. Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

randomly selected items from each scale. The latent factor for autonomous motives was indicated by two indicators, that is, the scale scores for integration and identification. Similarly, the latent factor for controlled motives was indicated by the scale scores for external regulation and introjection. Finally, the three adjustment scales (depressive symptoms, self-esteem, and agency) served as indicators for the latent adjustment construct.

Data screening of the observed indicators indicated partial data nonnormality, both at the univariate and at the multivariate level. Therefore, in all subsequent models we used the asymptotic covariance matrix between all indicators as input and inspected the Satorra–Bentler scaled chi-square ($SBS-\chi^2$; Satorra & Bentler, 1994). To evaluate model fit, the comparative fit index (CFI) and the root mean squared error of approximation (RMSEA) were selected. According to Hu and Bentler (1999), combined cut-off values close to .95 for CFI and close to .06 for RMSEA indicate good fit.

To determine the adequacy of the measurement model, we first conducted a confirmatory factor analysis (CFA). In the initial CFA model, no correlations between errors of indicators or cross-loadings were allowed. Estimation of the measurement model with 21 indicators and eight latent variables indicated an acceptable model fit ($SBS-\chi^2(143) = 431.21$; CFI = .94; RMSEA = .07). Inspection of the modification indices showed that this model could be substantially improved by allowing an error correlation between two indicators of the adjustment construct (i.e., depressive symptoms and self-esteem). The final measurement model (with this error correlation allowed) had an acceptable fit ($SBS-\chi^2(142) = 390.79$; CFI = .95; RMSEA = .06) and all indicators had significant ($p < .01$) and moderate to strong loadings on the respective latent factors, ranging from .47 to .89 (mean $\lambda = .70$). In sum, a reliable measurement model was obtained.

To examine the proposed mediation model, a series of structural models was estimated following Holmbeck's (1997)

recommendations. According to Holmbeck (1997), mediation is evident when (a) there is initially a significant association between the independent variables (identity styles) and the dependent variable (adjustment), and (b) this association is substantially reduced after taking account of the intervening variables (strength of commitment and motives for commitment). Following Holmbeck's (1997) recommendations, three models were tested: (a) a direct-effects model in which identity styles directly predicted adjustment (i.e., a model without intervening variables), (b) a fully mediated model in which identity styles are only indirectly related to adjustment through their effect on the intervening variables (commitment and motives for commitment), and (c) a partial-mediation model in which identity styles are still directly related to adjustment beyond the indirect association through the intervening variables. Full mediation is shown when the fit of the partial-mediation model does not differ from the fit of the full-mediation model. In addition to this model comparison, we used the Sobel (1982) test to assess the significance of indirect effects. In each of the models tested, gender was included as a control variable by allowing paths from gender to each of the model variables.

Estimation of the first (i.e., "direct-effects") model yielded an acceptable fit ($SBS-\chi^2(55) = 110.18$; CFI = .97; RMSEA = .05) and each of the three identity styles showed significant associations with adjustment. Whereas both the informational ($\beta = .33$, $p < .001$) and normative styles were positively related to personal adjustment ($\beta = .34$, $p < .001$), the diffuse-avoidant style was negatively related to adjustment ($\beta = -.39$, $p < .001$).

The second model (i.e., the full-mediation model) also had an acceptable fit ($SBS-\chi^2(145) = 401.08$; CFI = .95; RMSEA = .06). The fit of this full-mediation model was compared with the fit of a partial-mediation model by means of a χ^2 -difference test using the Satorra–Bentler correction (Satorra & Bentler, 2001). The partial-mediation model was found to improve model fit compared to the full-mediation model ($\Delta SBS-\chi^2(3) = 10.49$, $p < .05$). Thus,

the partial-mediation model was retained as the final, best-fitting model. This model is depicted in Figure 1.

