Identity Styles and Causality Orientations: In Search of the Motivational Underpinnings of the Identity Exploration Process

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Abstract

This study examines relationships between constructs based on two perspectives on the development of self-governance, namely Self-Determination Theory (SDT; Deci & Ryan, 2000) and Berzonsky's (1990) identity style model. Theoretically predictable relationships are found between the three causality orientations defined by SDT (autonomous, controlled, and impersonal) and the three identity styles proposed by Berzonsky (informational, normative, diffuse–avoidant) in a sample of Belgian late adolescents. An autonomous causality orientation is positively related to an informational identity style and negatively related to a diffuse–avoidant style. A controlled orientation is positively associated with a normative identity style, and an impersonal orientation is positively related to a diffuse–avoidant identity style. Participants' gender does not moderate these relationships. The findings suggest that the causality orientations late adolescents employ may play an important role in how actively and thoroughly they explore identity-relevant issues. Copyright © 2005 John Wiley & Sons, Ltd.

INTRODUCTION

Two major developmental tasks that must be negotiated during adolescence involve forming a stable sense of identity and establishing a personal sense of autonomy (Erikson, 1968; Hill & Holmbeck, 1986). To become self-governing, adolescents need to establish a clear and integrated personal stance on important existential issues such as ideology, values, relationships, and life goals. There are individual differences, however, in the way adolescents approach this process of self-definition. For instance, some establish their

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self-definition by actively processing self-relevant information, whereas others are more inclined to adopt the normative expectations of others. In the present study, it is proposed that adolescents' causality orientations—their views about the motivational processes that initiate and regulate their behaviour—may, in part, account for interindividual variability in the process of identity exploration and construction. We examined relationships between two perspectives on the process of psychological individuation and identity formation, *Self-Determination Theory* (SDT; Deci & Ryan, 1985a, 2000, 2002), which highlights differences in behavioural self-regulation and motivational orientations, and Berzonsky's (1989, 1990) model of *identity processing* styles, which postulates reliable stylistic differences in how adolescents approach or manage to avoid the tasks of exploring and constructing a sense of identity. Specifically, we examined the relationships between the three causality orientations defined by SDT and the three identity styles defined by Berzonsky. Before describing both sets of constructs, we provide some background on the theoretical underpinnings of both theories.

Self-Determination Theory and Berzonsky's model

At a broad level, SDT and theories of identity development, including Berzonsky's model, converge in their assumptions about the development of autonomous self-regulation and self-definition: both are described in terms of processes of internalization and increasing personal integration (Berzonsky, 1997, 2003; Deci & Ryan, 2000; Lerner, Freund, De Stefanis, & Habermas, 2001; Waterman, 1992). According to SDT, individuals are thought to build representations of themselves through a process of internalizing potential goals, values, and regulatory mechanisms (Deci & Ryan, 2000). The nature and quality of this internalization is said to depend on the extent to which values and standards become integrated within one's core sense of self. To some extent, this view corresponds to that of Berzonsky (1990, 1993, 2003), who considers identity to be a self-theory or a conceptual structure that integrates an individual's assumptions, hypotheses, and constructs about the self as experienced in interaction with the physical and social world. This self-theory directs and governs the way adolescents cope and adapt in everyday life (see also Epstein, 1980). Both in SDT and in Berzonsky's social–cognitive model, the internalization and integration of goals, standards, self-regulatory strategies, and self-relevant information encountered as individuals interact and develop within the external world is postulated to be the process by which they develop a sense of self-identity.

However, both theories hold somewhat divergent views on how this process of internalization takes place. Self-determination theory is rooted in assumptions about human development that imply that individuals are active, growth-oriented organisms with innate, natural tendencies toward developing a more elaborated and unified identity. This movement towards more integrative functioning is guided by a natural endowment or nascent self that enables people to act and live in accordance with their underlying motives, needs, and values. The self thus functions as the integrative centre that serves a synthetic function (Ryan & Deci, 2003). In line with Waterman's (1984) discovery metaphor of identity formation, the self directs people towards the discovery of one's true and authentic potentialities, emotions, and goals. However, the self is not the only motivational force at work, because it develops in continual interplay with the social environment: the ongoing integrative process can be nurtured, but it can also be derailed by the social context (Deci & Ryan, 2000; Vansteenkiste & Sheldon, in press). As a consequence, individuals either develop a refined and well explored sense of identity or end up with an impoverished and fragile self-concept.

