



The process of exploration in identity formation: the role of style and competence

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This study drew on two approaches to identity formation, each postulating differing but complementary exploration components (style and competence), in an effort to better understand the identity exploration process. The sample for this study ($n=215$) was socio-demographically diverse with respect to gender, age, ethnicity and setting, with participants drawn from two universities in two different settings (rural residential, and urban non-residential), with differing ethnicities (primarily non-Hispanic White *vs.* primarily Hispanic) and varying ages. Overall patterns of results revealed by hierarchical regression analyses were consistent with a process model of exploration and with the view that exploration is a multi-dimensional process comprised of multiple components. The findings also provide evidence for the utility of both of the critical constructivist and co-constructivist approaches to identity formation used in this study, and for the validity of the rich clinical/qualitative literature that gave rise to the construct of exploration.

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Introduction

Beginning with the theoretical writings of Erikson (1950; 1982), the process of exploration has been viewed as central to the formation of an identity. The recognition of the importance of exploration is evident in the considerable empirical work (e.g. Grotevant and Cooper, 1981; Marcia and Archer, 1993) generated by Marcia's (1966; 1980) pioneering work on the identity status paradigm. In adapting Erikson's concept of identity for empirical research, Marcia identified exploration and commitment as the two basic dimensions for defining the individual's status with respect to achieving an identity. By simultaneously considering an individual's levels of exploration and commitment, Marcia was able to derive four statuses for characterizing an individual's development toward a mature identity. These statuses are Achievement, Moratorium, Foreclosure, and Diffusion (for further information on the statuses see Marcia, 1980; 1993; Waterman, 1993). Consistent with the psychosocial developmental theoretical tradition, Marcia defined exploration as the search for a revised and updated sense of self, whereas commitment was taken to symbolize "the [adherence] to a course of action, a kind of settling down" (1988, p. 213). Exploration is thus a process of examination and discovery of who and what one might be, with commitment to an identity being a consolidation of this process. As such, exploration might be seen as a basic process underlying the formation of an identity.

Recent work has begun to investigate exploration and to articulate more fully its component processes. Grotevant (1987) for example, has proposed a process model of identity formation in which "the 'work' of identity is seen as the process of exploration. . .

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[where] identity exploration may be defined as problem-solving behavior aimed at eliciting information about oneself or one's environment in order to make a decision about an important life choice" (p. 204). Moreover, Grotevant's process model includes, "those *abilities* and *orientations* that individuals bring to bear on the identity formation process" (pp. 204–205, emphasis added).

Subsequent work has helped to advance our understanding of the process of exploration by examining the respective roles that abilities and orientations play in that process. Berzonsky (1989) and Kurtines (2001), for example, have each proposed theoretical approaches to identity formation. Both approaches draw on the constructivist tradition (e.g. Kelly, 1955) and include efforts to conceptualize and operationalize components of the exploration process. This tradition emphasizes the individual as an intentional agent proactively participating in the construction of her/his world. These two approaches, however, focus on differing components of the process of the constructive of the self (i.e. the ego synthesis) that is the outcome of exploration process. Berzonsky's critical constructivist approach focuses on the contribution of personal *orientations* to identity formation whereas Kurtines's co-constructivist approach focuses on the *abilities* that individuals bring to the identity formation process. More specifically, the critical constructivist approach of Berzonsky focuses on the role of information processing *style* whereas the co-constructivist approach of Kurtines focuses on the contribution of problem-solving *competence* to the process of identity formation. The critical constructivist and co-constructivist approaches thus draw on a similar theoretical background but propose differing (though perhaps complementary) components of the process of exploration.

Social-cognitive style: a critical constructivist approach

Berzonsky (1990) has proposed that each individual adopts a characteristic information-processing style when forming an identity. According to this framework, each individual adopts one of three styles as his/her characteristic orientation to making identity-relevant decisions during the process of identity formation. The most facilitative of these, the *Informational style*, is characterized by active exploration of alternatives, information seeking, and flexible commitments. Alternatively, the *Normative style* displays little exploration of alternatives and is characterized by attitudes such as subservience, deference to authority and dogmatic, inflexible commitments. This style represents conformity to social and familial expectations. Lastly, the *Diffuse/Avoidant style* is characterized by the avoidance of exploration or exploration that is unsystematic and characterized by procrastination, avoidance and the unwillingness to confront the decision-making process.

While each style is associated with a characteristic identity status (i.e. Informational with Achievement and Moratorium; Normative with Foreclosure, and Diffuse/Avoidant with Diffusion; Berzonsky, 1989), identity styles tend to be characterized as less developmental than identity statuses. That is, whereas identity statuses are generally seen as developmental pathways for resolving the issue of identity *vs.* role confusion (an issue with a phase-specific time of ascendance; Waterman and Archer, 1990), styles are more process and individual-difference oriented in late adolescent and adult populations. Conceptually it has been postulated that virtually all normal 18-year-olds are capable of utilizing all three social-cognitive strategies. Style is thus the type of social-cognitive strategy that individuals prefer in seeking a successful identity resolution (Berzonsky, 1990). Berzonsky (1989; 1997) has developed a style measure that specifically taps content relevant to identity issues. This self

report measure asks participants to provide ratings (on a five-point Likert rating scale) of how they generally tend to handle identity-related problems when they arise.