As shown in Figure 1, each identity style had a unique association with commitment, and motives for commitment. An informational style was positively related to commitment and autonomous motives for commitment, and unrelated to controlled motives for commitment. A normative style was positively related to commitment and to the two types of motives for commitment, although the association with controlled motives for commitment was most pronounced. A diffuse-avoidant style was negatively related to commitment and autonomous motives for commitment and positively related to controlled motives for commitment. In turn, commitment and motives for commitment were significantly related to personal adjustment. Consistent with the regression analyses, commitment and autonomous motives for commitment were positively related to adjustment, whereas controlled motives for commitment were negatively related to adjustment.

The association between an informational style and adjustment was no longer significant after modeling commitment and motives for commitment as independent variables. Moreover, the indirect effect of an information-oriented style on personal adjustment through these intervening variables was significant ($z = 3.76, p < .001$). This pattern of findings is consistent with full mediation (Holmbeck, 1997). The normative and diffuse-avoidant styles still had significant associations with adjustment after taking into account the intervening role of commitment and motives for commitment. Whereas the original direct effect of a normative style on adjustment was reduced by 29%, the original direct effect of a diffuse-avoidant style was reduced by 49%. Moreover, the indirect effects of both styles on adjustment through the intervening variables were significant ($z = 1.93, p = .05$ and $z = -4.12, p < .001$, respectively), indicating that the effects of a normative style and of a diffuse-avoidant style on personal adjustment were partially (rather than fully) mediated (Holmbeck, 1997).

Ancillary analyses

Two sets of ancillary analyses were conducted (a) to compare our model to an alternative model with a different causal ordering, and (b) to examine the moderating role of gender. First, we compared a model where commitment and motives for commitment precede identity styles which, in turn, relate to adjustment to a model where identity styles precede commitment and motives for commitment which, in turn, relate to adjustment. Because both models represent nonnested (nonhierarchical) models, we inspected two fit indices that can be used to compare nonnested models, that is, the Akaike information criterion (AIC) and the consistent Akaike information criterion (CAIC). The model with the lowest values for these indices is preferred. The initial model (AIC = 619.62, CAIC = 982.86) had lower values compared to the alternative model (AIC = 659.44, CAIC = 1022.68), providing at least some evidence for our hypothesized developmental order.

Second, to examine whether gender moderates the associations in the final model depicted in Figure 1, we performed a multigroup analysis. We compared two models, one in which the 15 path coefficients were allowed to vary between women and men (i.e., the unconstrained model), and one in which the path coefficients were constrained to be equal (i.e., the constrained model). The corrected scaled chi-square difference test was used to determine whether

these two models were equivalent. The results indicated that the difference was not significant, $\Delta\chi^2(15) = 12.71, p = .62$. This finding indicates that the path coefficients were not significantly different for men and women.

Discussion

From Erikson's (1968) theory on identity development, scholars have derived the idea that identity commitments contribute to psychosocial adjustment. Both studies tapping into identity statuses (Marcia, 1980) and studies adopting a dimensional approach to the assessment of commitment (e.g., Luyckx et al., 2006; Meeus et al., 1999) have confirmed this idea. On the basis of SDT (Deci & Ryan, 2000; Ryan & Deci, 2003) we argued that not all commitments are created equally, however. Specifically, we hypothesized that there would be interindividual differences in the level of internalization of identity commitments, as would be reflected in the extent to which commitments are pursued for autonomous versus controlled reasons (Ryan & Deci, 2003; Soenens & Vansteenkiste, in press). In this study we developed a questionnaire to measure motives for identity commitments and, consistent with our hypothesis, we found evidence for a reliable two-factor structure representing autonomous and controlled motives for commitment. Both factors were largely unrelated, which is consistent with previous research measuring motives in different life domains (Ryan & Connell, 1989; Vansteenkiste et al., 2009). Mean-level scores on autonomous motives were higher compared to scores on controlled motives. Moreover, the measure of commitment used in this study was related positively to autonomous motives and unrelated to controlled motives. Together, these findings suggest that, at least in a relatively well-adjusted sample such as the one in this study, late adolescents typically make identity commitments for autonomous motives and are relatively less likely to make commitments for controlled reasons. This average pattern of associations does not exclude the possibility, however, that there are important interindividual differences between adolescents in the extent to which commitments are regulated by autonomous or controlled motives, and that this interindividual variability is meaningfully related to adolescents' adjustment.

