Testing a process-oriented model of identity development in South Korean young adults

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Abstract

The five-dimensional process-oriented model of identity development delineates the formation and evaluation cycles of identity and includes ruminative exploration. In South Korea, individualistic and collectivistic cultures coexist, and such culture may influence the identity development process of young adults. However, identity development in Korean young adults has not been studied abundantly. In particular, the five-dimensional model of identity has never been used to study a Korean sample. In the present study, we tested the applicability of the five-dimensional model of identity with South Korean young adults between ages 19 and 25 ($N = 548$; $M_{age} = 22.72$; $SD_{age} = 1.93$; 44.2% men). Specifically, we examined the measurement model of the Dimensions of Identity Development Scale (DIDS) and nomological net of the identity dimensions. Further, we conducted a cluster analysis to derive identity statuses. Results indicated that the five-factor model of the DIDS could be applied in our sample. The identity dimensions were related to each other and with external variables in ways that were mostly consistent with previous studies. Exploration in breadth and exploration in depth's relations with commitment making, identification with commitment, and psychosocial functioning, which have not been consistent in previous studies, were positive. Finally, we identified five identity status clusters that resembled statuses identified in previous studies, but further research would be needed to ensure comparability.

Keywords Identity process · Identity status · Psychosocial functioning · Identity style · Cluster analysis · South Korea

In many modern developed countries, where individuals are given the freedom to determine who they are and how they will live, developing a sense of identity is an important part of the transition into adulthood (Côté, 2009). Identity development occurs throughout a person's lifespan, but it can be particularly salient to adolescents and young adults (Erikson, 1968). To understand how life paths are influenced, both positively and negatively, social scientists have studied identity development for several decades (Vignoles et al., 2011). Process-oriented models of identity, such as the dual-process model (Luyckx et al., 2008), have been instrumental in such research.

The sociocultural contexts in which people live have powerful impacts on identity development, and the processes of identity development and associated outcomes may vary depending on societal values and norms (Côté, 2009). Therefore, cultural diversity must be considered when conducting identity development research (Cheng & Berman, 2012). The present study was conducted in the context of South Korea, where there has been a dearth of research on identity processes. As a step toward promoting active identity research in South Korea, we applied the process-oriented, five-dimensional model of identity to South Korean young adults for the first time.

The Process-Oriented Five-Dimensional Model of Identity

Since Erikson's psychosocial development theory, identity development has been considered an important construct in understanding the development of personality in adolescence and early adulthood (Erikson, 1968). Marcia's identity status paradigm that defined four identity statuses (diffusion, foreclosure, moratorium, and identity achievement), using exploration and commitment as two key processes, has been

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highly instrumental in empirical research (Marcia, 1966). However, there were criticisms regarding its developmental implications and precision. Associations between the four identity statuses and personality characteristics have been established in many studies; however, the developmental sequence of the statuses has not been clarified (Waterman, 1982). Several scholars pointed out that the identity statuses are only useful for categorizing individuals and do not capture the dynamic process of identity formation (Bosma, 1985; Grotevant, 1987; Meeus, 1996). They suggested that different aspects of exploration, such as the exploration of alternatives before making commitments and that of information regarding current commitments, should be differentiated (Grotevant, 1987; Meeus, 1996). It was also suggested that commitment should be divided into the making of commitments and feeling certainty about a commitment (Bosma, 1985).

In light of the criticisms, Luyckx et al. (2006) extended Marcia's paradigm to posit a process-oriented model of identity involving processes of commitment formation and commitment evaluation. Instead of a model with two process dimensions, they suggested one with four identity development process dimensions: exploration in breadth (EB), commitment making (CM), exploration in depth (ED), and identification with commitment (IC). EB refers to exploration in the formative cycle and is the search for various alternatives to which one may commit. CM is the formation of initial commitments, which may occur as the result of EB. ED is the exploration process involved in the evaluative cycle. It is the search of information pertinent to the commitment chosen through EB and evaluation of the commitment. Through ED, individuals can reach IC, the feeling of certainty about one's commitments. The dimension of ruminative exploration (RE) was subsequently added to this model to reflect the maladaptive aspect of prolonged identity exploration (Luyckx et al., 2008). RE refers to continuous contemplation about alternatives without being able to make a commitment, leading to a state of being stuck in the exploration process and not proceeding to the identity development process.

The five-dimensional model of the identity development process suggested by Luyckx et al. (2008) has been applied to research on identity development of various youth populations through the use of the Dimensions of Identity Development Scale (DIDS). In studies using samples of Belgian, Italian, American, French, Swiss, Japanese, and Filipino adolescents and young adults, the five-factor structure of the DIDS was confirmed (Crocetti et al., 2011; Luyckx et al., 2008; Nakama et al., 2014; Pesigan et al., 2014; Schwartz et al., 2011; Zimmermann et al., 2015). Studies that aimed to test the DIDS on other populations, such as Finnish, Greek, and Georgian youth, found that ED can be further divided into two sub-processes (Mannerström et al., 2017; Mastrotheodoros & Motti-Stefanidi, 2017; Skhirtladze et al., 2016). The processes were reflective exploration in-depth—

wherein individuals seek in-depth information about a commitment—and reconsideration of commitment—wherein individuals explore alternative identities while still maintaining a set of commitments. Considering that previous studies provided two potential factor structures of the DIDS, the first aim of the present study was to ascertain which of the five- or six-factor models could be replicated in our sample.

The Nomological Network of the Dimensions of Identity Development

The dimensions of identity development have been examined for relations between themselves and with related constructs (Crocetti et al., 2011; Luyckx et al., 2008; Mannerström et al., 2017; Mastrotheodoros & Motti-Stefanidi, 2017; Nakama et al., 2014; Pesigan et al., 2014; Skhirtladze et al., 2016; Zimmermann et al., 2015). The second aim of the present study was to examine those relations in the context of South Korean young adults. We were interested in investigating whether the relations that were consistently found in previous studies that used the DIDS in different countries could also be found in the present study and what relations would exist between variables that were inconsistently associated in previous studies.

Across studies that have tested the DIDS in different countries, RE has been found to be consistently negatively correlated with CM and IC (e.g., Luyckx et al., 2008). This relation is consistent with theory as prolonged maladaptive exploration of identity is theorized to disturb identity formation. Further, strong positive correlations have been consistently found between CM and IC and between EB and ED (Crocetti et al., 2011; Luyckx et al., 2008; Nakama et al., 2014; Pesigan et al., 2014; Zimmermann et al., 2015). In studies using the six-factor model of the DIDS, EB has been found to be positively correlated with both reflective exploration in depth and reconsideration of commitment (Mannerström et al., 2017; Mastrotheodoros & Motti-Stefanidi, 2017; Skhirtladze et al., 2016).