In contrast, Berzonsky's identity theory emphasizes a more cognitive view of identity development. However, just as with SDT, Berzonsky (1990) recognizes that identity develops in continual interaction with the physical and social world. This developmental process, however, is thought to occur through cognitive constructions of both a sense of who people think they are (i.e. their identity) and the reality within which they live (Berzonsky, 1986, 1990, 2002). Berzonsky's model shares this focus on the social–cognitive processes through which the social environment conveys information and feedback to people with other social–cognitive theories such as self-efficacy theory (Bandura, 1977, 1989; Kirsch, 1985; Maddux & Gosselin, 2003). This view also corresponds to Waterman's (1984) creation metaphor of identity formation: As experiences recur, people form personal constructs that influence how environmental stimuli are attended to, processed, and interpreted (Berzonsky, 1990; Kelly, 1955). It should be noted that these constructions are not necessarily formed or utilized in a deliberate and conscious fashion. Much if not most self-theorizing occurs in a relatively mindless or automatic fashion (Bargh, 1997; Berzonsky, 2002). Also, it is not maintained that people can simply construct or 'make up' anything they want (Berzonsky, 1993). It is assumed that the utility of people's constructions is constrained by their biological makeup and the physical and social 'realities' within which they live and develop. However, people have no way to directly know and understand reality; an understanding of reality is always mediated by the cognitive structures (or personal constructs) people impose on it (Berzonsky, 1993; Kelly, 1955).

In this view, there is no objective frame of reference that can be used to evaluate whether self-constructions, including a sense of identity, correspond to an innate propensity or potentiality. Instead, self-constructs need to be evaluated in terms of pragmatic utility. Do they make accurate predictions? Do they effectively answer the questions and solve the problems they were constructed to handle (Berzonsky, 1993)? Hence, Berzonsky's identity style theory (1990) focuses on the role that social–cognitive processes play in identity formation. In contrast, SDT tends to emphasize the affective dimension of self-development, that is, the extent to which people act in accordance with their innate needs so that they affectively experience their behaviour as inherently satisfying and personally meaningful. Despite these different emphases, there is a striking resemblance between the causality orientations that are proposed in SDT and the identity styles proposed in Berzonsky's (1990) social–cognitive theory. Both are discussed in greater detail below.

Self-determination theory: three causality orientations

According to SDT, people vary on a global level in the way they regulate their behaviour. More specifically, they are thought to differ in terms of their understanding of the nature of the causation of their behaviour, that is, their perceived locus of causality (deCharms, 1968).[1] These differences are characterized in terms of three general causal motivational orientations (Deci & Ryan, 1985b; Vallerand, 1997). The *autonomy orientation* is

[1]It is important in this context to distinguish the concept of locus of causality (deCharms, 1968) from the concept of locus of control (Burger & Cooper, 1981; Rotter, 1966). Locus of control refers to the extent to which people expect that the outcomes they are striving for are dependent upon their behaviours and thus pertains to the expectancies people have concerning the link between their actions and certain outcomes. Self-efficacy (Bandura, 1977) can be seen as one component of this concept. Locus of causality, by contrast, pertains to the extent to which people perceive themselves as the origin or agent of their own actions (deCharms, 1968). Irrespective of whether people believe whether their actions will yield the desired outcome (i.e. locus of control), they can experience their actions as either self-initiated and self-chosen or pressured and coerced (i.e. locus of causality).

characteristic of individuals whose actions are based on a sense of volition and an awareness of their own personal standards and goals; they perceive their behaviour as being freely chosen, self-initiated, and self-regulated. These individuals actively seek out opportunities that correspond to their personal values and interests. This orientation has been shown to be related to variables that express psychological well-being and self-governance, such as high self-esteem, self-awareness, high levels of ego-development and personality integration, low levels of self-derogation, and successful goal attainment (Deci & Ryan, 1985b; Hodgins & Knee, 2002; Sheldon & Kasser, 1995). In terms of Big Five personality correlates, an autonomous orientation has been linked with high levels of agreeableness and extraversion (Deponte, 2004).

Individuals with a *controlled orientation* perceive their behaviour as being influenced by external forces and demands or internalized imperatives. They tend to comply with factors and events such as threats, deadlines, and internalized expectations about how they 'should' act. The controlled orientation has been associated with a concern about external agents of control (e.g. social expectations, pressure from others, tangible rewards), expressions of negative affect, public self-consciousness (Deci & Ryan, 1985b; Sheldon & Kasser, 1995), and low levels of agreeableness (Deponte, 2004).

Individuals with an *impersonal orientation* perceive their actions as being influenced by factors over which they have limited intentional control. In terms of Rotter's theory (1966), they are thought to possess an external locus of control; they tend to believe that they lack the ability or resources to personally regulate their actions in a way that will enable them to effectively obtain the outcomes they desire. Through a process of 'learned helplessness' (Seligman, 1972, 1975) they develop a pervasive sense of incompetence that makes them vulnerable to failure experiences and feelings of depression, social anxiety, shame, self-derogation, low self-esteem, fear, and hostility (Deci & Ryan, 1985b). Personality correlates of an impersonal orientation include neuroticism, low extraversion, and low conscientiousness (Deponte, 2004).