Problem-solving competence: a co-constructivist approach

Recently, Kurtines (1998) has investigated a competence component in order to further understand the exploration process. Although it appears highly plausible that higher forms of cognitive competence might facilitate exploration, research on the role of competence in identity formation has been scant and inconsistent. As part of a developing program of research, Kurtines (2001) has proposed that during the developmental process, individuals acquire a complex set of cognitive and communicative competencies, including the capacity for critical thinking and discussion. This approach defines intraindividual change as developmentally normative only up through childhood, emphasizing instead the self-directed nature of the developmental process in adolescence and adulthood (Brandstadter and Lerner, 1999; Lerner and Busch-Rossnagel, 1981). Thus, as with Berzonsky's approach, after adolescence, competencies are conceptualized as process and individual-difference oriented, with the use of critical competencies hypothesized to contribute uniquely to the exploration process and to identity formation as a whole.

Drawing on this work, Kurtines (2001) has identified three problem-solving processes hypothesized to facilitate the exploration process during identity formation. *Creativity* is the degree to which the individual is innovative or inventive in generating alternatives for life choices encountered during the exploration process. *Suspension of judgment* represents the degree to which the individual is capable of adopting multiple perspectives with respect to life choices, that is, considering positive and negative aspects (i.e. "pros" and "cons") for each alternative. *Critical evaluation* represents the degree to which the individual is capable of questioning or challenging alternatives and willing to change one's original choice in the context of "a more viable alternative".

Accordingly, a cognitive competence measure that specifically taps content relevant to identity issues has been developed. This performance-based measure requires participants to generate as many potential alternatives as possible for solving life-choice dilemmas, to suspend judgment by providing justifications for alternatives they disagree with, and to indicate, with supportive reasoning, the choice that they would make following critical thinking.

Theoretical implications and empirical questions

The availability of two identity perspectives, each postulating differing but complementary exploration components (and with distinct component-appropriate measurement techniques), opens up considerable potential for knowledge development concerning the exploration process. As noted, for example, Grotevant's process model conceptualizes exploration as a multi-dimensional process comprised of multiple components, a claim that is consistent with the richness of the clinical/qualitative literature that gave rise to the construct of exploration (Erikson, 1982). Although the view that the exploration process is comprised of multiple components appears highly plausible, the focus of research in the identity formation literature has historically been mainly on the contribution of identity style. A sizable literature has emerged, for example, establishing a link between identity style and identity status. Informational style has been found to predict Moratorium and Achievement (Berzonsky, 1989), Normative style has been found to predict Foreclosure (Berzonsky and Neimeyer, 1994), and Diffuse/Avoidant style to predict Diffusion (Berzonsky, 1989; Streitmatter, 1993).

A link between cognitive competence (as a component of the exploration process) and identity status has proved more difficult to establish than has a link between identity style and identity status. Despite the paucity of evidence for the contribution of higher forms of cognitive competence to the exploration process, it appears highly unlikely that the use of higher forms of cognitive competence would *not* contribute to achieving an identity. Therefore, examining alternative explanations for this knowledge gap may help to shed light on this issue.

The greater difficulty in establishing a link for competence than for style, for example, may partially stem from the fact that historically, these constructs have been operationalized using differing methods of measurement. More specifically, in the identity-formation research literature, the constructs of identity status and identity style have historically tended to be measured by the *same* type of methods, i.e. group administered self-report scales most often using Likert type rating scales (e.g. Bennion and Adams, 1986; Berzonsky, 1989; Balistreri *et al.*, 1995). Moreover, measures of these two constructs tend to share similar content with respect to identity issues, including overlapping items. Such measurement overlap may inadvertently capitalize on shared method variance and, consequently, overestimate the linkages between these variables.

Cognitive competence constructs, on the other hand, have historically been measured mainly using performance-based “tests of limits” (e.g. Flavell and Markman, 1983) rather than self-report methods, and these performance based measures often lack content relevance for identity issues. The small research literature that does exist lends some credibility to the possibility that the lack of shared method variance such as common measurement source (e.g. similarity of measurement format and/or content) may result in underestimating the link between cognitive competence and identity status. Reviews of the literature (e.g. Marcia, 1993) have revealed only moderate success establishing a link between cognitive competence and identity status, with studies using more socially oriented measures of cognitive sophistication such as integrative complexity (Slugoski *et al.*, 1984) and skeptical doubt (Boyes and Chandler, 1992) tending to appear more promising than studies using more performance-based indices of formal operational thought (e.g. Leiper, 1981; Rowe and Marcia, 1981; Wagner, 1987). Additional research using measures that are more format and content appropriate thus has the potential to contribute to the classification of the link between cognitive competence and identity status.