Correlations between RE and EB and between RE and ED found in previous studies have not been as consistent. In Italy, Belgium, Japan, and the Philippines, RE was moderately positively correlated with both EB and ED (Crocetti et al., 2011; Luyckx et al., 2008; Nakama et al., 2014; Pesigan et al., 2014). However, in France and Switzerland, RE was weakly positively correlated with EB but moderately positively correlated with ED (Zimmermann et al., 2015). In Finland, the correlation between RE and reflective exploration in depth was not significant, whereas in Greece and Georgia, the correlation was negative (Mannerström et al., 2017; Mastrotheodoros & Motti-Stefanidi, 2017; Skhirtladze et al., 2016). In the same samples, RE was positively correlated with reconsideration of commitment (Mannerström et al., 2017;

Mastrotheodoros & Motti-Stefanidi, 2017; Skhirtladze et al., 2016). Correlations of CM or IC with EB or ED have also been inconsistent across previous studies. In Belgian adolescents, CM and IC were significantly positively correlated with EB and ED; however, in Belgian young adults, CM and IC were only weakly positively correlated with ED and not with EB (Luyckx et al., 2008). In France and Switzerland, conversely, CM and IC were only weakly positively correlated with EB and not ED (Zimmermann et al., 2015). Like with Belgian adolescents, in Italy, Japan, and the Philippines, CM and IC were positively correlated with EB and ED (Crocetti et al., 2011; Nakama et al., 2014; Pesigan et al., 2014).

Regarding relations between the dimensions of identity development and external constructs, variables related to psychosocial functioning have frequently been investigated (Meeus et al., 1999), including depression, self-esteem, anxiety, psychological well-being, happiness, and life-satisfaction (Crocetti et al., 2011; Luyckx et al., 2008; Luyckx et al., 2013; Mannerström et al., 2017; Mastrotheodoros & Motti-Stefanidi, 2017; Nakama et al., 2014; Park & Moon, 2020; Pesigan et al., 2014; Skhirtladze et al., 2016). In these studies, CM and IC were consistently associated with positive psychosocial functioning, whereas RE was associated with negative psychosocial functioning (e.g., Luyckx et al., 2008). However, associations of EB and ED with psychosocial functioning have not been consistent. In most studies, EB and ED were not significantly correlated with constructs related to psychosocial functioning (e.g., Luyckx et al., 2008). However, in Japan and the Philippines, EB and ED were significantly positively related to psychosocial functioning (Nakama et al., 2014; Pesigan et al., 2014). In a study by Mannerström et al. (2017), reconsideration of commitment was negatively correlated with self-esteem and EB, and reflective exploration in depth was positively correlated with self-esteem. In the present study, we included psychological well-being and depressive symptoms to assess psychological functioning as they are frequently used in sub-clinical samples.

Identity styles may also be related to identity dimensions. The identity style theory (Berzonsky & Barclay, 1981; Berzonsky et al., 2013) posits that individuals' cognitive styles for approaching decisions related to identity formation can be categorized into three individual styles—information-oriented style, normative-oriented style, and diffuse/avoidance-oriented style. Information-orientation refers to the tendency to actively seek and evaluate information to make decisions about one's identity. Normative-orientation refers to the tendency to internalize expectations from other people as one's own goal and avoid uncertainty. Finally, diffuse/avoidance-orientation refers to the tendency to postpone solving the task of identity development and making decisions (Berzonsky et al., 2013). Thus, the information-oriented identity style may be related to the exploration dimensions in the DIDS, the normative-oriented style with the

commitment dimensions, and the diffuse/avoidance-oriented identity style with RE. In the present study, we analyzed correlations among the dimensions of identity development along with those between the identity dimensions and psychological well-being, depressive symptoms, and identity styles to examine the nomological net of the five-dimensional model of identity development in South Korea.

Identity Status Clusters

In addition to measuring identity formation processes, the five-dimensional identity model has been used to derive identity statuses through cluster analysis (Crocetti et al., 2011; Luyckx et al., 2008; Mannerström et al., 2017; Nakama et al., 2014; Schwartz et al., 2011; Skhirtladze et al., 2016; Zimmermann et al., 2015). The third aim of the present study was to examine what data-driven clusters of identity status could be identified in the current sample.

Across studies conducted worldwide, combinations of five or six clusters out of the following seven have been identified. The achievement status was generally characterized by high CM, IC, EB, and ED. The foreclosure status was typically characterized by average to high CM and IC and low EB, ED, and RE. The moratorium status, also referred to as ruminative moratorium, was typically characterized by low CM and IC, high EB and ED, and average to high RE. The searching moratorium status was characterized by high, instead of low, CM and IC. This status represents people who are exploring new alternatives while maintaining prior commitments. The troubled diffusion or diffused diffusion status was marked by low CM and IC, average EB and ED, and high RE. This status corresponds with the diffusion status that Marcia (1966) defined in the status model. The carefree diffusion status, which is characterized by average to low engagement in all dimensions, represents people who have not formed a clear sense of identity but are not worried about this. Finally, a status that was not defined by Marcia but was identified across studies is the undifferentiated status, wherein people have average scores across all five dimensions of the identity process.

Notably, some identity status clusters had different patterns of DIDS subscale scores. For instance, whereas the achievement status cluster was characterized by low reported RE among Belgian-Dutch or North American youth, the same cluster was characterized by high reported RE in Italian young adults (Crocetti et al., 2011; Luyckx et al., 2008; Schwartz et al., 2011). Such inconsistencies can be attributed to the process of cluster analysis being first entirely driven by data and then followed by theory-informed labeling. Moreover, it should be pointed out that the identity status clusters have been described and labeled in relation to standard scores rather than raw scores. That is, the scores that were used to identify

clusters of identity statuses are centered on the sample mean and are in units of standard deviations. This practice is noteworthy when comparing studies because mean-level differences may exist between samples.

In several studies, variables related to psychosocial functioning and well-being have been investigated as covariates of identity status cluster membership. Across these studies, variables of positive functioning, such as psychological well-being and self-esteem, were high on average in the achievement and foreclosure clusters and low in the diffusion and moratorium clusters (Crocetti et al., 2011; Luyckx et al., 2008; Mannerström et al., 2017; Schwartz et al., 2011; Skhirtladze et al., 2016). In contrast, variables of negative functioning, such as depressive and anxiety symptoms, were low on average in the achievement and foreclosure clusters, and high in the diffusion and moratorium clusters (Crocetti et al., 2011; Luyckx et al., 2008; Skhirtladze et al., 2016).

In the present study, we conducted a cluster analysis to examine whether and what identity clusters could be identified in our sample. We considered resemblance with patterns of identity status clusters in previous studies and theoretical definitions of identity statuses to label the clusters identified in the current sample. Ideally, when conducting a cluster analysis, the clusters should be validated externally (Gore, 2000). In the present study, we used measures of psychological well-being, depressive symptoms, and the Extended Objective Measure of Ego Identity Status-Revised (EOM-EIS-2; Bennion & Adams, 1986). The EOM-EIS-2 has been criticized by some researchers as lacking construct validity (Schwartz, 2004). However, to our knowledge, the EOM-EIS-2 was the only measure of identity status readily available for use in Korean (Shin, 2001).