Identity processing orientation: three identity styles

For almost 40 years, empirical research on Erikson's theory of identity development has been guided by the identity status paradigm developed by Marcia (1966, 1980). In Marcia's paradigm, identity formation is operationally defined according to two dimensions, exploration and commitment. Exploration refers to the degree to which individuals actively examine values, beliefs, and goals, and experiment with different social roles, plans, and ideologies. Commitment refers to the determined adherence to a set of convictions, goals and values. In an attempt to conceptualize the social–cognitive processes underlying the identity exploration process, Berzonsky (1989, 1990) proposed three identity-processing orientations: informational, normative, and diffuse–avoidant. These orientations comprise the social–cognitive strategies that individuals prefer to use to process identity-relevant information, make personal decisions, and negotiate identity-relevant problems (Berzonsky, 1990).

An *information style* is typical of adolescents who actively construct a sense of identity by seeking out and evaluating self-relevant information before making decisions and forming commitments. Information-oriented adolescents assume a critical attitude toward their self-conceptions, are open to new information, and they are willing to revise aspects of their identity when faced with discrepant information about themselves, which should result in a well differentiated and integrated sense of personal identity (Berzonsky, 1990,

1992a, 2002). Adolescents with an informational identity style have been found to display high levels of cognitive complexity, decisional vigilance, need for cognition, problem-focused coping, autonomy, and cognitive persistence (Berzonsky, 1992a, 1999, 2002; Berzonsky & Ferrari, 1996; Berzonsky & Kuk, 2000; Duriez, Soenens, & Beyers, 2004). Of the five personality factors, openness to experience has shown the strongest (positive) links with an information style (Berzonsky & Sullivan, 1992; Dollinger, 1995; Soenens, Duriez, & Goossens, 2005).

A *normative style* is typical of adolescents who rely on the prescriptions and expectations held by significant others (such as parents and authority figures) when confronted with identity-relevant problems. Normative individuals are 'closed' to information that may threaten their hard-core values and beliefs; they hold rigidly organized identity commitments that they defensively strive to preserve and maintain (Berzonsky, 1990). Research indicates that adolescents with a normative identity style are firmly committed, and they possess a well defined sense of educational purpose (Berzonsky, 2003; Berzonsky & Kuk, 2000). In addition, they display high levels of conscientiousness (Dollinger, 1995; Duriez et al., 2004). However, they also have been found to score high on measures of cultural conservatism, need for structure, and need for cognitive closure (Berzonsky, 2002; Soenens et al., 2005) and low on measures of openness to values, actions, and fantasies (Berzonsky & Sullivan, 1992).

Adolescents with a *diffuse–avoidant style* strive to avoid personal conflicts and identity-relevant problems; they procrastinate and delay making decisions until situational demands dictate a course of action. These individuals continually accommodate their behaviours and views to current social demands and consequences, without making long-term revisions in their identity structure (Berzonsky, 1990). Such strategies are likely to result in a fragmented, loosely integrated identity structure. Adolescents with a diffuse–avoidant identity style have been found to display pre-decisional panic and rely on maladaptive practices in decisional situations (Berzonsky & Ferrari, 1996). They also have been found to utilize maladaptive coping mechanisms (Berzonsky, 1992b; Soenens et al., 2005), to be prone to feelings of shame (Lutwak, Ferrari, & Cheek, 1998), and to display conduct disorders and hyperactivity problems (Adams et al., 2001). In terms of the Big Five, they have been shown to score high on neuroticism and low on agreeableness and conscientiousness (Dollinger, 1995; Duriez et al., 2004).

The present investigation

The objective of the present investigation was to examine how individual differences in causality orientations are related to individual differences in adolescents' identity exploration process. To date, evidence for linkages between the two sets of constructs has been mainly indirect. First, it has been shown in an experimental study that autonomous individuals take into account the advice of credible, well informed experts (Koestner et al., 1999), which suggests that they seek the most reliable information before making choices and thus are likely to score high on the information-oriented identity style. Second, Schwartz, Mullis, Waterman, and Dunham (2000) found that information-oriented adolescents score higher on a measure of personal expressiveness than adolescents with a diffuse-avoidant identity style. Their measure of personal expressiveness was designed to assess the extent to which individuals rate their activities as expressing their 'true' sense of self, and hence resembles the concept of autonomous, self-determined behaviour in SDT. However, these authors did not find significant differences between

information-oriented and normative adolescents. This finding may be due to the fact that their measure of personal expressiveness does not differentiate sufficiently between qualitatively different types of motivational orientation, as used within SDT. Therefore, the present study builds on the work of Schwartz et al. (2000) by introducing a more refined measurement of motivational orientations. Third, Wheeler, Wintre, and Polivy (2003) have recently reported positive correlations between the diffuse–avoidant identity style and the impersonal and controlled motivational orientations. The present study however is, to the best of our knowledge, the first to fully examine relationships between the two sets of constructs.

