ABSTRACT. The authors examined the hypothesis that psychosocial identity development is related to need for cognition (NFC), a social–cognitive individual-difference variable defined as the desire to engage in effortful thinking (J. T. Cacioppo, R. E. Petty, J. Feinstein, & W. Jarvis, 1996). They administered 2 measures of psychosocial identity—a scale from the Extended Objective Measure of Ego Identity Status 2 (EOMEIS-2; G. R. Adams, L. Bennion, & K. Huh, 1989) and the Identity subscale of the Erikson Psychosocial Stage Inventory (EPSI; D. A. Rosenthal, R. M. Gurney, & S. M. Moore, 1981)—and the NFC scale to 200 incoming college students and approximately half of those students about 15 months later. Results indicate that people with higher psychosocial identity levels had higher NFC scores at both time periods. In addition, higher Time 1 NFC scores were related to higher Time 2 EOMEIS-2 achieved scores and lower Time 2 foreclosure and diffusion scores, and changes in NFC over the course of the study were positively correlated with EPSI changes and negatively correlated with changes in EOMEIS-2 foreclosure and diffusion scores. Results provide support for the importance of a cognitive and motivational individual-difference variable in the development of a unique and cohesive identity.

Keywords: identity development, individual differences, need for cognition

ERIKSON (1963) CONCEPTUALIZED THE DEVELOPMENTAL PROCESS as a progression through a series of eight psychosocial crises. Beginning at birth and continuing throughout life, people must confront a series of issues that are common to all but dealt with uniquely by each individual. We examined how the normal psychosocial developmental process that occurs during adolescence—the search for a cohesive sense of identity—is related to an individual-difference variable called need for cognition (NFC; Cacioppo, Petty, Feinstein, & Jarvis, 1996). The authors are grateful to David Bishop and Cynthia Bane for their feedback and input on the preparation of this article. Address correspondence to David Njus, Luther College, Department of Psychology, Decorah, IA 52101, USA; njusdavi@luther.edu (e-mail).
1996), which refers to the desire to engage in effortful thinking and is conceptually relevant to the process of resolving the adolescent identity crisis. However, before we specifically address the NFC–identity link, we must describe the specifics of the Eriksonian identity crisis and a relevant theoretical elaboration of that stage.

The central psychosocial crisis of the adolescent years is identity versus role confusion (Erikson, 1963). During the transition from childhood to adulthood, adolescents struggle to find an integrated sense of self; identify their roles, values, talents, and beliefs; and blend them into a cohesive and unique sense of who they are.

The growing and developing youths, faced with this physiological revolution within them, and with tangible adult tasks ahead of them are now primarily concerned with what they appear to be in the eyes of others as compared with what they feel they are, and with the question of how to connect the roles and skills cultivated earlier in life with the occupational prototypes of the day. (Erikson, p. 261)

Successful resolution of this stage leads to identity achievement, which is the attainment of a person’s own identity. According to Erikson, failure at this stage of development leads to role confusion or diffusion, in which a person lacks a cohesive sense of self and appears adrift, aimless, and without purpose.

Marcia (1993) elaborated Erikson’s (1963) approach to identity development, proposing four identity statuses that are differentiated by the degree to which a person has undergone a crisis (i.e., the process of identity exploration) and the degree to which a person has committed to a sense of self. Individuals who have undergone identity exploration and committed to an identity have successfully navigated the Eriksonian psychosocial crisis and are termed identity achieved. Those who have neither explored nor committed to an identity are termed identity diffused and are characterized by the same sense of being lost and adrift as Erikson described. The moratorium identity status is characterized by the presence of the crisis or search process and the absence of commitment to an identity. Although the nature of this protracted search may lead individuals to feel anxious because they are uncertain about their identity, the process is actually fairly healthy for adolescents; these adolescents are not only aware of their lack of identity but also actively engaged in the exploration process that is necessary to forge a unique identity. Last, people who have committed to an identity without active exploration—that is, people who have committed to someone else’s values, beliefs, and roles—are in the identity foreclosed status. At first blush, identity foreclosed individuals may appear to have an achieved identity. However, because their identity is not based on self-exploration, but rather on someone else’s views and beliefs, these people—though adamant about what they believe—tend to be less secure in their identities than are achieved people.