On the basis of SDT it was predicted that the quality of adolescents' motives for commitment would relate to adolescents' adjustment, above and beyond the association between the strength of commitment and adjustment. Consistent with this prediction, it was found that autonomous motives for commitment were related positively to self-worth and a sense of agency and negatively to depressive symptoms, even after controlling for the effect of commitment making per se. Conversely, controlled motives for commitment were related positively to depressive symptoms and negatively to self-worth. Together, these results suggest that both the strength and the motivational regulation of commitment matter in predicting adolescent adjustment. When commitments are held and pursued for autonomous motives, adolescents are likely to feel as if their commitments reflect who they are. The sense of authenticity associated with this type of motivational regulation may increase adolescents' vitality and would increase the likelihood of need-satisfying experiences in the pursuit of commitments (Assor et al., 2005; Soenens & Vansteenkiste, in press). In contrast, commitments held for controlled reasons are more likely to give rise to inner tension and to elicit approach-avoidance conflicts, thereby increasing the likelihood of maladjustment. Future research may

explicitly address the role of these presumed mediational dynamics in the relation between motives for commitment and adjustment.

Having established associations between motives for commitment and adjustment, we also explored possible antecedents of these motives by examining associations between Berzonsky's (1989, 1990) identity-processing styles and motives for commitment. Identity styles are considered to reflect relatively stable interindividual differences in ways of exploring and processing identity-relevant information. It was found that each of Berzonsky's (1990) three identity styles had a unique profile in terms of the motivational regulation of commitment. At the level of the raw correlations, an informational style was positively related to autonomous and controlled motives. However, in the path model, where the variance shared between the identity styles and between commitment and the motives was controlled for, an information style was uniquely related to autonomous motives. This finding is consistent with our expectation that an open and deliberate search for identity alternatives creates opportunities to form commitments that most accurately reflect personal core interests and values. It is also consistent with previous research showing a positive association between an information-oriented style and the dispositional tendency to function autonomously (Soenens, Berzonsky, et al., 2005).

A normative style showed a more mixed pattern of associations with the motivational regulations. It was positively related to both autonomous and controlled motives, suggesting that normative individuals feel generally strongly motivated to adhere to their commitments, irrespective of the quality of their motivation. This is consistent with the idea that normative individuals are strongly invested in preserving commitments (Berzonsky, in press). It should be noted, however, that the most pronounced association was obtained between a normative style and controlled motives, suggesting that a normative style primarily reflects a controlled regulation of identity commitments. The latter finding suggests that when people are wary of discrepant identity-related information and predominantly assimilate information into preexisting identity structures, their regulation of commitments is likely to come with feelings of pressure and conflict. In line with this reasoning, previous research already established an association between a normative style and a general disposition to function in a controlled fashion (Soenens, Berzonsky, et al., 2005).

Finally, a diffuse-avoidant style was related to the most maladaptive motivational profile, as it was negatively related to autonomous motives and positively related to controlled motives. Diffuse-avoidant adolescents tend to procrastinate identity-related decision making and, as such, typically have few or only volatile commitments. However, to the extent that they do make commitments, these commitments are typically made on the basis of coincidental or even pressuring situational cues and demands (Berzonsky, 1990, in press). Commitments made under these circumstances are unlikely to reflect individuals' personal interests and are, instead, likely to feel alien and imposed under pressure.