The current study

The aim of the current study was to draw on both the critical constructivist and co-constructivist approaches to identity formation (with process-appropriate measures) to empirically investigate whether competence variables make a contribution to the exploration process beyond that of style variables and, if so, the nature of that contribution. In addition to drawing on differing conceptual frameworks in an effort to ensure theoretical diversity, an effort was also made to obtain a sample that was socio-demographically diverse with respect to gender, age, ethnicity, and setting.

Method

Participants

A total of 215 psychology students (60 males, 155 females) were recruited for this study, ranging in age from 18 to 25 years. The sample consisted of 103 Whites, 15 African-

Americans, 75 Hispanics, five Asians, six Native Americans, and 12 Others. Participants were recruited from two universities: 100 (33 males, 67 females) from a small, private university in upstate New York; and 115 (30 males, 85 females) from a large, urban public university in southern Florida.

The majority ($n=74$) of the Hispanic participants were recruited from the Florida sample, whereas the majority ($n=83$) of the non-Hispanic White participants were recruited from the New York sample. The mean age of the Florida sample was 22.2 years, with a standard deviation of 7.16, whereas the mean age of the New York sample was 19.5 years, with a standard deviation of 1.56. Because these age differences were statistically significant [$t(219.21)=3.83, p<0.001$], age was used as a covariate in all subsequent analyses.

Measures

Demographics. Participants provided their age, gender, year in school, and ethnicity on a brief demographic form. Because Hispanics and non-Hispanic Whites together comprised 83% of the sample, ethnicity was coded as Hispanic, Non-Hispanic White, or Other.

Identity status. The Ego Identity Process Questionnaire (EIPQ; Balistreri *et al.*, 1995) was used to identify participants' identity status. The EIPQ assesses exploration and commitment within four ideological domains (politics, religion, occupation, and values) and within four interpersonal domains (friendships, dating, sex roles, and family). This 32-item self-report measure uses a six-point Likert scale and consists of two exploration items and two commitment items per domain. The EIPQ yields a total score for exploration and a total score for commitment. The Cronbach's alpha value for the overall exploration scale has been reported as 0.76, and the test-retest reliability coefficient for this scale as 0.90 (Balistreri *et al.*, 1995). The commitment scale was used in combination with the exploration scale to assign participants to identity statuses. The Cronbach's alpha value for the commitment scale has been reported as 0.75 with a test-retest reliability coefficient of 0.76.

The EIPQ was developed using a six-point Likert-type rating scale. However, due to constraints involving the standard response sheets available to the authors, a five-point scale was used to collect the data for this questionnaire. For purposes of analyses, total scores on exploration and commitment were prorated to their original metric using the following quantitative transformation, Prorated Score: $x/80=y/96$, where x is the obtained score, y is the prorated score, 80 the maximum score on the five-point scale, and 96 the maximum score on the six-point scale. The converted medians obtained in this study (61.0 for exploration, 58.0 for commitment) are comparable to those obtained by Balistreri *et al.* (1995) in their study validating the EIPQ (66.5 for exploration, 62.0 for commitment).

The EIPQ assigns participants to one of four status categories by means of a median split technique. For both exploration and commitment, scores falling on or above the median were classified as "high", the remainder, "low". Identity status categories are assigned based on these median splits, using medians provided by Balistreri *et al.* (1995), adjusted for the five-point Likert scale used in this study. A person who is high on both the exploration and commitment scales was considered to be in the Achievement status. Someone who is high on exploration and low on commitment is judged to be in the Moratorium status. A respondent with the reverse pattern is considered to be Foreclosed. Someone low on both scales is placed in the Diffusion category.

Identity style. The Identity Style Inventory (ISI; Berzonsky, 1997) was used to assess participants' identity style. The ISI is a 40-item, group-administered questionnaire, for which participants rate each item on a five-point Likert scale. The ISI contains 11 items measuring the informational style, nine items measuring the normative style, 10 items measuring the diffuse/avoidant style, and 10 items measuring commitment. The commitment scale was not analyzed for this report.

Cronbach's alpha coefficients for the ISI scales have been reported as follows: Informational style, 0.70; Normative style, .66; and Diffuse/avoidant style, 0.76, with good test-retest reliabilities (Berzonsky, 1997). The alpha coefficients for our sample were: Informational style, 0.68; Normative style, .70; and Diffuse/avoidant style, 0.72.