These identity statuses are not conceptualized as stages or substages through which a person necessarily moves from the least to the most sophisticated status.
(i.e., from diffused to foreclosure to moratorium to achieved). However, there is at least one aspect of Marcia’s (1993) conceptualization that incorporates a stage-like sequencing. Identity achievement is not attainable without the crisis-based search and exploration associated with the moratorium process. Therefore, the moratorium and achieved statuses are conceptualized as developmentally more sophisticated than are the foreclosed and diffused statuses; this theoretical distinction has received empirical support (Serafini & Adams, 2002).

The idea that the identity development process may be related to individual differences in traits or other dispositional variables is not new. For example, Zuo and Tao (2002) have found that in a sample of gifted children, traits such as purposiveness and low levels of inferiority were associated with successful identity development. Clancy and Dollinger (1993) found evidence that identity status was related to several of Costa and McCrae’s (1992) Big 5 personality traits. Specifically, they found evidence that less sophisticated identity statuses, particularly the diffused status, were associated with lower scores on the Conscientiousness, Agreeableness, Openness, and Extraversion scales. In the present study, we aimed to investigate the role of another possible individual-difference predictor of identity development: NFC.

NFC is an individual-difference variable (Cacioppo et al., 1996) that grew out of Petty and Cacioppo’s (1986) work with the elaboration-likelihood model of persuasion. It is conceptualized as a person’s desire to engage in effortful thinking. According to Cacioppo et al., all people try to make sense of the world in which they live, but low and high NFC individuals do so in different ways. High NFC individuals “naturally tend to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships, and events in the world” (p. 198) and have “active, exploring minds” (p. 243). Although not necessarily less intelligent or less capable of exerting themselves cognitively, low NFC individuals prefer not to engage in effortful and complex thought. Rather, to understand their environment, low NFC individuals are more likely to rely on less effortful peripheral cues, such as cognitive heuristics or the advice of others.

NFC, then, is conceptually linked to identity development. As previously mentioned, the moratorium process involved in acquiring an achieved identity entails a search among various roles and possible selves to find a unique, cohesive self. NFC should facilitate this search process in that high NFC individuals should be more likely to think about and explore aspects of identity sooner than should low NFC individuals. In other words, the normal developmental process of identity achievement should occur and be accomplished sooner in those inclined to do the kind of high NFC exploring that is part and parcel of the moratorium process.

Although Cacioppo et al. (1996) conceptualized NFC as an individual-difference variable, it is important to note that this variable can change for people across time. As Cacioppo et al. noted, NFC is “derived from past experience, buttressed by accessible memories and behavioral histories, manifest in current
experience, and influential in the acquisition or processing of information relevant to dilemmas or problems” (p. 197). Therefore, a person’s level of NFC can change as he or she experiences life events. This capacity for change is relevant to the present study because adolescents who leave high school and make the transition to college could conceivably experience a change in their desire to engage in effortful thought.

Consistent with the link between identity and NFC that we proposed, Berzonsky and Sullivan’s (1992) study found a relation between NFC and social–cognitive aspects of identity style. Specifically, they found that NFC was positively correlated with an information-oriented cognitive style, which is characterized by seeking, elaborating on, and using relevant information to make decisions, whereas NFC was negatively correlated with the diffuse–avoidant cognitive style, which is characterized by “defensive maneuvering: a reluctance to face up to problems and conflicts” (Berzonsky & Sullivan, p. 141). Also consistent with our hypothesis of a NFC–identity development link is Low’s (1999) study that found that identity-achieved people had a more complex self-concept (i.e., more numerous and more elaborately structured aspects of the perceived self) than did identity-foreclosed people.

Although consistent with an association between NFC and identity development, none of the aforementioned research explicitly links these two constructs. In the present study, we explored this hypothesized linkage. Specifically, we hypothesized that adolescents with higher levels of NFC would score at higher levels of Eriksonian psychosocial identity development because they are more likely to have explored aspects of identity. Related to Marcia’s (1993) elaboration of Erikson, we hypothesized that high NFC individuals would more likely be characterized by the two more sophisticated identity statuses that involve an active identity search (i.e., moratorium, achieved) than by the less sophisticated statuses (i.e., diffused, foreclosed).