Although both a normative style and a diffuse-avoidant style are related to controlled motives for commitment, this association may occur for different reasons. Specifically, individuals with high normative scores are likely to have at least a partial or shallow level of internalization. Normative individuals are known to strongly identify with their parents and to adopt their parents' expectations (e.g., Dunkel, Papini, & Berzonsky, 2008). Yet, given that they are likely to adopt their parents' expectations in a relatively automatic or mindless fashion, their commitments are likely to be accompanied by feelings of duty and internal pressure. In terms of the SDT

internalization continuum this would be reflected in an association between a normative style and introjection. In contrast, the behavior of individuals with high diffuse-avoidant scores is relatively more likely to be uniquely determined by situational cues and external demands, resulting in a more pronounced absence of internalized commitments. This would be reflected in an association between a diffuse-avoidant style and external regulation. We performed some ancillary analyses to test these speculations. Largely in line with our reasoning, we found that only a normative style was related to introjection ($r = .22, p < .001$) whereas both a normative and a diffuse-avoidant style were related to external regulation ($r = .34, p < .001$ and $r = .24, p < .001$, respectively). Thus, compared to a diffuse-avoidant style, a normative style is related to at least partial internalization. Given the low reliability of the scales for introjection and external regulation, these findings need to be elaborated upon in future research.

Another direction for future research is to address the concept of amotivation. This study addressed the motives that people have to pursue and adhere to commitments, without considering the possibility that some people may experience a total lack of motivation for commitment making. Diffuse-avoidant individuals may be particularly likely to score high on amotivation because they may feel overwhelmed with the task of identity formation and, as such, feel unable to effectively deal with identity commitments. The finding that a diffuse-avoidant style is related to an impersonal causality orientation (Soenens, Berzonsky, et al., 2005) provides some preliminary support for this idea.

Given (a) the substantial and conceptually plausible associations between the identity styles and the motives for commitment, and (b) the associations between the motives for commitment and personal adjustment, we also examined whether motives for commitment would play an intervening role in associations between identity styles and adjustment, thereby taking into account the intervening role of strength of commitment, which was already demonstrated in earlier research (Berzonsky, 2003). For the informational and diffuse-avoidant identity styles, a clear-cut pattern of findings was obtained. First, the positive association between an informational style and adjustment was fully mediated by strength of commitment and autonomous motives for commitment. Information-oriented individuals appear to experience high levels of adjustment and subjective well-being because they are effective in arriving at commitments and because these commitments typically reflect their personal preferences and values. Second, the negative association between a diffuse-avoidant style and adjustment was partially mediated by strength of commitment and controlled motives for commitment. Diffuse-avoidant adolescents seem to suffer from maladjustment and ill-being at least partially because they fail to arrive at commitments and because, to the extent that they do make commitments, their commitments provoke feelings of pressure and conflict and are not personally endorsed or valued.

A more complex, yet intriguing, pattern of mediation findings was obtained with the normative style. Consistent with previous research, a normative style was positively related to personal adjustment (Beaumont & Zukanovic, 2005; Berzonsky et al., 1999; Nurmi et al., 1997), and this association remained significant after controlling for the intervening role of strength of commitment and the motives for commitment. This is surprising because, as noted earlier, a normative style is associated with a relatively mixed pattern of motivational regulations and even seems to be more strongly related to controlled than to autonomous motives. Apparently, a normative style is a mixed blessing: whereas the strong commitments and the

autonomous motives for commitment associated with a normative style seem beneficial for adjustment, the controlled motives that are simultaneously associated with a normative style seem to come at a cost for well-being. Overall, the benefits of a normative style appear to outweigh the costs, such that, in the end, normative individuals are relatively well adjusted. One may wonder, however, whether the mixed motivational profile of normative individuals would also protect them against maladjustment in times of unpredictability and stressful life events. Given that normative individuals are motivated to adhere rigidly to their commitments in a steadfast manner, it is possible that they would respond rather defensively in times of stress, thereby refusing to accommodate their commitments even when such adjustments would be warranted. Consistent with this line of reasoning, Berzonsky and Kinney (2008) found that a normative style was associated with a pattern of defensive mechanisms that deny and distort potentially threatening information.

