

National and Gender Measurement Invariance of the Utrecht-Management of Identity Commitments Scale (U-MICS): A 10-Nation Study With University Students

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Abstract

The purpose of this study was to examine the psychometric properties of the Utrecht-Management of Identity Commitments Scale (U-MICS), a self-report measure aimed at assessing identity processes of commitment, in-depth exploration, and reconsideration of commitment. We tested its factor structure in university students from a large array of cultural contexts, including 10 nations located in Europe (i.e., Italy, the Netherlands, Poland, Portugal, Romania, and Switzerland), Middle East (i.e., Turkey), and Asia (i.e., China, Japan, and Taiwan). Furthermore, we tested national and gender measurement invariance. Participants were 6,118 (63.2% females) university students aged from 18 to 25 years ($M_{age} = 20.91$ years). Results indicated that the three-factor structure of the U-MICS fitted well in the total sample, in each national group, and in gender groups. Furthermore, national and gender measurement invariance were established. Thus, the U-MICS can be fruitfully applied to study identity in university students from various Western and non-Western contexts.

Keywords

identity, U-MICS, gender, cross-national, measurement invariance, Europe, Asia, Middle East

In past decades, a progressive deferral of transition to adulthood has been observed in large segments of youth around the world (cf. Arnett, 2007). As a consequence, the period from the late teens through the 20s (i.e., emerging adulthood; Arnett, 2000) emerged as a key phase for identity formation. In this period, young people, especially those attending university, have the possibility to explore a large array of alternatives in multiple life domains, such as education, work, and love, before enacting adult commitments (Arnett, 2004). However, cross-national investigations are needed to examine the extent to which identity formation dynamics are similar across university students from different contexts.

Although interest in international perspectives in identity has recently increased (e.g., Berman, 2011; Schwartz, Zamboanga, Meca, & Ritchie, 2012), cross-national comparisons of youth identity are still limited. Moreover, the few available ones present a number of shortcomings. First, extant cross-national studies on identity are mainly based on pairwise comparisons, in which youth from the United States are compared with their counterparts from another nation (i.e., India: Graf, Mullis, & Mullis, 2008; Norway: Jensen, Kristiansen, Sandbekk, & Kroger, 1998; South Africa: Low,

Akande, & Hill, 2005; Sweden: Schwartz, Adamson, Ferrer-Wreder, Dillon, & Berman, 2006; and Turkey: Eryigit & Kerpelman, 2011). An exception to reliance on pairwise comparisons has been provided by Berman, You, Schwartz, Teo, and Mochizuki (2011), who compared identity in youth from the United States, China, Japan, and Taiwan. Albeit these studies revealed interesting differences, no consistent pattern has emerged.

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The second criticism of most cross-national comparisons of identity is related to methodological weaknesses. It has to do with mean comparisons often conducted without first testing the extent to which both the instrument and the psychological meaning and structure of its underlying constructs are group equivalent (e.g., Byrne et al., 2009). Indeed, mean comparisons as well as analysis of structural relationships can be meaningfully conducted only in presence of measurement invariance (i.e., the extent to which both the item content and psychometric properties of the instrument are similar across groups; van de Schoot, Lugtig, & Hox, 2012). For instance, in Berman et al.'s (2011) study, possibilities of comparisons were limited by the fact that authors did not find measurement invariance of the identity scale they employed (i.e., Ego Identity Process Questionnaire [EIPQ]; Balistreri, Busch-Rossnagel, & Geisinger, 1995). Additionally, most of the other available cross-national investigations on identity (Graf et al., 2008; Jensen et al., 1998; Low et al., 2005; Schwartz et al., 2006) have been conducted by means of the Extended Objective Measure of Ego Identity Status II (EOM-EIS-II; Bennion & Adams, 1986), a measure of which the validity has been widely questioned (e.g., Crocetti & Meeus, 2014). As an exception, Eryigit and Kerpelman (2011) used a more recent measure of identity, the Dimensions of Identity Development Scale (Luyckx et al., 2008). However, they did not report tests for the various levels of invariance, thus it is not possible to ascertain whether the differences in the composite means they reported are due only to group differences or reflect some unknown combination of latent mean differences and item-level differences.