Method

Participants and Procedure

In the first phase of the study, we mailed a packet of questionnaires with a postage-paid return envelope to 400 randomly selected incoming college freshmen the July before they started classes at a small liberal arts college in the Midwest. Of these, 200 students (146 women, 54 men) returned completed packets. In the following fall semester, when these students were in their sophomore year, we contacted them and asked them to complete the second round of questionnaires. For this second wave, 105 participants completed the packet of questionnaires, though because of an error in coding, we were able to match only 87 participants (69 women, 18 men) with their Time 1 data. Thus, there were 105 usable data packets for Time 2 analyses and 87 usable packets for longitudinal analyses.
Materials

Data packets for Time 1 included a demographic questionnaire and at both Times 1 and 2 included the following scales.

**NFC.** The NFC Scale (Cacioppo et al., 1996) is an 18-item scale that measures participants’ desire to engage in effortful thought. Participants responded to items such as “I would prefer complex to simple problems” and “The notion of thinking abstractly is appealing to me” on a 5-point Likert-type scale ranging from 1 (extremely uncharacteristic) to 5 (extremely characteristic). In a review of the literature on NFC, Cacioppo et al. reported extensive evidence for the convergent and discriminant validity of NFC. For example, the construct is positively related to formulation of complex attributions and amount of attention given to cognitive tasks, and it is negatively related to dogmatism and the valuing of attractiveness and popularity in others’ identity. In addition, NFC explains variation in performance beyond that of measures of cognitive ability. In their review, Cacioppo et al. reported for the 18-item scale reliability coefficients ranging from .83 to .97. In the present study Cronbach’s alpha reliability of the NFC scale was .90.

**Erikson Psychosocial Stage Inventory (EPSI).** The EPSI identity subscale (Rosenthal, Gurney, & Moore, 1981) consists of 12 items and provides a single identity score for each participant. The identity items (e.g., “The important things in life are clear to me”) are measured on a 5-point Likert-type scale ranging from 1 (hardly ever true) to 5 (almost always true). Rosenthal et al. provided evidence for the construct validity of the EPSI by showing its positive relation to a measure of psychosocial maturity and by providing evidence that younger adolescents score lower on the EPSI scales (including the identity subscale) than do older adolescents. Rosenthal et al. reported reliability coefficients of .71 and .78 for the subscale in two different administrations of the test. In the present study, Cronbach’s reliability coefficient for the EPSI identity subscale was .74.

**Extended Objective Measure of Ego Identity Status 2 (EOMEIS-2).** The ideology subscale of the EOMEIS-2 (Adams, Bennion, & Huh, 1989) consists of 32 items measured on a 6-point Likert-type scale ranging from A (strongly agree) to F (strongly disagree). The scale consists of four subscales, one for each status that Marcia (1993) defined. Each participant can be classified into an identity status based on his or her four subscale scores. If a participant’s score on a subscale falls one or more standard deviation higher than the norm-group mean for that subscale, then he or she is classified as in that status. If a participant is at or above one standard deviation higher than the mean for two or more subscales, then he or she is classified as being in the lesser of the two psychosocially sophisticated statuses (in which achieved is the most sophisticated, followed by moratorium, then foreclosed, then diffused). If a participant is not one standard deviation above
the mean on any of the subscales, then he or she is classified in a fifth status called *low-profile moratorium*. Although the EOMEIS-2 manual distinguishes *pure* from *low-profile moratorium*, Adams et al. (1989) reported that people who are classified as *pure* and *low-profile* are “very similar in attitudes, values, behaviors, and developmental trajectories” (p. 26). Therefore, for the present study, we combined those people into one identity category. Adams et al. provided evidence for the factor structure of the EOMEIS-2 and for its convergent and discriminant validity and reported reliabilities for the four EOMEIS-2 subscales ranging from .62 to .75. In the present study, Cronbach’s alpha reliabilities ranged from .63 to .82.