Causality orientations refer to people's general motivational stance towards a broad range of behaviours, attitudes, and, hence, also the way in which they deal with identity concerns (i.e. their identity styles) (Deci & Ryan, 1985b; Ryan & Deci, 2003). As such, these global orientations can also be expected to be predictive of people's styles of processing and dealing with identity-relevant issues and behaviours. We hypothesized that an autonomous causality orientation would positively predict an information-oriented identity style. The more adolescents are inclined to act in accordance with personal values and standards, the more likely it is that they will actively seek out, process, and evaluate self-relevant information. Second, it was hypothesized that a controlled causality orientation would positively predict the use of a normative identity style. Adolescents whose behaviour is primarily initiated and guided by introjected standards and expectations of significant others should rely on normative prescriptions and expectations of important authority figures when making identity-relevant decisions. Finally, it was expected that the impersonal causality orientation would be a positive predictor of a diffuse–avoidant identity style. Adolescents who experience their behaviour as being influenced by impersonal external contingencies, and who lack a sense of mastery over their decisions and choices, are most likely to procrastinate and avoid dealing with identity-relevant decisions. In short, our primary prediction was that each of the three causality orientations would be related with its conceptually corresponding identity style. However, some other paths might also emerge. For instance, because autonomously oriented individuals base their actions on their personal interests and values and, hence, display well integrated functioning, they are unlikely to use a diffuse–avoidant style in dealing with identity issues. The latter individuals are characterized by ambiguous, loose, and rather fragmented identity representations.

An additional goal of the present study was to examine the role of gender differences in these hypothesized relationships. A large body of research on gender differences converges on the general conclusion that, in contrast to the original formulations by Marcia, there are few, if any, systematic differences between males and females in identity formation (Kroger, 1997; Waterman, 1993). In line with this conclusion, it has been found that mean gender differences in identity style scores, if any, are small (see e.g. Berzonsky, 1992b). Moreover, interactions between gender and identity processing styles have rarely been reported in studies on the correlates of identity styles. With respect to the causality orientations, it has been observed that males scored significantly higher on the controlled orientation than females, whereas females scored significantly higher on the autonomous orientation (Deci & Ryan, 1985b). Systematic research on gender effects in the relationship between motivational orientations and outcomes, however, is lacking (Wong, 2000). Therefore, it was hypothesized that, despite potential mean differences between males and females on the identity style and motivational orientation measures, relationships between these constructs would not be moderated by gender.

METHOD

Participants

Participants were 367 first-year psychology students from a large university in the Dutch-speaking part of Belgium (Europe). The majority of the students was female (80%). The age of the participants ranged from 17 to 25 years ($M = 18$ years). Participants were predominantly White and came from working, middle class backgrounds. All participants were volunteers who participated for extra course credit.

Measures

Motivational orientations

The General Causality Orientations Scale (GCOS: Deci & Ryan, 1985b) was used to measure participants' causal motivational orientations. The GCOS consists of 17 situations presented in brief vignettes (e.g. what questions one might ask oneself after being offered a new position in a company) followed by responses that reflect one of three motivational orientations: *autonomous orientation* (e.g. How interesting will the work be?); *controlled orientation* (e.g. How much money will I make?); and *impersonal orientation* (e.g. What if I do poorly?). Participants were asked to indicate, on a five-point scale, the extent to which each response (beliefs, thoughts, behaviours, or feelings) reflected how they would act or feel in the situation. The GCOS yields three scores based on 17 items each. Cronbach's alphas of the autonomous, controlled, and impersonal orientations were 0.81, 0.78, and 0.79, respectively.

Identity style

The Revised Identity Style Inventory (ISI) was used to assess identity processing styles (Berzonsky, unpublished measure). The ISI contains the informational identity style scale (11 items, e.g. 'I've spent a great deal of time thinking seriously about what I should do with my life', Cronbach's alpha 0.70), the normative identity style scale (nine items, e.g. 'I prefer to deal with situations where I can rely on social norms and standards', Cronbach's alpha 0.63), and the diffuse–avoidant identity style scale (10 items, e.g. 'I'm not really thinking about my future now; it's still a long way off', Cronbach's alpha 0.73). The reliability estimates in our sample are consistent with psychometric data provided by Berzonsky (1990, unpublished measure, 2003).