Critical problem solving. The Critical Problem Solving Scale (Ferrer-Wreder *et al.*, in press) was used to assess participants' problem solving competence. The CPSS is a group-administered performance based measure in which participants' performances on four tasks are elicited in response to two hypothetical life-choice dilemmas with identity content relevance (a personal and an interpersonal dilemma) and used to index three problem solving processes. The responses are used to obtain the following four scores tapping the three problem-solving processes. *Creativity* is tapped by the Generation of Alternatives (GA) score, which is the total number of different and distinct alternatives generated for both dilemmas. *Suspension of judgment* is tapped by the Decentering, Positive Alternatives (DPA) and the Decentering, Negative Alternatives (DNA) scores (the total number of "cons" and "pros" each participant generated for her/his own "best" and "worst" alternatives). *Critical evaluation* is tapped by the Modification (MO) score (the number times a participant changes (modifies) his/her original choice and provides a "justification" for the change based on his/her previous pros and cons for that alternative). Responses are coded and scores are assigned by raters who are trained in coding responses to the CPSS. In the current study, 10 per cent of the responses were coded by all 10 raters to obtain reliability with the remainder of the responses scored individually. Interrater reliability in this study, for all four scores and across 10 raters, was 84 per cent. For the individual scores, the interrater reliability was 82 per cent for the GA score, 86 per cent for the DPA score, 81 per cent for the DNA score, and 87 per cent for the MO score.

Procedure

Participants were group administered the EIPQ, ISI, CPSS, and an informed consent form in a classroom setting. Demographic information was obtained as part of the EIPQ.

Results

Descriptive statistics

All continuous scores approximated a normal distribution except for the MO scale, which was positively skewed (Kolmogorov-Smirnoff $Z=6.35$, $p < 0.0001$)¹.

The identity status distribution in this sample was as follows: 39 participants were classified as Diffused (18.1% of the sample), 48 as Foreclosed (22.3%), 48 as Moratorium (22.3%), and 80 as Achieved (37.2%). There was no significant effect of age [$F(3, 211)=0.65$, ns] or year in school [$F(3, 211)=0.57$, ns] on identity status in this sample. Both

¹The MO scale was not used in subsequent analyses because it was not normally distributed.

gender [$\chi^2(3, 215)=8.61, p<0.04$] and ethnicity [$\chi^2(6, 215)=16.31, p<0.02$] were related to identity status. With respect to gender, 25.3 per cent of females, as opposed to 10.2 per cent of males, were classified into the Foreclosed status, whereas 27.1 per cent of males, as opposed to 14.8 per cent of females, were classified into the Diffused status. With respect to ethnicity, 31.0 per cent of Hispanics, as opposed to 19.5 per cent of non-Hispanic Whites, were classified as Foreclosed, whereas 26.5 per cent of non-Hispanic Whites, as opposed to 14.7 per cent of Hispanics, were classified as Moratorium. Gender and ethnicity² were thus entered as control variables in subsequent analyses.

Interrelationships between style and competence variables

Correlational analyses were used to investigate the interrelationship between the style and competence variables (and among the variables within each group). Table 1 presents the correlation matrix. The EIPQ exploration and commitment scores were also included in the matrix because: (a) exploration scores were used as the dependent variable in some analyses; and (b) exploration and commitment scores from the EIPQ were used to derive status assignments.³

The contribution of style and competence components to exploration

The analyses described in this section provided the opportunity to empirically investigate whether competence variables make a contribution to the exploration process beyond that of style variables and the nature of the contribution across all statuses. To do so, hierarchical multiple regression analyses were used to estimate the unique contribution attributable to the variables associated with each of the hypothesized exploration components (style and competence). The data analytic strategy was to conduct hierarchical multiple regression analyses using the EIPQ total exploration score as the dependent variable and with the demographic variables (age, gender, year in school, ethnicity and data source), CPSS variables (GA, DPA, and DNA), and ISI variables (Informational, Normative, and Diffuse/Avoidant) as the predictor variables.

Demographic variables (age, gender, year in school, ethnicity and data source) were entered into the regression hierarchy as the first block to serve as control variables, followed by the block of CPSS variables and the block of ISI variables. The order of entry of the blocks of variables was selected based on the expected relative strength of the competence and style variables as predictor variables. As noted previously, substantial empirical research has

²Because the majority of participants in this study were either Hispanic or non-Hispanic White, ethnicity was dummy coded into three dichotomous variables: White, Hispanic, and Other. Of these three dummy coded variables, only White and Hispanic were entered into the regression models as predictors. As Other as an ethnicity variable was comprised of a small group of extremely diverse and ethnically heterogeneous participants, their inclusion in the analyses would have rendered the results conceptually difficult to interpret.