**Results**

There were no differences between men and women at Times 1 or 2 on any of the following: the EPSI identity measure; the EOMEIS-2 achieved, moratorium, foreclosed, and diffused scales; the NFC measure (all $p > .05$). As previously mentioned, there was considerable attrition from Time 1 to Time 2 (200 participants vs. 105 participants). Therefore, a mortality (attrition) threat to validity exists; the people who chose not to participate in the second part of data collection may, in some way, have differed from those who participated in both parts (Cook & Campbell, 1979). To explore this possibility, we compared Time 1 scores for those who participated in both parts of the study with those who participated in only the first part on the EPSI identity scale; the EOMEIS-2 achieved, moratorium, foreclosed, and diffused scales; and the NFC scale. Results showed no significant differences between the two groups on any of these scales (all $p > .05$). Although these results do not conclusively eliminate attrition as a threat to validity, they provide a measure of confidence that there were no meaningful differences between the two groups on the major variables of interest.

**Time 1 NFC and Identity**

As previously mentioned, the identity scale of the EPSI does not categorize people into distinct identity statuses. Rather, the EPSI provides a score that falls along a continuous scale from low to high identity development. We compared the NFC scores for people who scored high on the EPSI (i.e., those in the top quartile) to NFC scores for those who scored low on the EPSI (i.e., those in the bottom quartile). As can be seen in Table 1, participants who scored high on the EPSI had higher mean NFC scores than did those who scored lower on the EPSI, $t(107) = 2.35, p < .05, d = .45$. Results from the EOMEIS-2 also aligned with our predictions. Participants in the achieved and moratorium identity statuses (i.e., the two that had undergone or were undergoing the identity crisis) had significantly higher mean NFC scores than did participants in the foreclosed and diffused identity statuses, $t(196) = 2.66, p < .05, d = .38^1$. 
Consistent with Time 1 data and as we had predicted, the NFC scores for people who scored high on the EPSI (i.e., those in the top quartile) were significantly higher than were the NFC scores for those who scored low on the EPSI (i.e., those in the bottom quartile), \(t(58) = 2.69, p < .05, d = .69\).

Similarly, participants in the two more sophisticated of Marcia’s (1993) identity statuses, as measured by the EOMEIS-2 (achieved, moratorium), had higher mean NFC scores than participants in the two less sophisticated identity statuses (foreclosed, diffused). Although this difference only approached the conventional level of statistical significance, the results were in line with predictions and consistent with other results from Times 1 and 2, \(t(101) = 1.96, p < .10, d = .39\). (see Table 2 for Time 2 scores of high and low NFC participants on the EPSI and EOMEIS-2 scales).

### Time 2 NFC and Identity

**TABLE 1. Scores for High and Low Need for Cognition (NFC) Participants on Two Measures of Psychosocial Identity at Time 1**

<table>
<thead>
<tr>
<th>Time 1 NFC</th>
<th>High</th>
<th>Low</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>EPSI identity</td>
<td>67.1a</td>
<td>10.6</td>
<td>62.8a</td>
</tr>
<tr>
<td>EOMEIS-2 identity</td>
<td>65.2a</td>
<td>11.8</td>
<td>60.4a</td>
</tr>
</tbody>
</table>

*Note. All t tests (and subsequent effect sizes) have been corrected for unreliability of measures. EPSI = Erikson Psychological Stage Inventory (Rosenthal, Gurney, & Moore, 1981). EOMEIS-2 = Extended Objective Measure of Ego Identity Status 2 (Adams, Bennion, & Huh, 1989). aMeans differ at the \(p < .05\) level.