RESULTS

Descriptive and correlational analyses

To determine whether participants' mean scores on the measures varied by gender, a MANOVA was conducted with gender as between-subjects variable and the causality orientations and the identity styles as dependent variables. An overall multivariate effect of gender was found (Wilks's $\lambda = 0.86$; $F(6, 360) = 10.04$; $p < 0.01$) and subsequent ANOVAs indicated that female participants, on average, scored higher on the normative style ($M = 2.99$; $F(1, 365) = 8.28$; $p < 0.01$, $\eta^2 = 0.02$) and on the autonomous orientation ($M = 4.22$; $F(1, 365) = 16.08$; $p < 0.01$, $\eta^2 = 0.04$) than male participants ($M = 2.78$ and $M = 4.02$, respectively). In contrast, males scored higher on the diffuse–avoidant style ($M = 2.59$) than females ($M = 2.40$; $F(1, 365) = 6.67$; $p < 0.05$, $\eta^2 = 0.02$).

Table 1.   Means, standard deviations, and correlations among all study variables

Measures	M	SD	1	2	3	4	5	6
1. Autonomous orientation	4.19	0.37	—					
2. Controlled orientation	2.78	0.46	0.07	—				
3. Impersonal orientation	2.63	0.46	−0.09	0.18**	—			
4. Informational style	3.34	0.51	0.32**	−0.14*	−0.09	—		
5. Normative style	2.95	0.50	0.04	0.23**	0.04	0.03	—	
6. Diffuse–avoidant style	2.43	0.52	−0.25**	0.15*	0.23**	−0.41**	−0.04	—

$*p < 0.05$; $**p < 0.01$.

Means, standard deviations, and correlations among all of the measures are presented in Table 1. The three causality orientations were virtually unrelated to one another, although a slight positive correlation between a controlled and impersonal orientation was found. Concerning the identity styles, none of the correlations reached significance except for the negative relationship between the informational and the diffuse–avoidant identity style scores.

The hypothesized positive correlations between an autonomous orientation and an informational style, a controlled orientation and a normative style, and an impersonal orientation and a diffuse–avoidant style were all significant. In addition, a controlled orientation was negatively correlated with informational identity style scores and was positively correlated with a diffuse–avoidant identity style, whereas an autonomous orientation was negatively associated with a diffuse–avoidant style.

Structural equation modelling

Next, we performed structural equation modelling with latent variables (SEM; Bollen, 1989), using the Lisrel 8.54 software (Jöreskog & Sörbom, 1996a). The aim of these analyses was to determine the unique, specific relationships between causality orientations and identity styles (i.e. by partialling out the variance shared by the three identity styles and by the three causality orientations), while correcting for measurement error. SEM with latent variables requires multiple indicators for all the constructs that are assessed. Instead of using separate items as indicators, we created three parcels of items for each construct (in a random fashion) and used these as indicators of the six latent constructs (i.e. three causality orientations and three identity styles). This procedure therefore resulted in 18 parcels. According to Marsh, Hau, Balla, and Grayson (1998), parceling has some advantages with respect to the modeling of latent factors. Parceling results in a smaller number of indicators per latent factor, individual parcels are likely to have a stronger relation to the latent factor, and are less likely to be influenced by method effects, and the reliability of the factors is unaffected by the use of parcels because the same items are used to form the latent factor. In addition, parcels are more likely to meet the assumptions of normality. However, data screening of the parcels using Prelis 2.54 (Jöreskog & Sörbom, 1996b) indicated partial non-normality of the data, both at the univariate and the multivariate level. Therefore, in addition to the covariance matrix between all parcels, in all subsequent models we also used the matrix of asymptotic covariances as input, and we inspected the Satorra–Bentler scaled chi-square (SBS-χ^2, Satorra & Bentler, 1994) to correct for this non-normality. To evaluate the goodness of fit of the structural equation models, the standardized root mean square residual (SRMR; Bentler, 1995) and the root

mean squared error of approximation (RMSEA; Steiger & Lind, 1980) were selected. According to Hu and Bentler (1999), the combined cut-off values of 0.08 for SRMR and 0.06 for RMSEA indicate a good model fit.