Identity Development in South Korea

In many countries where individuals are given much freedom to determine who they are and how they will live, the transitional phase from childhood to adulthood is an important period to think about their identities to make important life decisions (Côté, 2009). South Korea is one of such countries where identity development is an important task for young adults (Yeung & Alipio, 2013). Especially in recent years, demographic markers of transition to adulthood, such as completion of education, marriage, and entry to the labor force, are being increasingly more delayed, causing the early 20's to be a crucial period for identity development (Arnett, 2000; Furstenberg, 2015; Yeung & Alipio, 2013). However, identity research has not been active in South Korea, and not much is known about the experiences of identity development of current young adults. The five-dimensional model of identity development, in particular, may be a useful tool for studying

identity development of South Korean young adults, but, to our knowledge, the model is yet to be used in South Korea.

Identity development processes are affected by various contextual factors (Côté, 2009). Cultural values in people's social environments are one of such factors that have a broad influence on how people form their identities (Galliher et al., 2017). Thus, it is important to consider where research on identity is being conducted. South Korea is an East Asian country, where traditionally, interdependent cultural values have been dominant (Markus & Kitayama, 1991). Nevertheless, due to globalization, democratization, and South Korea's rapid economic growth, the traditional collectivistic values now coexist with individualistic values. In a study with South Korean adults, Han and Shin (1999) found approximately equal portions of individuals with individualistic values and individuals with collectivistic values and highlighted the coexistence of cultures in South Korean society. The authors also found that adults in their third decade of life valued individualism more so than older adults. Han and Shin's (1999) findings have also been demonstrated in recent empirical studies where South Korean youth showed individualistic characteristics such as narcissism as strongly as youth in the U.S. (Lee et al., 2014; Park et al., 2016). Because of the increasing strength of individualism in the younger population of South Korea, Korean young adults may experience identity development largely similarly with youth in Western countries, where independent self-views have been traditionally dominant.

The strengthening of individualism does not mean that collectivism has been completely replaced. Instead, the two cultural values coexist among and within people (Cheng & Berman, 2012). Unique characteristics may exist in such context with mixed demands for youth to form their identities. For instance, Berman et al. (2011) suggested that youth in East Asian countries may experience different identity formation processes or have different salient domains for identity exploration compared to U.S. or European youth because societal norms and expectations of family members are still more heavily valued in East Asian cultures.

Research on the presence and search for meaning in life of people from traditionally interdependent or independent cultures provides a clue as to how the two self-views affect the experience of identity formation. Steger et al. (2008) conducted a study comparing how the search for meaning in life predicts the presence of meaning in life and psychological well-being in Japanese and U.S. young adults. They found that in Japan, where interdependence has been traditionally valued similarly to South Korea (Markus & Kitayama, 1991), searching for meaning in life was positively related to the presence of meaning in life and well-being, whereas those relations were negative in the U.S. Considering how meaning in life may be a component of personal identity, Steger et al.'s (2008) findings suggest that identity exploration may be

positively associated with commitment and well-being in societies with interdependent values.

The Present Study

The goal of the present study was to conduct an exploratory study testing the five-dimensional model of identity in a sample of South Korean young adults. We decided to conduct our study with minimal hypotheses because the transitional state of South Korean culture made it difficult to discern the extent to which different aspects of Korean society may influence individuals' identity formation. Research using the process-oriented model of identity may yield useful information about how adolescents and young adults in South Korea are forming their identities in their cultural contexts. Specifically, there were three aims in the present study.

First, we aimed to ascertain whether the factor structure of the DIDS could be confirmed in data collected from South Korean young adults. Given that some studies identified a five-factor model and others a six-factor model (with two sub-dimensions of ED), we tested both possibilities to determine the best-fitting model for our sample.

Second, we analyzed the interrelations among the dimensions of the DIDS as well as the relations of the DIDS subscales with psychological well-being, depressive symptoms, and identity styles. These analyses were conducted to examine whether associations between these constructs, which have been consistently found in previous studies, could also be found in our sample. However, as the process-oriented model had not been used in South Korea, we were open to the possibility of differences in the findings. We were also interested in examining correlations that were not consistent across previous studies in the current sample.

Third, we investigated whether and what identity statuses could be identified using cluster analysis with the DIDS data. We used previous studies to inform how we would interpret and label identity status clusters identified in the present study. Similarly, with external covariates of the identity dimensions, we acknowledged the possibility of unpredicted findings. The concurrent validity of the identity clusters was examined by comparing scores on a direct measure of identity status between the clusters and with psychological well-being and depressive symptoms.

Method

Participants and Procedure

We recruited participants through an online survey company in Seoul, South Korea, called Embrain. We requested the recruitment of participants who met the criteria of being (1) between ages 19 and 25, (2) South Korean, and (3) in South Korea at the time of participation. Participants were first directed to the informed consent form on the survey webpage. After providing consent, they completed the online survey that took approximately 20 min. Participants received 3300 Won (approximately 3 U.S. dollars) as compensation for their time.

In total, 660 South Korean young adults responded to the survey. However, 112 did not respond correctly to the attention-check item in the survey, and their data were excluded. Therefore, the analytic sample included data from 548 participants with correct responses to the attention-check item. All participants were Koreans living in South Korea at the time of the study. The participants' ages ranged from 19 to 25 years ($M = 22.72$, $SD = 1.93$). There were 242 men (44.2%) and 306 women (55.8%).

Measures

Identity

The DIDS was used to assess participants' engagement in the dimensions of identity development processes suggested by the dual-cycle model (Luyckx et al., 2008). The DIDS comprises five items each on five subscales: CM, IC, EB, ED, and RE. Example items include the following: "I have decided on the direction I am going to follow in my life" (CM); "Because of my future plans, I feel certain about myself" (IC); "I think about different things I might do in the future" (EB); "I think about the future plans I already made" (ED); and "I worry about what I want to do in the future" (RE). For the present study, the Korean DIDS items were created through translation and back-translation by two bilingual researchers. The items were then proofread by several graduate students.

Responses were given on a 7-point Likert scale (1 = strongly disagree and 7 = strongly agree). Higher scores indicated stronger engagement in the corresponding dimensions of the subscales. Although the DIDS was developed to be responded to on a 5-point Likert scale, we modified the response scale to keep the response options as consistent across the whole survey as possible to prevent participants from getting confused. Research has shown that data collected using 5- and 7-point Likert scales do not differ significantly (Dawes, 2008). For the second and third research aims of the present study, the scores on each subscale were calculated by averaging the item responses. Estimates of internal consistency reliability (alpha) for scores on each subscale were .93 (CM), .90 (IC), .89 (EB), .78 (ED), and .80 (RE). The Korean version of DIDS was attached as online supplementary materials.