³In addition to the correlational analyses, three exploratory factor analyses (principal components, varimax rotation) were also conducted to begin examine the factor structure of the two measures. The results provided preliminary evidence that the measures assess constructs that are empirically distinct. When factor analysed, the three ISI variables yielded a single factor (eigenvalue=1.30, 43.3% explained variance) with all three style scales loading on this factor (Informational, 0.75, Normative 0.37, Diffuse/Avoidant, -0.78); the three CPSS variables yielded a single factor (eigenvalue=1.68, 56.0% explained variance), with all three competence scales loading on this factor (GA, 0.77; DPA, 0.78; and DNA, 0.69); the six ISI and CPSS variables, when factor analysed together, yielded two factors: Factor 1 (eigenvalue=1.91, 31.9% explained variance) with positive loadings for all three CPSS scales (GA, 0.76; DPA, 0.71; and DNA, 0.63) and a negative loading for the Normative Style scale (-0.57); Factor 2 (eigenvalue=1.23, 20.5% explained variance) with a positive loading for the Diffuse/Avoidant style scale (0.79) and a negative loading for the Informational Style scale (-0.79). A complete description is available from the first author.

Table 1 Intercorrelation matrix among style and competence variables

	2	3	4	5	6	7	8
1. Informational Style	0.13	-0.27**	-0.08	-0.01	-0.06	0.57**	0.17*
2. Normative Style		-0.07	-0.32**	-0.14*	-0.22**	-0.16*	0.57**
3. Diffuse/Avoidant Style			0.09	0.16*	0.08	-0.15*	-0.23**
4. Generation of Alternatives				0.33**	0.43**	0.12	-0.37**
5. Decentering, Negative Alternatives					0.33**	0.13*	-0.17*
6. Decentering, Positive Alternatives						0.09	-0.29**
7. Exploration							-0.05
8. Commitment							

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

established the contribution of style to the exploration process, whereas the contribution of competence has been less clearly established in the literature. Consequently, the style variables were expected to account for the largest amount of explained variance, with the contribution of the competence variables less clearly specifiable in advance. The analytic strategy was therefore to enter the competence variables into the regression hierarchy first after the control variables to provide an estimate of what (if any) contribution the competence variables made beyond the control variables. The block of style variables were then entered to provide an estimate of the contribution of the style variables and what (if any) of the remaining contribution the competence variables was uniquely attributable to them. Table 2 presents the results of this analysis.

When the block of the control variables was entered into the regression hierarchy, the overall regression equation was not significant, and none of the variables in that block were significant predictors of exploration. With the addition of the block of CPSS variables, the overall equation indicated a trend [adjusted $R^2 = 0.08$, $F(8, 177) = 1.73$, $p < 0.09$; R^2 change = 0.06, $F(3, 172) = 3.18$, $p < 0.03$], with the Generation of Alternatives score emerging as a significant positive predictor of exploration ($\beta = 0.19$, $t = 2.58$, $p < 0.02$). With the addition of the block of ISI variables, the overall equation became significant [adjusted $R^2 = 0.47$, $F(11, 174) = 13.90$, $p < 0.001$; R^2 change = 0.37, $F(3, 169) = 39.68$, $p < 0.001$], with the Generation of Alternatives score ($\beta = 0.16$, $t = 2.12$, $p < 0.04$) remaining a significant predictor. Finally, both the Informational ($\beta = 0.59$, $t = 9.83$, $p < 0.001$) and Normative ($\beta = -0.23$, $t = -3.71$, $p < 0.001$) styles emerged as significant predictors of exploration.

The contribution of specific style and competence components to identity status

The data analyses described in this section provided an opportunity to extend the findings of the previous section as well as to begin to investigate in more depth the relative contribution of style and competence to identity status. The results reported in the previous section contributed to our understanding of role of style and competence to exploration as a general process but not to our understanding of the role of style and competence as exploration processes specific to each particular identity status. To this end, hierarchical multiple regression analyses were again used, only in this case to investigate the unique contribution of the variables associated with each of the specific exploration components (style and competence) to particular identity statuses. As in the previous analyses, the demographic

Table 2 Regression of exploration by style and competence

Block	Variables entered	Partial R^2	β (final step)	ΔR^2
Control				0.02
	Gender	0.01	0.03	
	Age	0.00	-0.01	
	Year in school	0.01	0.08	
	Ethnicity (White)	0.01	0.16	
	Ethnicity (Hispanic)	0.00	0.07	
Competence	Data source	0.00	0.09	
	Generation of Alternatives	0.02	0.16*	0.08
	Decentering Negative Alternatives	0.00	0.04	
	Decentering Positive Alternatives	0.01	0.11	
Style				0.37***
	Informational	0.30	0.59***	
	Normative	0.04	-0.22***	
	Diffuse/Avoidant	0.00	-0.04	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

variables, CPSS variables, and ISI variables were entered, in that order, as blocks. For purposes of these analyses, a dichotomous variable was created for each identity status to serve as the dependent variable for that status. These dichotomous variables were created for each status by assigning a score of 1 to each participant who was assigned to that status and a score of 0 to all other participants. The analyses described in this section thus provided the opportunity to estimate the unique contribution of style and competence to each identity status relative to all other statuses combined. Table 3 presents the results of these analyses.