Measurement model

Initial estimation of the complete measurement model with 18 observed variables (i.e. parcels) and six latent factors by means of confirmatory factor analysis yielded a model which approached our criteria for acceptable fit (SBS-χ^2 (120) = 354.84, SRMR = 0.071, and RMSEA = 0.072). Careful inspection of residual covariances and modification indices as provided by Lisrel 8.54 (Jöreskog & Sörbom, 1996a) suggested two modifications to this initial model: a correlated error variance between two parcels of the diffuse–avoidant style and a correlated error variance between a parcel of the normative style and a parcel of the diffuse–avoidant style. Adding both error covariances significantly improved model fit (SBS-χ^2(118) = 269.46, SRMR = 0.065 and RMSEA = 0.059) compared to the model without correlated errors (ΔSBS-χ^2(2) = 85.38; $p < 0.01$). These modifications did not substantially change the correlations between the latent factors. Straightforward comparison of the two correlation matrices by means of a chi-square test indicated no overall differences ($\chi^2 = 5.47$ (df = 15), ns). Finally, all of the parcels had a strong loading on their corresponding latent factor (mean lambda = 0.65). In sum, a reliable measurement model was obtained for the six constructs in our study. The measurement model is summarized in Table 2.

Structural model

The initial structural model that was tested included the following three hypothesized structural paths: (a) a path from an autonomous orientation to an information-oriented identity style; (b) a path from a controlled orientation to a normative style; and (c) a path from an impersonal orientation to a diffuse–avoidant style. In order to control for the effect of gender, paths were allowed from gender to each of the model constructs. Overall fit

Table 2. Standardized factor loadings of the parcels on their latent variables

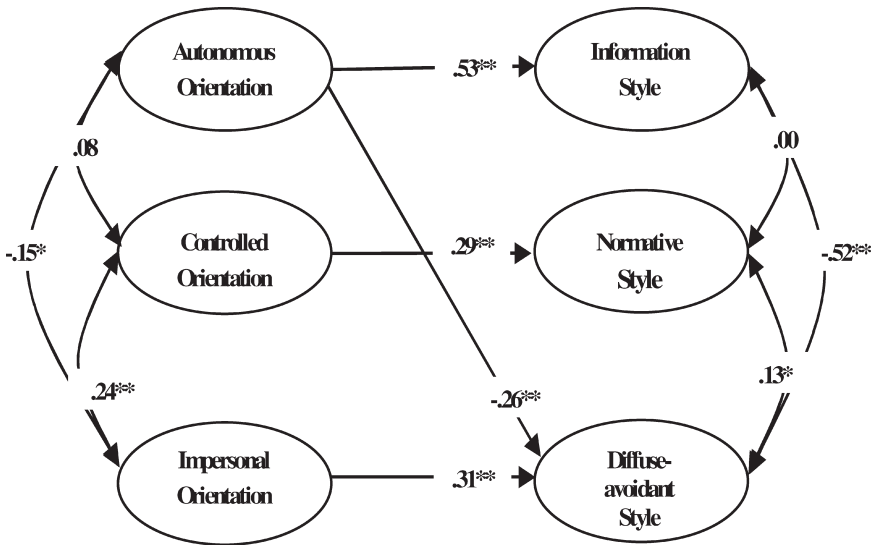| Latent variable	Parcel	1	2	3	4	5	6
1. Autonomous orientation	1	0.79	—	—	—	—	—
	2	0.76	—	—	—	—	—
	3	0.80	—	—	—	—	—
2. Controlled orientation	1	—	0.72	—	—	—	—
	2	—	0.76	—	—	—	—
	3	—	0.66	—	—	—	—
3. Impersonal orientation	1	—	—	0.73	—	—	—
	2	—	—	0.83	—	—	—
	3	—	—	0.68	—	—	—
4. Information style	1	—	—	—	0.51	—	—
	2	—	—	—	0.63	—	—
	3	—	—	—	0.44	—	—
5. Normative style	1	—	—	—	—	0.75	—
	2	—	—	—	—	0.58	—
	3	—	—	—	—	0.42	—
6. Diffuse–avoidant style	1	—	—	—	—	—	0.57
	2	—	—	—	—	—	0.80
	3	—	—	—	—	—	0.29

Figure 1.   Structural model of the relationships between causality orientations and identity styles.
For sake of clarity, the effects of gender are not shown.
*$p < 0.05$; **$p < 0.01$.

indices of this initial model pointed to an acceptable fit (SBS-χ^2(137) = 339.14, SRMR = 0.074, and RMSEA = 0.064) and each of the coefficients associated with the structural paths was significant ($p < 0.01$).

The modification indices suggested adding an additional structural path to this model, namely a path from an autonomous orientation to a diffuse–avoidant identity style. Adding this path significantly improved model fit (ΔSBS-χ^2(1) = 12.01; $p < 0.01$), resulting in a model with acceptable fit indices, SBS-χ^2(136) = 327.04, SRMR = 0.072, and RMSEA = 0.062. The modification indices did not suggest any additional structural paths, indicating that this was the most parsimonious, best fitting model. This final structural model is depicted in Figure 1 and shows that, in addition to the three hypothesized positive paths, an autonomous orientation negatively predicted the use of a diffuse–avoidant identity style.