Psychological Well-Being

To measure psychological well-being, we used the 30-item version of the Psychological Well-Being Scale developed by Ryff and Keyes (1995) that was translated and used by Shin et al. (2017). The Psychological Well-Being Scale consists of subscales measuring autonomy, environmental mastery, personal growth, positive relations, purpose in life, and self-acceptance, each of which are measured with five items. In this study, the average score across all 30 items was used as the aggregate indicator of psychological well-being. Participants responded to the items on a 7-point Likert scale (1 = *strongly disagree* and 7 = *strongly agree*) wherein higher scores corresponded to higher psychological well-being. Preliminary data screening showed that one of the items was significantly negatively correlated with the rest of the items. Thus, we dropped that item from the Psychological Well-Being Scale and calculated the scale score with the remaining 29 items. Internal consistency reliability (alpha) of the Psychological Well-Being Scale items in this sample was .92. Examples of the items include "In general, I feel confident and positive about myself" and "In general, I feel I am in charge of the situation in which I live."

Depressive Symptoms

The Center for Epidemiologic Studies Depression Scale (CES-D), which was originally published in Radloff (1977) and translated into Korean by Chon and Rhee (1992), was used to measure depressive symptoms. The CES-D consists of 20 items that measure the depressive mood that the respondent experienced in the previous week. Each item was scored on a 4-point Likert scale (1 = *almost never* and 4 = *always*), wherein higher scores indicated stronger feelings of depression. Example items include "I felt depressed" and "I thought my life had been a failure". In the present study, the average of the scores across all items was used as the score for depression. In this sample, internal consistency reliability (alpha) was .92.

Identity Style

We used the Korean Identity Style Inventory 5 (KISI5) that was originally developed by Berzonsky et al. (2013) and translated and validated in Korean by Lee and Shim (2014). The KISI5 consists of five items for measuring informational identity style, four items for normative identity style, and five items for diffuse/avoidant style. Scale scores were computed by averaging the scores across items for each identity style. In this study, the response scale to this measure was a 7-point Likert-type scale (1 = *strongly disagree* and 7 = *strongly agree*), wherein higher scores indicated stronger exhibition of the corresponding identity style. Among the current sample, estimates of internal consistency reliability (alphas) were .84 (informational), .57 (normative), and .77 (diffuse/avoidant). The measure for normative style showed low internal consistency, but the removal of particular items did not result in a higher alpha; therefore, we retained all the items on that subscale. Example items include "When facing a life decision, I try to analyze the situation in order to understand it" (information orientation), "I automatically adopt and follow the values I was brought up with" (normative orientation), and "I try not to think about or deal with problems for as long as I can" (diffuse/avoidant orientation).

Identity Status

To examine the convergent validity of the statuses derived from the DIDS items, a measure developed based on Marcia's (1966) identity status theory was used. We used the EOM-EIS-2 that was originally developed by Bennion and Adams (1986) and translated and validated in Korean by Shin (2001). The measure consists of a total of 64 items with four sets of 16 items each measuring the four identity statuses defined by Marcia (achievement, foreclosure, moratorium, and diffusion) across eight domains of identity (occupation, religion, politics, philosophical life-style, friendship, dating, sex roles, and recreation). Thus, there are two items each in the intersection of the eight domains and four statuses of identity. In this study, we used the average across items in each identity status to gauge participants' overall identity statuses. The response scale to this measure was a 7-point Likert-type scale (1 = *strongly disagree* and 7 = *strongly agree*). Higher scores indicated that the respondent had thoughts or showed behaviors that strongly corresponded to each identity status. Among the current sample, coefficient alpha values were .73 (diffusion), .89 (foreclosure), .76 (moratorium), and .78 (achievement). Example items include the following: "After considerable thought I've developed my own individual viewpoint of what is for me an ideal 'lifestyle' and don't believe anyone will be likely to change my perspective" (achievement); "My parents know what's best for me in terms of how to choose my friends" (foreclosure); "I'm looking for an acceptable perspective for my own 'life style' view, but I haven't really found it yet" (moratorium); and "I haven't chosen the occupation I really want to get into, and I'm just working at whatever is available until something better comes along" (diffusion).

Results

The Measurement Model of the DIDS

To investigate the measurement properties of the DIDS in the current sample, we conducted confirmatory factor

analyses (CFAs) and measurement invariance testing. Prior to conducting the first main analysis, the distribution of the data on the DIDS items was examined with descriptive statistics and histograms. The distribution of data on all items was normal, and there were no item-level outliers.

The CFAs were conducted using maximum likelihood estimation in Mplus 7.4 (Muthén & Muthén, 2016). Model fit was assessed using cutoff values recommended by Hu and Bentler (1999) for three statistical tests of model fit, the Confirmatory Fit Index (CFI) (a goodness-of-fit indicator), and two badness of fit indicators: the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR). RMSEA and SRMR values smaller than .05 were considered to indicate good model fit and values smaller than .08 to indicate acceptable model fit. CFI values larger than .90 were considered to indicate acceptable model fit and values larger than .95 to indicate good model fit. To assess the comparative model fit of the five-factor and six-factor structures, the CFI values and likelihood ratio tests of the two models were examined (Kline, 2016). If CFI values differed by more than .01, the model with the higher CFI value was considered to have significantly better model fit. If chi-square statistics differed by more than the cutoff chi-square value given the difference in degrees of freedom for $p < .05$, the model with a lower chi-square statistic was considered to have a better model fit. However, given the large sample size of the present study, we were aware that the chi-square tests of model fit would have considerably high power.

Table 1 shows the global and comparative fit indices of the two measurement models we tested. Overall, both the five- and six-factor models of the translated DIDS showed acceptable model fit. However, the six-factor model demonstrated only slightly better model fit than the five-factor model, with only a .005 higher CFI value. The chi-square value of model fit was significantly better for the six-factor model. However, considering the large sample size, we concluded that the

difference was not substantial. In addition, the five-factor structure was the more parsimonious model. Therefore, the five-factor model was selected for the DIDS data with our South Korean sample.

We then tested the five-factor model for measurement invariance between female and male participants using Mplus 7.4 (Muthén & Muthén, 2016). First, configural invariance was tested (whether the DIDS items would load to the same latent factors across genders) using the same criteria as those used in the CFA. Subsequently, metric invariance was tested (whether the items had similar factor loadings across genders) by comparing the chi-square statistic of model fit and CFI with the statistics of configural invariance. If the CFI value of the metric invariance model was smaller (i.e., worse) than the configural invariance model by less than .01, we considered the model as having passed metric invariance (Kline, 2016). In addition, if chi-square statistics increased by less than the cutoff chi-square value given the difference in degrees of freedom for $p < .05$, the model was considered to have passed metric invariance (Kline, 2016). Lastly, intercept invariance (whether the item intercepts are similar across genders) was tested by comparing the chi-square value and CFI with the analogous statistics from the metric invariance testing, using the same criteria as previously used to determine whether the model passed intercept invariance.