**TABLE 2. Scores for High and Low Need for Cognition (NFC) Participants on Two Measures of Psychosocial Identity at Time 2**

<table>
<thead>
<tr>
<th>Time 2 NFC</th>
<th>High</th>
<th>Low</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>EPSI identity</td>
<td>66.5a</td>
<td>10.8</td>
<td>59.7a</td>
</tr>
<tr>
<td>EOMEIS-2 identity</td>
<td>64.4b</td>
<td>11.8</td>
<td>59.8b</td>
</tr>
</tbody>
</table>

*Note. All t tests (and subsequent effect sizes) have been corrected for unreliability of measures. EPSI = Erikson Psychological Stage Inventory (Rosenthal, Gurney, & Moore, 1981). EOMEIS-2 = Extended Objective Measure of Ego Identity Status 2 (Adams, Bennion, & Huh, 1989). aMeans differ at the \(p < .05\) level. bMeans differ at the \(p < .10\) level.
Longitudinal Association Between NFC and Identity

Our hypothesis stated that high NFC individuals should be more likely to think about and explore aspects of identity sooner than should low NFC individuals. The above analyses examined this NFC–identity association at two separate time periods. There were two other ways of testing this hypothesis that were both longitudinal. The first way involved looking at high NFC individuals at Time 1 to determine if they had higher Time 2 identity scores than those who were lower in NFC at Time 1. The second way of looking at the NFC–identity linkage involved examining participants’ changes in NFC between Times 1 and 2 to see if those changes were related to identity development.

Analyses from the first longitudinal method of testing the NFC–identity association revealed partial support for our hypothesis. Although high NFC participants at Time 1 (i.e., those in the top quartile) did not have significantly higher Time 2 EPSI identity scores than did low NFC participants at Time 1 (i.e., those in the bottom quartile), \( t(45) = .41 \) (see Table 3), and participants with high Time 1 NFC scores did not have higher Time 2 EOMEIS-2 moratorium scale scores than did those with low Time 1 NFC scores, \( t(45) = .71 \), other analyses supported the hypothesized association. Compared with Time 1 low NFC participants, Time 1 high NFC participants had significantly lower EOMEIS-2 foreclosed scale scores, \( t(45) = 3.22, p < .05, d = .94 \), and diffused scale scores, \( t(45) = 2.74, p < .05, d = .80 \). High NFC participants at Time 1 also had higher Time 2 EOMEIS-2 achieved scores than did low NFC participants at Time 1, though this difference only approached conventional levels of significance, \( t(45) = 2.19, p < .10, d = .64 \).

<table>
<thead>
<tr>
<th>Time 2</th>
<th>High</th>
<th>Low</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPSI Identity</td>
<td>48.3</td>
<td>47.5</td>
<td>—</td>
</tr>
<tr>
<td>EOMEIS-2 identity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achieved</td>
<td>34.9(^a)</td>
<td>32.3(^b)</td>
<td>.64</td>
</tr>
<tr>
<td>Moratorium</td>
<td>25.0</td>
<td>26.3</td>
<td>—</td>
</tr>
<tr>
<td>Foreclosed</td>
<td>15.5(^a)</td>
<td>19.8(^a)</td>
<td>.94</td>
</tr>
<tr>
<td>Diffused</td>
<td>19.6(^a)</td>
<td>23.5(^a)</td>
<td>.80</td>
</tr>
</tbody>
</table>

Note. All \( t \) tests (and subsequent effect sizes) have been corrected for unreliability of measures. EPSI = Erikson Psychological Stage Inventory (Rosenthal, Gurney, & Moore, 1981). EOMEIS-2 = Extended Objective Measure of Ego Identity Status 2 (Adams, Bennion, & Huh, 1989). \(^a\)Means differ at \( p < .05 \) level. \(^b\)Means differ at the \( p < .10 \) level.
The second longitudinal method involved examining changes in both constructs across time. If our hypothesis about the relation between NFC and identity is correct, there should be evidence that these two constructs vary together. We found partial support for this relation. Changes in NFC between Times 1 and 2 were positively correlated with changes in EPSI identity, $r(86) = .40, p < .001$, and negatively correlated with changes in EOMEIS-2 foreclosure scale scores, $r(86) = -.24, p < .05$. NFC changes were also negatively correlated with EOMEIS-2 diffusion scale scores, though this relation only approached conventional levels of statistical significance, $r(85) = -.19, p < .10$. Changes in NFC were not significantly correlated with changes in EOMEIS-2 achieved scores, $r(86) = .17$, or moratorium scores, $r(86) = -.03$.