Gender as a moderator
In order to assess whether the structural relationships in this model are invariant across adolescents' gender, a multi-group analysis was performed. In this analysis, a comparison is made between a constrained model, that is, a model in which the structural coefficients are set equal across gender, to an unconstrained model, that is, a model in which these coefficients are allowed to vary between levels of gender. The constrained and the unconstrained model are compared in terms of the chi-square difference corresponding to the number of degrees of freedom. A significant difference implies that the model differs significantly across groups (boys versus girls). In contrast, a non-significant difference implies that the model holds invariantly across groups. This multi-group analysis was performed on the best fitting model as displayed in Figure 1. No significant difference was found between the constrained and the unconstrained models (ΔSBS-χ^2(4) = 3.1; ns), indicating that gender did not moderate the relationships in the model.

DISCUSSION

The findings are consistent with our hypothesis that differences in the way youth initiate and regulate their behaviour are associated with the way in which they tend to approach or manage to avoid the process of constructing and reconstructing a sense of identity. An *autonomous causality orientation* was predictive of an informational identity style, indicating that youth who base their actions upon personal values and interests and display high levels of self-regulated functioning are more likely to actively seek out and process identity-relevant information. Similarly, and consistent with our reasoning, these youth were also less likely to avoid identity-relevant problems, presumably because their well integrated functioning is unlikely to prevent them from dealing with identity issues. Second, a *controlled causality orientation* predicted the use of a normative identity style, suggesting that youth who organize their behaviour on the basis of external controls and constraints tend to define themselves in terms of the norms and expectations held by significant others (such as parents and authority figures). Finally, the *impersonal orientation* was a positive predictor of the diffuse–avoidant identity style. Thus, youth who feel that they are unable to regulate their behaviour effectively are likely to avoid dealing with important identity-relevant tasks, leaving them confused and uncertain about themselves.

An additional aim of the present study was to examine the role of gender differences in the link between causality orientations and identity styles. With respect to mean gender differences in identity styles and causality orientations, female participants had higher autonomous-orientation scores than their male counterparts. A similar finding has been reported in a number of studies (Deci & Ryan, 1985b; Wong, 2000) and, therefore, may reflect a consistent gender difference. The finding that males had higher diffuse–avoidant scores than females is also in line with earlier findings (Berzonsky, 1992b). However, we also found that females had higher normative scores than males, a result that has not previously been reported. Although the gender differences found in normative scores were statistically significant, they were small ($\eta^2 = 0.02$). Accordingly, this finding needs to be replicated before any generalizations can be drawn. However, investigators should be alert to the possibility that gender differences in identity styles may obtain at least under some conditions. More importantly, despite these mean gender differences, gender did not significantly moderate the relationships between causality orientations and identity styles. This finding is in line with earlier research that has shown that the processes involved in identity formation appear to be very similar for men and women (Kroger, 1997; Waterman, 1993).

Despite the clear evidence we obtained for our hypotheses, it should be noted that the relationships obtained in the present investigation were relatively modest in size. The causality orientations accounted for 28, 14, and 19% of the variance in the information style, the normative style, and the diffuse-avoidant style, respectively. Thus, although causality orientations were significantly related to identity processing styles in a predictable manner, they do appear to be distinct theoretical constructs. As postulated in the introduction, this distinctiveness may stem, in part, from the different emphases displayed in the two theories. Compared with the identity style model, SDT highlights the more affective side of self-development, that is, the importance of discovering and acting in accordance with one's intrinsic needs and interests (Deci & Ryan, 2000; Sheldon & Kasser, 1995). Berzonsky's (1990) constructivist view, in contrast, focuses on the social–cognitive side of self-development—constructing and reconstructing a sense of who one thinks one is. These differences may also be reflected in the way the central constructs within both theories are measured and operationalized. For instance, an autonomous

orientation is mainly assessed by items tapping intrinsic motivation and inherent interest in certain activities. Such measurements are designed to reveal the extent to which people are in tune with and receptive to their inner wishes and the degree to which their actions correspond to what they find personally (i.e. *affectively*) satisfying, interesting and meaningful. In contrast, an informational style is operationalized with items dealing with the extent to which the pros and cons of different options and alternatives are considered in decisional situations and the *cognitive* strategies one uses to select and process or to avoid information about important life-choices.