Table 1 lists fit indices from the tests of measurement invariance. Configural invariance was established because SRMR was below .08 (SRMR = .07), and RMSEA and CFI statistics were marginally outside the cutoff values (RMSEA = .09, CFI = .89). Metric and intercept invariance were then established because CFI statistics changed by only .001 and .002 between models. Chi-square statistics increased by less than the cutoff chi-square value as well. Overall, these statistics indicated that the DIDS showed full measurement invariance between men and women in the current sample.

Interrelations of the DIDS Subscales and Related Constructs

We examined the nomological net of the dimensions of identity development with a series of correlational analyses. Prior to conducting these analyses, we examined the distribution of the scale scores used in the present study through descriptive statistics and histograms. Table 2 shows the means, standard deviations, skewness, and kurtosis of each scale score. Data were normally distributed on all scales. The five dimensions on the DIDS were negatively skewed, whereas other scales were positively skewed. However, the histograms of the scale scores did not show any extreme deviation from normality. Thus, we determined that the skewness was not extreme and did not require data transformation.

Table 1 Model Fit Indices from Tests of Measurement Invariance of the Dimensions of Identity Development Scale between Male and Female South Korean Young Adults ($N = 548$)

Model	RMSEA	SRMR	CFI	χ^2	df
Five-factor model	.081	.069	.902	1207.97	265
Configural invariance	.085	.073	.891	1583.43	530
Metric invariance	.084	.076	.892	1600.96	550
Intercept invariance	.083	.078	.890	1638.63	570
Six-factor model	.078	.064	.909	1130.98	260

Note. RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; CFI = Confirmatory Fit Index

Table 2 Distributional Properties of the Measured Constructs in the Present Study (*N* = 548)

Variable		*M*	*SD*	Skewness	Kurtosis
Dimensions of identity development	EB	5.13	1.03	−0.51	0.17
	ED	4.88	0.99	−0.35	0.08
	RE	4.74	1.16	−0.54	0.07
	CM	4.33	1.32	−0.18	−0.59
	IC	4.47	1.22	−0.2	−0.17
Psychological well-being		4.48	0.86	0.86	−0.00
Depressive symptoms		1.84	0.54	0.54	0.17
Identity styles	Informational	5.47	0.85	0.85	0.12
	Normative	4.41	0.89	0.89	0.75
	Diffuse-avoidant	3.26	1.06	1.06	−0.42
Identity statuses	Diffusion	3.89	0.77	0.77	0.32
	Foreclosure	2.45	0.87	0.88	0.84
	Moratorium	3.85	0.72	0.72	0.33
	Achievement	4.22	0.75	0.75	0.16

Note. EB = Exploration in Breadth; ED = Exploration in Depth; RE = Ruminative Exploration; CM = Commitment Making; IC = Identification with Commitment

Standard error of skewness = .10; Standard error of kurtosis = .21.

Correlations among the DIDS Subscales

To examine how the subscales of the DIDS were related to each other, we analyzed the correlations among the five identity dimensions, which are shown in Table 3. There were strong positive correlations between the two commitment dimensions (CM and IC) and between EB and ED. EB and ED were each moderately positively correlated with CM and IC. RE had moderate negative correlations with CM and IC and weak negative correlations with EB and ED.

Correlations with Related Constructs

Next, we examined how the DIDS identity dimensions were related to commonly associated constructs. We analyzed correlations between the DIDS identity dimensions, psychological well-being, depressive symptoms, and identity styles (Table 4). CM, IC, EB, and ED were moderately positively correlated with psychological well-being and negatively with

reported depressive symptoms. The opposite was true for RE, which was moderately negatively correlated with psychological well-being and moderately positively correlated with reported depressive symptoms. Regarding identity styles, CM and IC had weak positive correlations with the informational and normative identity styles and weak negative correlations with the diffuse/avoidant style. EB and ED had moderate positive correlations with the informational style, weak positive correlations with the normative style, and weak negative correlations with the diffuse/avoidant style. RE had a significant correlation with only the diffuse/avoidant style, which was moderate and positive.

Identity Status Clusters

To examine whether clusters that represented identity statuses could be extracted in the South Korean sample, we conducted a two-step cluster analysis procedure. The goal was to identify homogeneous groups of individuals in the sample using the five DIDS subscales as clustering variables.

Prior to the analyses, data were screened for quality for clustering. Some researchers recommend that the sample size should be greater than $2^{\text{number of variables}}$ (Sarstedt & Mooi, 2014), which, in the present study, equals to 32. The sample size was accordingly sufficiently large. In addition, Sarstedt and Mooi (2014) recommend that the correlations among the clustering variables should be below .90 to avoid problems associated with collinearity. As shown in Table 2, the five dimensions in the DIDS were correlated at less than .90 across all pairs. Lastly, univariate and multivariate outliers at the subscale-level were examined, following the procedures used

Table 3 Correlations among the Subscales of the Dimensions of Identity Development Scale

Variable	1	2	3	4
1. Commitment Making				
2. Identification with Commitment	.86			
3. Exploration in Breadth	.58	.71		
4. Exploration in Depth	.66	.68	.77	
5. Ruminative Exploration	−.61	−.55	−.24	−.26

Note. All correlations were statistically significant at *p* < .001

Table 4 Correlations between Subscales of the Dimensions of Identity Development Scale and Related Constructs

| | PWB | Depression | Identity styles | | |
			Informational	Normative	Diffuse-avoidant
CM	.57***	−.39***	.17***	.13**	−.23***
IC	.62***	−.44***	.20***	.14**	−.23***
EB	.59***	−.35***	.39***	.13**	−.33***
ED	.57***	−.33***	.35***	.25***	−.34***
RE	−.50***	.40***	−.00	−.02	.28***

Note. CM = Commitment Making; IC = Identification with Commitment; EB = Exploration in Breadth; ED = Exploration in Depth; RE = Ruminative Exploration; PWB = Psychological Well-Being

***$p < .001$, **$p < .01$

for the original development of the DIDS (Luyckx et al., 2008). Univariate outliers were detected with absolute Z-scores in each subscale. Scores more than three standard deviations away from the sample mean would be considered outliers, and in the current sample, there were two univariate outliers. Multivariate outliers were detected by calculating the Mahalanobis distances across the five subscales of the DIDS. Chi-square values of Mahalanobis distances under .001 were considered to signify outliers. There were 10 multivariate outliers detected in the current sample. The univariate and multivariate outliers were excluded from the sample, leaving 536 cases.