Diffused status. When Diffused status was used as a dependent variable, the addition of the control and CPSS block variables did not make a significant contribution to accounting for membership in that status. When the ISI block variables were added to the regression equation, the result was a significant equation [adjusted $R^2=0.15$, $F(14, 200)=3.25$, $p < 0.001$; R^2 change= 0.14 , $F(3, 169)=9.98$, $p < 0.001$]. The beta weights for the equation indicated that Informational style score was a significant negative predictor of Diffused status ($\beta = -0.36$, $t = -4.75$, $p < 0.001$).

Foreclosed status. When membership in the Foreclosed status was used as a dependent variable, the addition of the control variables did not yield a significant equation. However, the beta weight for gender emerged as a significant predictor of Foreclosure ($\beta = 0.14$, $t = 2.07$, $p < 0.04$), with females more likely to be Foreclosed than males. The addition of the block of CPSS variables yielded a significant overall equation [adjusted $R^2=0.10$, $F(8, 172)=2.29$, $p < 0.025$; R^2 change= 0.05 , $F(3, 172)=3.71$, $p < 0.02$] with none of the individual CPSS beta weights reaching significance. The addition of the ISI variables yielded a significant equation [adjusted $R^2=0.18$, $F(14, 200)=3.91$, $p < 0.001$; R^2 change= 0.15 , $F(3, 169)=10.95$, $p < 0.001$]. The beta weights for the equation indicated that scores on both the Informational ($\beta = -0.28$, $t = -3.79$, $p < 0.001$) and Normative ($\beta = 0.32$, $t = 4.40$, $p < 0.001$) styles were significant predictors of Foreclosure, with Informational in a negative direction and Normative in a positive direction. The beta weight for gender remained significant and positive ($\beta = 0.14$, $t = 2.04$, $p < 0.05$).

Table 3 Regression of identity status by style and competence

Block	Variables entered	Partial R^2	β (final step)	ΔR^2
Diffused Control				0.05
	Gender	0.00	-0.07	
	Age	0.01	0.10	
	Year in school	0.00	-0.08	
	Ethnicity (White)	0.00	0.08	
	Ethnicity (Hispanic)	0.00	0.08	
	Data source	0.02	-0.22	
	Competence			0.02
	Generation of Alternatives	0.01	-0.11	
	Decentering Negative Alternatives	0.01	0.15	
Style	Decentering Positive Alternatives	0.00	0.01	
				0.14***
	Informational	0.11	-0.36***	
	Normative	0.00	-0.07	
Foreclosed Control	Diffuse/Avoidant	0.00	0.06	
				0.05
	Gender	0.02	0.14*	
	Age	0.00	0.08	
	Year in school	0.00	0.01	
	Ethnicity (White)	0.00	-0.09	
	Ethnicity (Hispanic)	0.01	-0.12	
	Data source	0.00	0.00	
	Competence			0.05*
	Generation of Alternatives	0.00	-0.08	
Decentering Negative Alternatives	0.01	-0.11		
Decentering Positive Alternatives	0.00	-0.07		
Style				0.15***
	Informational	0.06	-0.27***	
	Normative	0.09	0.32***	
	Diffuse/Avoidant	0.00	-0.03	
Moratorium Control				0.04
	Gender	0.00	-0.07	
	Age	0.00	-0.07	
	Year in school	0.01	0.09	
	Ethnicity (White)	0.00	-0.01	
	Ethnicity (Hispanic)	0.00	0.05	
	Data source	0.01	-0.18	
	Competence			0.05*
	Generation of Alternatives	0.02	0.21*	
	Decentering Negative Alternatives	0.00	-0.04	
Decentering Positive Alternatives	0.00	-0.03		
Style				0.14***
	Informational	0.03	0.20*	
	Normative	0.11	-0.37***	
	Diffuse/Avoidant	0.00	-0.01	
Achieved Control				0.05
	Gender	0.00	0.01	
	Age	0.00	-0.06	
	Year in school	0.01	-0.11	

Table 3 (Continued)

Block	Variables entered	Partial R^2	β (final step)	ΔR^2
Competence	Ethnicity (White)	0.01	0.16	0.02
	Ethnicity (Hispanic)	0.00	0.09	
	Data source	0.01	0.21	
	Generation of Alternatives	0.02	-0.23*	
	Decentering Negative Alternatives	0.00	0.03	
	Decentering Positive Alternatives	0.00	0.07	
Style	Informational	0.10	0.35***	0.13***
	Normative	0.01	0.11	
	Diffuse/Avoidant	0.00	-0.01	

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Moratorium status. When membership in the Moratorium status was used as a dependent variable, the addition of the control variables did not make a significant contribution to status. The addition of the CPSS variables produced a significant R^2 change [R^2 change=0.05, $F(3, 172)=2.87$, $p < 0.04$], although the overall model remained non-significant. When the CPSS variables were added, the Generation of Alternatives score was a significant positive predictor of Moratorium status ($\beta=0.20$, $t=2.54$, $p < 0.02$). When the ISI variables were added, both the Informational ($\beta=0.20$, $t=2.50$, $p < 0.02$) and Normative ($\beta=-0.37$, $t=-4.85$, $p < 0.001$) styles were again significant predictors. The Generation of Alternatives score ($\beta=0.21$, $t=2.14$, $p < 0.04$) remained a significant predictor, and the overall equation remained significant [adjusted $R^2=0.15$, $F(14, 200)=3.32$, $p < 0.001$; R^2 change=0.14, $F(3, 169)=10.35$, $p < 0.001$].