### Discussion

Our hypothesis was that high NFC participants would be more likely than would low NFC participants to explore aspects of identity and would, therefore, be at a higher level of identity development. Our results, using two separate measures of psychosocial identity, provided support for this hypothesis. First, in our analysis of Time 1 data, we found that participants who had more sophisticated levels of identity development, as measured by the EPSI and the EOMEIS-2, had higher NFC scores. We found the same pattern in the Time 2 data, which were collected 15 months later.

In addition, high NFC scores at Time 1 were related to lower EOMEIS-2 Time 2 foreclosure and diffusion scores and higher achievement scores, though the latter association only approached the conventional level of statistical significance. Last, supportive of our hypothesis, changes in NFC across the 15 months of the study were positively correlated with EPSI score changes and negatively correlated with EOMEIS-2 foreclosure and diffusion score changes, though again, this latter relation only approached the conventional level of statistical significance.

We find it interesting that Time 2 EOMEIS-2 achieved and moratorium scores were not strongly related to Time 1 NFC scores, nor were changes across time in NFC strongly related to changes in achieved and moratorium scale scores. It is unclear from these data whether this indicates that NFC is in fact more strongly (and negatively) related to the scales that measure the two less sophisticated identity statuses or whether this reflects scale construction issues for the EOMEIS-2 achieved and moratorium scales.

Erikson (1963) suggested that psychosocial identity development is a normal part of lifespan development. However, not all people resolve this crisis in the same way or at the same rate, and some never successfully resolve it. Of theoretical interest is what factors facilitate the successful resolution of this stage. Erikson emphasized that there was a strong social aspect to the development of a cohesive identity, specifically “with the opportunities offered in social roles” (p. 261). Although the place of social roles in the process of identity development
may well be important, our research suggests that there is also a place for an individual-difference perspective in this developmental process.

As previously mentioned, research has indicated that variations in the normal developmental process are related to certain individual-difference variables, such as several of the Big 5 personality dimensions (Clancy & Dollinger, 1993) and complexity of self-concept (Low, 1999). Our hypothesis was that another individual-difference variable, NFC, is also related to identity development: specifically, that people with higher NFC would be more likely to undergo the search necessary for identity development. Taken as a whole, the results from our study indicate a positive linkage between NFC and psychosocial identity development and are consistent with the hypothesis that higher levels of NFC facilitate identity development.

Nonetheless, the conclusions from this first examination of an NFC–identity association should be viewed as tentative and not conclusive. Further examination of the relation between NFC and identity development—using different populations of adolescents (e.g., adolescents not bound for college, younger adolescents still in high school) or employing different measures of identity development—could provide more definitive evidence that a partial explanation for what accounts for differences in adolescent identity development is the desire to engage in effortful thought.

NOTE

1. Although not part of our specific hypothesis regarding the association between NFC and identity, it is theoretically plausible that NFC differences may exist between the two more sophisticated identity statuses (i.e., achieved, moratorium) and between the two less sophisticated statuses (i.e., foreclosed, diffused). Analyses of Time 1 data revealed that for achievement and moratorium, achieved people had higher NFC scores than did those in the moratorium status, 70.6 versus 63.5, t(149) = 3.25, p = .001. Significant differences existed neither between foreclosed and diffused at Time 1 nor between achieved and moratorium or foreclosed and diffused at Time 2 (all ps > .20).

AUTHOR NOTES

David Njus is an associate professor in the Department of Psychology at Luther College. His research interests are identity development, attachment, and the psychology of religion. Dan R. Johnson is a graduate student at the University of Oklahoma and an employee of the Center for the Study of Human Operator Performance.

REFERENCES


*Original manuscript received June 28, 2007  
Final version accepted January 29, 2008*

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**Erratum**

In the September 2008 issue of *The Journal of Psychology: Interdisciplinary and Applied* (Volume 142, Number 5), the order of authors for the article, “Motivation and Flow: Toward an Understanding of the Dynamics of the Relation in Architecture Students,” was printed incorrectly. The correct order of authors is Maura J. Mills and Clive J. Fullagar. The editorial staff of *The Journal of Psychology: Interdisciplinary and Applied* regrets this error. The article should be referenced as follows:

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