We used a two-step cluster analysis procedure. The first step was a hierarchical cluster analysis using Ward's method with squared Euclidian distances (Ward, 1963). We examined the resulting agglomeration coefficient schedules and dendrograms to identify the point at which any two clusters were too different to be combined into a homogeneous group (Yim & Ramdeen, 2015). Usually, the most appropriate number of clusters is the number before a significant decrease in the agglomeration coefficients followed by little change between the remaining coefficients (Yim & Ramdeen, 2015). In our sample, we identified three plausible cluster solutions (4, 5, and 6 clusters) to consider further. Next, the initial cluster centers were used as non-random starting points in an iterative k-means clustering procedure (MacQueen, 1967).

We then evaluated the four-, five-, and six-cluster solutions with the cross-validation procedure as recommended by Sarstedt and Mooi (2014). Two subsamples, each representing 75% of the total sample and having similar demographic characteristics to the total sample, were randomly created. We then used the recommended five-step cross-validation procedure to conduct the replication analysis. That is, we compared cluster membership of the second subsample using the initial means from k-means clustering in each of the two subsamples. The cluster solution with a strong kappa was retained for the full sample. Cohen's kappa of the four-, five-, and six-cluster solutions were .29, .80, and .82, respectively. The five- and six-

cluster solutions showed almost perfect agreement. In this step, we eliminated the four-cluster solution from further consideration due to substantially lower Cohen's kappa, and proceeded with revaluating the five- and six-cluster solutions.

To decide on the final cluster solution, the five-and six-cluster solutions were evaluated through three additional steps with respect to parsimony and correspondence with prior research. First, we examined the patterns of each cluster and compared the two solutions. Second, we inspected how participants were categorized into clusters within both the five- and six-cluster solutions (i.e., whether they were classified into similar clusters). Lastly, we compared the statuses that were similar in both solutions to determine if the sixth cluster added substantive value beyond the five-cluster solution. Through these evaluations, we decided that the five-status cluster solution was most meaningful and parsimonious. Although the six-cluster solution had slightly higher kappa, we decided to retain the five-cluster solution as the final solution because the improvement was marginal. For more details on how the decision was made between the five- and six-cluster solutions, please see the online supplementary materials.

The final centroids of the five-cluster solution are shown in Fig. 1. The y-axis represents z-scores of the five subscales of the DIDS. The magnitude of the z-scores, the distances between the within-cluster means, and the overall sample means in standard deviation units were interpreted as an effect size. Following the original study developing the DIDS, a *SD* of 0.2 was perceived as a small effect, a *SD* of 0.5 as a moderate effect, and a *SD* of 0.8 as a large effect (Luyckx et al., 2008). The clusters were labeled based on these effect sizes, informed by prior studies using the DIDS (e.g., Luyckx et al., 2008) and Marcia's identity status model (Marcia, 1966). We labeled the first cluster *Achievement* ($n = 98$; 18.3% of the sample) because it was characterized by very high scores on CM, IC, EB, and ED, but very low on RE, relative to average DIDS scores. We labeled the second cluster *Searching Moratorium* ($n = 103$; 19.2% of the sample) because it was characterized

Fig. 1 Z-scores of Commitment Making (CM), Identification with Commitment (IC), Exploration in Breadth (EB), Exploration in Depth (ED), and Ruminative Exploration (RE) for five clusters in the full sample. *Note.* A = Achievement; SM = Searching Moratorium; RM = Ruminative Moratorium; D = Diffusion; U = Undifferentiated; CM = Commitment Making; IC = Identification with Commitment; EB = Exploration in Breadth; ED = Exploration in Depth; RE = Ruminative Exploration
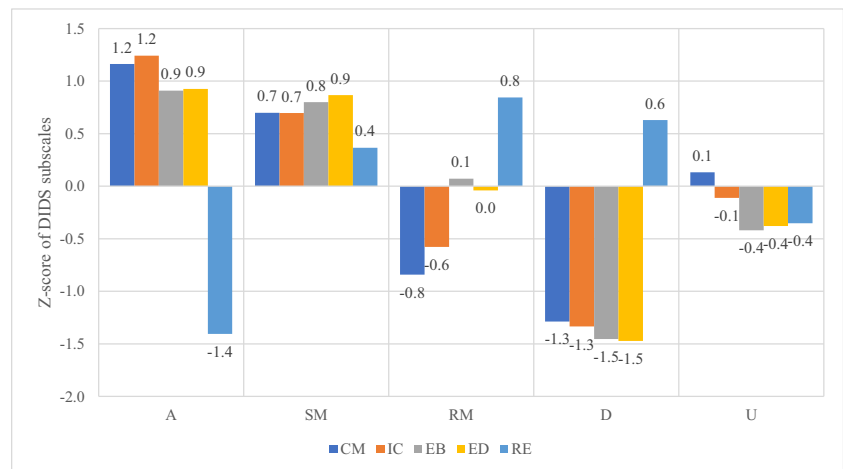
by moderately to very high scores on CM, IC, EB, ED, and RE compared to average DIDS scores. We labeled the third cluster *Ruminative Moratorium* (n = 114; 21.3% of the sample) because it was characterized by weak CM and IC and high RE relative to average. We labeled the fourth cluster *Diffusion* (n = 84; 15.7% of the sample) because it was characterized by moderately low scores on CM, IC, EB, and ED, and slightly high scores on RE compared to average DIDS scores. Finally, we labeled the fifth cluster *Undifferentiated* (n = 137; 25.6% of the sample) because it was characterized by moderately higher scores on CM and IC than average, average scores on EB and ED, and lower than average scores on RE.

Concurrent Validity of the Identity Status Clusters

To investigate the concurrent validity of the identity status clusters, we conducted analyses involving a direct measure of identity status and measures of psychological well-being and depressive symptoms. One-way ANOVAs were conducted to compare the mean z-scores on the four statuses measured by the EOM-EIS-2 and the scale scores of psychological well-being and depressive symptoms across the five DIDS-derived identity clusters. To examine which specific clusters differed on their mean scores (i.e., follow up comparisons), we conducted the Games-Howell test because the sizes and variances of the clusters were not equal (Field, 2009).

The average EOM-EIS-2 scores for each of the five DIDS-derived statuses are shown in Fig. 2. Participants' scores on the achievement ($F(4, 531) = 50.41$, $p < .001$), foreclosure ($F(4, 531) = 3.58$, $p = .001$), moratorium ($F(4, 531) = 15.35$, $p < .001$), and diffusion ($F(4, 531) = 22.00, p < .001$) subscales of the EOM-EIS-2 significantly differed across the five clusters.