Achieved status. When membership in the Achieved status was used as a dependent variable, the addition of the control variables did not make a significant contribution to status. When the CPSS variables were added, the R^2 change was not significant, but the Generation of Alternatives score was a significant predictor of Achievement status, this time in a negative direction ($\beta=-0.17$, $t=-2.12$, $p < 0.04$), although the overall model was not significant. Finally, when the ISI variables were added, Informational ($\beta=0.35$, $t=5.17$, $p < 0.001$) style was a significant predictor, Generation of Alternatives ($\beta=-0.23$, $t=-2.23$, $p < 0.03$) remained a significant predictor, and the overall equation remained significant [adjusted $R^2=0.11$, $F(14, 200)=2.67$, $p < 0.005$; R^2 change=0.13, $F(3, 169)=8.64$, $p < 0.001$].

Discussion

The aim of the current study was to begin to shed light on the ways that specific exploration components are related to exploration in general and identity statuses in particular, especially with respect to the competence component. It was noted that a sizable literature has established a link between identity style and identity status, but the existence of a link between cognitive competence and exploration has been less clear. Thus, although it would

appear highly plausible that the process of exploration might be facilitated by higher forms of cognitive competence, the few possible results that have been reported in the literature have been less than promising and difficult to disentangle from potential measurement source issues.

This study provided the opportunity to begin to investigate in a more systematic way than previously possible whether or not competence variables make a contribution to the exploration process beyond that of style variables and the nature of that contribution. By drawing on two identity perspectives, each postulating differing but complementary exploration components (and with distinct component-appropriate measurement techniques), this study was able to empirically estimate (through the use of hierarchical regression analyses) the unique contribution of style and competence to overall exploration and to each identity status relative to all other statuses combined.

The relative contribution of style and competence to exploration and identity status

Within the limited range of theoretical perspectives (and associated measures) used in this study and limitations on sample size and diversity, the findings from the study indicate that although style variables tended to account for more variance, competence variables consistently accounted for a small but statistically significant proportion of unique variance. Moreover, the overall pattern of results from these analyses provided a cogent and plausible pattern indicating style and competence to be two distinct components of the exploration processes that operated in ways that were consistent with the differing theoretical expectations of both the identity approaches used in this study.

For example, with respect to the general process of identity exploration, the results provided support for the expectations of both perspectives. Two of the style variables and one of the competence variables contributed significantly to total score variance. Consistent with the critical constructivist perspective, the Informational and Normative styles were significantly related to total exploration score, with Informational in a positive direction and Normative in a negative direction. As expected, style variables generally accounted for more variance than competence variables. Similarly, consistent with the co-constructivist perspective, Generation of Alternatives was significantly and positively related to exploration.

With respect to the unique contribution of the variables associated with each of the specific exploration components (style and competence) to particular identity statuses, the results also provided support for the differing theoretical expectations of both perspectives. For example, the results of these within-group analyses indicated that style variables were the only measures significantly predictive of the diffusion and foreclosure statuses. Moreover, consistent with the theoretical expectations of the critical constructivist perspective, the pattern of results indicated that Informational style was significantly and negatively associated with both the diffused and the foreclosed status while the Normative style was associated with the foreclosed status in a positive direction. None of the competence variables were significantly predictive of either diffused or foreclosed status. Although it was neither clearly consistent nor inconsistent with the co-constructivist perspective, this finding does suggest future theoretical considerations. More specifically, it suggests that in the future, theoretical formulations of the role of competence in identity exploration might consider articulating more fully the differential role of competence variables, particularly for the diffused and foreclosed statuses, which are defined by a lack of exploration.

The results of the within group analyses for the moratorium and achieved statuses similarly provided support for the theoretical expectations of both perspectives, particularly with respect to the differing roles that style and competence play in identity formation processes. The results indicated that, again consistent with the critical constructivist perspective, the Informational and Normative styles were significantly related to the moratorium status, with Informational in a positive direction and Normative in a negative direction, while only Informational was significantly related to the Achieved status. In contrast to the findings with the diffused and foreclosed statuses, Generation of Alternatives was significantly related to both the moratorium and achieved statuses, though generally accounting for less variance than the style variables. In addition, Generation of Alternatives was positively related to Moratorium status but negatively related to Achieved status.