These differences may reflect what Waterman (1984) termed two different metaphors for identity formation: discovery versus creation (construction). Waterman (1984) proposed that forming an identity through discovery involves a process of coming to understand and actualize one's 'true' self or *damion*—the potentialities and talents that constitute one's unique, inherent essence. In contrast, forming an identity through construction (see Berzonsky, 1986) involves a process of exploring options and alternatives and making personal choices and commitments. Put simply, construction implies that existence precedes essence, whereas discovery implies that essence precedes existence (Berzonsky, 1986). However, in our view, these two processes might be mutually reinforcing: because of individuals' natural inclination to act upon their own desires and personal values, they are likely to explore various options and alternatives, which, in turn, helps them to gain deeper insight in their own potentials, and, hence, creates the opportunity to better enact them. In other words, forming an identity might involve a cyclical process of discovery and construction.

Implications for future research and limitations

Our findings are in line with the idea that both cognitive and affective processes are implicated in self-governance and autonomous self-regulation. In order to deal effectively with the important existential issues and self-relevant problems that arise during identity formation, adolescents not only need to be able to reflect and gain insight about different possibilities and standpoints (e.g. use an information-oriented identity style), but they also need to be able to make decisions and act upon their personal interests and values (e.g. be autonomously oriented). Future research might focus on whether these related but distinct dimensions of the individuation process play an interactive, independent, or mutually reinforcing role as adolescents strive to make identity commitments and develop a sense of personal effectiveness and psychological well-being.

Another avenue for future research could be to further explore linkages between (dimensions of) personality and both causality orientations and identity styles. At the general conceptual level, relations between personality dimensions such as the Big Five and the causality orientations and identity styles may reflect the distinction between core and surface traits (Asendorpf & Van Aken, 2003). Whereas core traits (such as the Big Five and temperamental characteristics) are based on genetic differences and evidence limited susceptibility to social–contextual influences, surface traits pertain to characteristics that are more malleable and open to development. Both causality orientations and identity styles are considered to be developmental outcomes and, hence, can be seen as surface traits. For instance, within SDT (Deci & Ryan, 2000) it is claimed that preferences for particular orientations emerge as individuals interact within the social environment. Likewise, Berzonsky's (1990, 2002) model postulates that people develop different social–cognitive strategies as they interact within environmental contexts, and that they develop a

stylistic preference for a particular strategy or identity orientation. These preferences may be further reinforced by the life events and social relationships that are elicited by the orientation or style individuals engage in. Eventually as people enter adulthood these orientations and styles are thought to become relatively stable, although concurrent experiences such as stressful life events or therapeutic interventions may still affect the causality orientations and identity styles that people deploy.

Given their intermediate status between stable, genetically transmitted traits and domain-specific outcomes (such as, for instance, school achievement or feelings of social competence), these styles and orientations may serve to mediate or moderate the effects of personality on such outcomes. Contemporary personality and developmental research indeed assumes that personality dimensions are dynamic, organizational constructs that influence how people regulate their behaviour and process information (Caspi, 1998). In turn, these processes may relate to individuals' functioning and adjustment in daily life. Future empirical research may therefore explore the mediating role of causality orientations and identity styles in linkages between core personality traits and specific behavioural, attitudinal, and affective outcomes. An illustration of such an approach can be found in a recent study by Duriez et al. (2004). These authors demonstrated that direct relationships between the Big Five and dimensions of religiosity were mediated by the identity styles used by late adolescents. For instance, they found that a direct relation between Openness to Experience and a symbolic, tolerant, and personal stance towards religiosity was mediated by the information-oriented style. Future longitudinal research (i.e. cross-lagged panel studies; Asendorpf & Van Aken, 2003) would be particularly instructive to disentangle the relations between stable personality traits, surface traits (such as the causality orientations and identity styles), and domain-specific outcome variables.

In conclusion, some limitations of the present investigation need to be highlighted. First, the data were collected at one point in time. Thus suggestions about the directional influence of motivational orientations on identity styles were based on conceptual considerations. In our view, causality orientations—as broad motivational resources for individuals' behaviours in diverse domains of life, guided by a nascent sense of self (Deci & Ryan, 1985a, 1985b)—are predictive of the way individuals process information in identity-relevant domains. However, based on the present data, one could plausibly argue that a youth's identity processing style contributed to his or her motivational orientation or that some third factor (e.g. intelligence, family rearing patterns, and so forth) influenced both. Cross-lagged longitudinal data are needed to begin to address the question about the direction of the relationship between causality orientations and identity styles. Also, it is important to note that all of the data were self-reported and may have been inadvertently or intentionally biased. Accordingly, at least some of the covariation between motivational and identity styles that was found may reflect common method variance. One way to address this issue in future research would be to attempt to measure behavioural and cognitive aspects of these motivational and identity processing orientations more directly. Finally, participants in our sample were predominately white, late adolescents attending a university, which may limit the generalizability of the findings.

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