Scores on the achievement subscale were highest in the Achievement cluster and lower, in the following order, in the Searching Moratorium, Undifferentiated, Ruminative Moratorium, and Diffusion clusters. Post hoc comparisons indicated that the mean score on the achievement subscale of the EOM-EIS-2 was mostly significantly different between pairs of clusters except for between the Achievement and Searching Moratorium clusters and between the Ruminative Moratorium and Undifferentiated clusters.

Scores on the foreclosure subscale were higher than average for participants in the Searching Moratorium and Undifferentiated clusters and lower than average for those in the Achievement, Diffusion, Ruminative Moratorium clusters. Post hoc comparisons showed that the mean foreclosure score in the Undifferentiated cluster and Searching Moratorium cluster were significantly higher than in the Ruminative Moratorium. Other pairs of comparisons were not significant.

Scores on the moratorium subscale were higher than average for participants in the Searching Moratorium and Ruminative Moratorium clusters and lower than average for participants in the Achievement, Undifferentiated, and Diffusion clusters. Post hoc comparisons revealed that the Ruminative Moratorium and Searching Moratorium clusters had significantly higher moratorium scores than the Achievement, Undifferentiated, and Diffusion clusters. Average moratorium scores in the Ruminative and Searching Moratorium clusters were not significantly different, nor were the average moratorium scores among the Achievement, Undifferentiated, and Diffusion clusters.
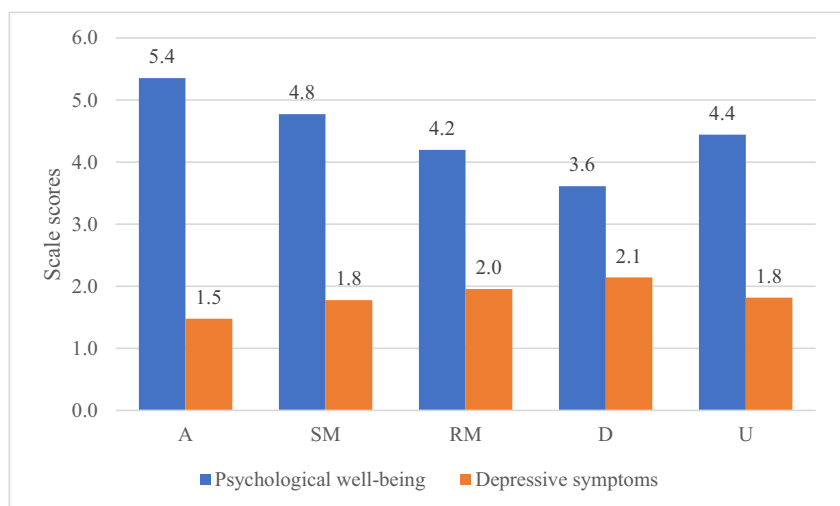
Lastly, scores on the diffusion subscale were highest in the Diffusion cluster, followed by Ruminative Moratorium, Searching Moratorium, Undifferentiated, and Achievement clusters. The mean score on the diffusion subscale of the EOM-EIS-2 was significantly higher in the Diffusion cluster than in all other clusters and lower in the Achievement cluster than in all other clusters. Differences of the mean diffusion score among the Ruminative Moratorium, Searching Moratorium, and Undifferentiated clusters were not significant.

Fig. 2 Z-scores of achievement, foreclosure, moratorium, and diffusion as measured with the Extended Objective Measure of Ego Identity Status – Revised (EOM-EIS-2) for five clusters. *Note.* A = Achievement; SM = Searching Moratorium; RM = Ruminative Moratorium; D = Diffusion; U = Undifferentiated

Discussion
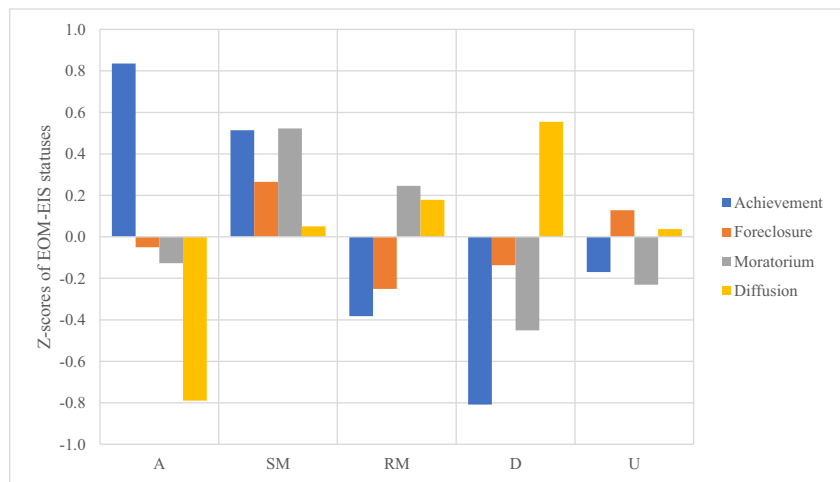
The average scores of psychological well-being and depressive symptoms in each of the DIDS-derived statuses are shown in Fig. 3. Participants' scores of psychological well-being ($F(4, 531) = 88.08$, $p < .001$), and depressive symptoms ($F(4, 531) = 5.64$, $p = .001$) significantly differed across the five clusters as well. Scores on the psychological well-being measure were highest on average in the Achievement cluster, followed by Searching Moratorium, Undifferentiated, Ruminative Moratorium, and Diffusion (all pairwise comparisons were statistically significant). The average score of depressive symptoms in the Achievement cluster was significantly lower than the average scores of all other clusters. The Diffusion cluster had significantly higher average psychological well-being score than the Achievement, Searching Moratorium, and Undifferentiated clusters. Differences of depressive symptoms between Ruminative Moratorium, Searching Moratorium, and Undifferentiated clusters were not statistically significant.

The present study aimed to examine, for the first time, how the five-dimensional process-oriented model of identity (Luyckx et al., 2008) applies to young adults in South Korea. Specifically, there were three research aims. First, we examined the psychometric properties and the measurement model of the DIDS in our current sample. Second, we investigated the nomological net of the dimensions of identity development. Third, we studied whether and what identity status clusters could be identified in our data.

Psychometric Properties of the DIDS

First, we examined the psychometric properties of the DIDS with our sample. Internal consistencies of the five factors (CM, IC, EB, ED, and RE) were good to excellent. The CFA of the five-factor model of the DIDS that was consistent

Fig. 3 Average psychological well-being and depressive symptoms for five clusters. A = Achievement; SM = Searching Moratorium; RM = Ruminative Moratorium; D = Diffusion; U = Undifferentiated

with the original conception (Luyckx et al., 2008) indicated an acceptable fit with our South Korean participants. The six-factor model, wherein ED is divided into two factors, which was found in some previous studies (e.g., Skhirtladze et al., 2016) was also found to have acceptable fit with similar fit indices as the five-factor model. We decided that the five-factor model was more useful as it is more parsimonious, and the six-factor model did not improve the model fit significantly. In addition, we established measurement invariance for gender. Therefore, the DIDS may be used in future studies to compare South Korean women and men's identity processes. This array of analyses suggests that the DIDS may be used for measuring identity development processes in South Korea's young adult population.