The availability of multiple identity perspectives with differing but complementary components of the exploration process and component-appropriate measures thus facilitates addressing theoretical issues that have been identified as important for the field. Additionally, these perspectives also help point to other potentially productive areas for fostering future theoretical and empirical advances concerning the process of identity exploration. The fact that style contributes significantly to placement in all four statuses while competence does not, for example, raises intriguing questions with respect to the interaction between the basic qualities of style and competence variables and the qualities that define the statuses. In this case, for example, the differences in the contribution of style and competence may exist, in part, because although both style and competence are conceptualized as process and individual-difference oriented variables, the concept of style appears to imply a more stable orientation. Style variables, consequently, may tend to be more trans-situational and generalize across statuses. Competence variables, particularly of the problem solving type, on the other hand, tend to come into play in solving particular problems and hence tend to be more situational. Consequently, competence variables may be more likely to come into play for those statuses that involve more specific and active types of problem solving processes, i.e. the moratorium and achieved statuses.

Measurement issues

The results of this study also help to disentangle potential measurement source issues. Although the study was not designed as a direct test of the degree to which content overlap between self-report measures of identity status and identity style may inadvertently capitalize on shared method variance and, consequently, over-estimate the linkages between these two constructs, it did provide a direct test of the contribution of the performance based competence measures to identity exploration and status relative to the self-report measures of style. Moreover, although the pattern of results indicated that the contribution of competence was modest when compared to the style measure, the absence of shared method variance between the self-report measure used to assess identity exploration and identity status and the performance-based measure of cognitive competence increases the likelihood that the obtained results accurately estimate (rather than over-estimate) the linkages between these two constructs.

Gender and ethnicity

Concerns about the impact of gender and ethnicity have recently come to the forefront in several literatures including the identity literature (e.g. Patterson *et al.*, 1992; Phinney and Rosenthal, 1992). The current study contributed to this ongoing discussion by investigating

the possible impact of gender and ethnicity on the variables used in the study. In the current study, an effort was made to obtain a sample that was socio-demographically diverse with respect to gender, age, ethnicity, and setting. Participants were drawn from two universities in two different settings (rural, residential, and urban, non-residential) with differing ethnicities (primarily non-Hispanic White *vs.* primarily Hispanic) and varying age means and ranges. All analyses investigated the potential effects of these variables.

The results of the analyses offer suggestions for future research, even though the effects of these variables tended to be somewhat limited, at least for the variables and populations used in this study. For example, the results indicated that both gender and ethnicity were significantly related to identity status with more females foreclosed and more males diffused and more Hispanics foreclosed and more non-Hispanic Whites in moratorium. The pattern of greater foreclosure in Hispanics is consistent with other findings of more foreclosure in ethnic minorities while the pattern of gender differences with respect to foreclosed in this study are more similar to pre-1977 studies as reviewed by Marcia (1993). Perhaps this reflects the traditional atmosphere of many Hispanic families. These findings are worthy of follow-up in future research.

Additional findings indicated that, although both gender and ethnicity were significant related to identity status classification, this effect carried over to the exploration variables only for gender in the foreclosed status. Although the apparent robustness of the gender effect for the foreclosed status might be limited to this particular sample's ethnic composition, it is finding that is also worthy of follow-up in future research. Future research should thus continue to investigate the impact of culture and ethnicity as well as gender by targeting samples with greater diversity in gender and ethnicity to test whether the findings obtained in this study will generalize to more diverse samples.

Practical implications

Empirical research that addresses such issues not only has theoretical and empirical significance but considerable practical significance as well. Specifically, the emergence of a growing interest in developing and evaluating intervention programs to facilitate the identity formation process (e.g. Archer, 1994) has called attention to the need for more detailed and specific knowledge of effective intervention strategies. Because exploration is seen as the "work" of identity formation (Grotevant, 1987) then, for example, increasing exploration would appear to be in many cases a useful intervention strategy. Thus, the development of workable and effective identity interventions requires knowledge concerning specific components of the exploration process (e.g. style, competence, etc.) and how such processes are related to identity status in the normal course of development. An understanding of exploration components and how they operate would help to ensure treatment integrity and specificity in such interventions. Moreover, an empirically derived knowledge base would be useful in addressing general and practical questions regarding the development of effective interventions. Examples of such questions include whether it is more useful to focus on developing "generic" intervention strategies that can be used with any population, or more effective to target specific types of processes (style, competence, etc.) when working with specific populations (diffused, foreclosed, moratorium).

Conclusion

The overall patterns of the findings from this study appear to be consistent with Grotevant's (1987) process model of exploration and with the claim that exploration is a multi-dimensional process comprised of multiple components. These findings also provide support for the utility of both of the theoretical approaches to identity formation used in this study. The pattern of these quantitative results validates the richness of the experience reported in the clinical/qualitative literature that gave rise to the construct of exploration.

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