Our hypothesized model (where identity styles precede commitment and motives for commitment) was found to provide a better fit to the data compared to an alternative model with a different causal ordering (where commitment and motives for commitment precede identity styles). However, cross-sectional data do not provide a sound empirical basis for making conclusive inferences about direction of effects. Future longitudinal research is needed to begin to unravel the direction of effects in the associations hypothesized in our model. An alternative possibility is that identity styles and motives for commitment may be related in a reciprocal and mutually reinforcing fashion across time. That is, although identity styles may affect the motivational regulation of individuals' commitments, across time these regulations may also affect adolescents' identity styles. To the extent that adolescents pursue their commitments for autonomous reasons, they are likely to adopt an informed, open style of identity exploration (Soenens & Vansteenkiste, in press). Conversely, a controlled regulation of commitments is likely to give rise to a more defensive and assimilative approach to identity exploration. For instance, with a controlled regulation, individuals are likely to be preoccupied with self-protection, which would hinder an open and unbiased approach to identity exploration.

Apart from the cross-sectional design, this study has a number of other potential limitations, including the relatively homogeneous nature of our sample of university students (in terms of age, ethnicity, and socioeconomic status) and the self-reported nature of the measures. Due to the exclusive reliance on self-report measures, at least some of the associations obtained may be overestimated and/or may be affected by response tendencies. Future research may deal with this problem, for instance, by controlling for individuals' dispositional orientation towards autonomy and control or by including multi-informant assessments of some of the variables in our model.

Another possible limitation is that the language used to refer to identity commitments differed slightly between the two main questionnaires used in this study (i.e., the ISI-4 and the SRQ). Whereas the ISI-4 items refer to "values, goals, standards, beliefs, and personal problems," the items on the SRQ refer to "goals you have in your life," "values that you use when making personal decisions," and "ideals that you would like to accomplish in your life." Because these wordings are overlapping yet not identical, respondents may have had different commitments in mind when filling out both questionnaires. Future research would do well to use a common stem for both questionnaires.

Whereas this study examined adolescents' motives for commitment, future research may also address motives for adolescents' styles of identity exploration (Soenens & Vansteenkiste, in press). For instance, although some normative adolescents may adopt the guidelines of authority figures volitionally, others may feel obligated to do so. Depending on the motives underlying a particular identity style, this style may relate to adjustment in different ways (see, e.g., initial research by Smits, Soenens, Vansteenkiste, Luyckx, & Goossens, 2010). Another direction for future research is to examine whether our findings apply across different life domains. As our measures referred to generic and domain-overarching commitments such as goals, values, plans, and ideals, we do not know the particular referents the participants had in mind when responding to the items, that is, whether they interpreted the items in ideological or interpersonal terms. It remains to be examined whether associations between commitments and motives would be different in different domains. Although the mean level of autonomous and controlled motives may differ between domains, on the basis of SDT we speculate that associations between the motives and adjustment should be similar in both domains. This is because, according to SDT, these motives appeal to basic psychological needs that are essential for adjustment across domains (Deci & Ryan, 2000).

Conclusion

Recent identity research addressing the role of commitment in adolescents' psychosocial adjustment has tended to neglect the Eriksonian idea that not all commitments are created equally. Drawing from this idea and from self-determination theory, this study found that—in addition to late adolescents' strength of commitment—the quality of their motives for commitment explains unique variance in adjustment. Commitments that have been internalized and integrated (i.e., autonomous rather than controlled motives) seem to contribute to psychological well-being and adjustment. Different styles of exploring one's identity were differentially related to motives for commitment, with an information-oriented style showing the most adaptive pattern of motivational regulation and subsequent personal adjustment.

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