The Nomological Net of the Five Dimensions of Identity Development

Prior studies using the DIDS have examined the relations between the dimensions of identity development and the relations between the dimensions and related constructs. Correlations that were consistently found in previous studies were replicated in the present study. In our sample, RE had strong negative correlations with CM and IC and weak negative correlations with EB and ED. In addition, CM was positively correlated with IC, and EB was positively correlated with ED. These findings were consistent with previous studies that examined inter-dimension correlations (e.g., Luyckx et al., 2008). We examined psychological well-being and depressive symptoms as indicators of psychosocial functioning that may be related to the five dimensions of identity development. In previous empirical studies, CM and IC were related to positive psychosocial functioning and RE with negative psychosocial functioning (e.g., Luyckx et al., 2008). Consistent with such studies, CM and IC were positively correlated with psychological well-being and negatively with depressive symptoms in our sample. Further, consistent with previous studies (e.g., Luyckx et al., 2008), RE was negatively correlated with psychological well-being and positively correlated with depressive symptoms. These results demonstrate aspects of identity development of South Korean young adults that are similar to youth in other countries that the DIDS have been used in.

Conversely, there were correlations among the DIDS subscales and between the DIDS subscales and external variables that had not been consistent across previous studies. Correlations between CM or IC and EB or ED have varied across prior studies, reflecting the various statuses of identity development individuals may be in. Correlations between RE and EB or ED have also been inconsistent, possibly because these dimensions share the characteristic of being exploration processes, yet they are the opposite in regard to adaptiveness. In the present study, we found strong positive bivariate

correlations between CM or IC and EB or ED and negative correlations between RE and EB or ED. Regarding associations with external variables, correlations between EB and ED and psychosocial functioning have varied across previous studies. In the present study, EB and ED showed similar patterns of association with functioning as IC and CM.

Although the above-mentioned associations were not consistent across prior studies, interestingly, they have been consistent in research conducted in Asian countries (Nakama et al., 2014; Pesigan et al., 2014). That is, the positive correlations between the exploration and commitment dimensions and between EB and ED and psychosocial functioning have also been found in Japan and the Philippines. Such common relations were similar to Steger et al.'s (2008) finding that searching for meaning in life is positively related to the presence of meaning in life and positive psychosocial outcomes in interdependent cultures. To our knowledge, there has been no research on how identity exploration is experienced in Asian cultures. Detailed inspections of the influence of the current cultural values in Asian countries, such as South Korea, Japan, and the Philippines, on identity processes may inform the underlying contextual influence of this commonality.

In addition to psychological well-being and depressive symptoms, we examined identity styles as external correlates of the process-oriented model of identity. Both informational and normative styles were positively correlated with CM, IC, EB, and ED. One difference between the two styles was that the informational style had a stronger correlation with exploration than the normative style. This difference is consistent with the concept of the two identity styles, as individuals with strong informational orientation to approach identity are likely to seek information about current and alternative commitments (Berzonsky et al., 2013). The diffuse/avoidant identity style was positively correlated with RE and negatively correlated with the rest of the identity process dimensions. These results imply that young adults who tend to avoid the task of identity development may show less engagement in the adaptive identity formation and evaluation cycles and more engagement in the maladaptive dimension of RE.

Identity Statuses

Finally, we investigated whether we could identify identity statuses in the current sample. We conducted a two-step clustering procedure followed by an additional validation procedure and identified five identity status clusters: Achievement, Searching Moratorium, Ruminative Moratorium, Diffusion, and Undifferentiated. These status clusters demonstrated external validity, as each cluster showed higher mean scores on corresponding EOM-EIS-2 subscales; achievement was associated with high psychological well-being and low depressive symptoms, and Diffusion was associated with the reverse

pattern. Overall, the five clusters largely resembled identity status clusters from previous empirical studies. This pattern of results suggests that youth in South Korea may be facing identity tasks in similar ways to youth in other countries.

However, there were some differences in the specific patterns of the identity status clusters. In the present study, we did not identify a foreclosure status, which had been found in previous studies (e.g., Luyckx et al., 2008). Instead, the Undifferentiated cluster in our study was characterized by a pattern of DIDS scores which somewhat resembled the typical pattern of the foreclosure status but with scores that deviated much less strongly from the overall mean pattern of scores. Furthermore, whereas previous studies only identified one of the two moratorium-related statuses (i.e., Ruminative Moratorium and Searching Moratorium), the cluster solution in our study contained both of these statuses.

With the current amount of information, we cannot ascertain the extent to which these variations of patterns and labels of clusters represent actual variation in identity development processes or relative to divergence in cultural values. The DIDS has not been tested for measurement invariance across the countries studied; therefore, comparisons of the magnitude of DIDS scores from different countries are not suitable. In addition, the majority of previous studies that identified identity status clusters based on the DIDS only reported cluster means in terms of z-scores. There may be significant mean raw-score differences across samples of the different studies that could not be considered because they were not reported. To ensure that the clusters represent different identity statuses in different studies, comparison of raw scores after ensuring measurement invariance across different countries is necessary.

Limitations and Future Research

When interpreting the outcomes of this study, some limitations should be noted. First, the present study only examined identity processes cross-sectionally. To study identity development, longitudinal research is necessary (Meeus, 1996). For instance, to know if identity exploration in breadth later leads to commitment, or whether ruminative exploration is persistent, data should be collected at several time points. The identity status clusters should also be studied longitudinally for examination of trajectories of identity processes. Longitudinal research can provide information on trajectories of identity development in South Korea that can be compared with youth in different cultures. Cross-sectional data such as the data used in the present study can only represent engagement in the identity development process at a single time-point, and, thus, does not yield information about how the processes unfold.

Second, the external validity of our study may be limited due to the use of convenience sampling. Our sample was recruited from an online research panel, and we did not consider demographic information such as ethnicity, socio-economic status, or education during the recruitment procedure to ensure representativeness of our sample. Differences in such demographic factors can lead to differences in identity development processes even within the same country (Cheng & Berman, 2012). Thus, the influence of these factors should be considered in future studies.

Third, the five-dimensional process-oriented model of identity should further be tested with younger South Koreans. We recruited young adults aged 19 to 25 years old, but adolescence is also an important period for identity development (Erikson, 1968). Thus, the applicability of the DIDS for adolescents should be examined to usher more lucrative identity research. Additionally, longitudinal measurement invariance across early, middle, and late adolescents and adults should be tested to study the developmental process of identity across a longer period of time. Such future research will provide a tool for researchers to pay attention to a population with a wider age range for a richer illustration of identity development.

Declarations

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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