In line with these considerations, in this study, we sought to examine measurement invariance of the Utrecht-Management of Identity Commitments Scale (U-MICS; Crocetti, Rubini, & Meeus, 2008). The U-MICS is a self-report measure aimed at assessing identity processes encompassed in Meeus, Crocetti, et al.'s three-factor identity model (Crocetti et al., 2008; Meeus, van de Schoot, Keijsers, Schwartz, & Branje, 2010). We first tested the psychometric properties of the U-MICS in university students from 10 countries, including nations in Europe (i.e., Italy, the Netherlands, Poland, Portugal, Romania, Switzerland), the Middle East (i.e., Turkey), and Asia (i.e., China, Japan, Taiwan). Second, we tested measurement invariance across national groups through multiple hierarchical steps (Chen, 2007; Little, Card, Slegers, & Ledford, 2007; van de Schoot et al., 2012). Specifically, we tested configural (the same number of factors and pattern of fixed and freely estimated parameters hold across groups); metric (equivalence of factor loadings, indicating that respondents from multiple groups attribute the same meaning to the latent construct of interest); and scalar (invariance of both factor loadings and item intercepts, indicating that the meaning of the construct and the levels of the underlying

items are equal across groups) invariance (van de Schoot et al., 2012). Additionally, we tested for invariance of covariances, to examine whether identity processes are similarly related across national groups. Finally, we tested for gender measurement invariance across nations and within each nation.

The Three-Factor Identity Model

In the past decades, the identity literature rooted in Erikson's (1950, 1968) psychosocial theory and in Marcia's (1966) identity status paradigm underwent significant improvements with the development of process-models of identity focused on different ways youth can explore identity options and choose their own commitments (see Meeus, 2011, for a review). Within this renewed line of research, Meeus, Crocetti, et al. (Crocetti et al., 2008; Klimstra, Luyckx, et al., 2010; Meeus et al., 2010) have expanded the identity status paradigm proposing an identity model aimed at capturing the dynamic by which identity is formed and modified over time. This model takes into account three pivotal identity processes. *Commitment* refers to enduring choices that individuals have made with regard to various developmental domains and to the self-confidence they derive from these choices. *In-depth exploration* represents the extent to which individuals think actively about the commitments they have enacted (e.g., reflecting on their choices, searching for additional information, talking with others about their commitments). *Reconsideration of commitment* refers to the comparison of present commitments with possible alternative commitments because the current ones are no longer satisfactory.

The three-factor model includes a dual-cycle process (Luyckx, Goossens, & Soenens, 2006; Meeus, 2011). The first cycle is the identity-maintenance cycle. By exploring their present commitments, adolescents invest in maintaining them and make sure that they provide a good fit with their overall talents and potentials. If one's current commitments are not satisfying or do not provide a good fit, they may be reconsidered in favor of new ones (the identity-revision cycle). Thus, by including commitment, in-depth exploration, and reconsideration, this model sought to capture Erikson's (1968) dynamic of identity versus role confusion. Commitment and in-depth exploration, on the one hand, and reconsideration, on the other hand, are conceptualized as two opposing forces within this dynamic. Whereas commitment and in-depth exploration imply attempts to develop and maintain a sense of self (i.e., identity coherence or synthesis), reconsideration represents questioning and rethinking this sense of self (identity confusion).

The three-factor model has been applied both in variable-centered and person-centered studies (von Eye & Bogat, 2006), as well as in studies integrating the two approaches (see Crocetti & Meeus, 2014, for a review).

Variable-centered studies have pointed out that the three identity processes were meaningfully related to individual, relational, and social correlates. Specifically, commitment was found to be a strong predictor of identity consolidation and was linked to a stable self-concept, extraversion, emotional stability, low internalizing (anxiety, depression) and externalizing (aggression) problems, and nurturing relations with parents (e.g., Crocetti et al., 2008; Crocetti, Schwartz, Fermani, & Meeus, 2010; Morsunbul, Crocetti, Cok, & Meeus, 2014). In-depth exploration appeared to be a double-edged sword. On the one hand, it was negatively linked to self-concept clarity and emotional stability; on the other hand, it was found to be an adaptive process, being positively related to agreeableness, conscientiousness, openness to experience, social responsibility, and positive well-being (Crocetti et al., 2008; Crocetti et al., 2010; Crocetti, Jahromi, & Meeus, 2012; Karaś, Cieciuch, Negru, & Crocetti, 2014). Reconsideration of commitment unequivocally represented the crisis-like process of identity formation. It was negatively associated with agreeableness and conscientiousness; it was linked to poor family relationships, and positively associated with internalizing and externalizing problems (Crocetti et al., 2008; Crocetti et al., 2010; Crocetti, Klimstra, Hale, Koot, & Meeus, 2013). Therefore, releasing one's commitments was intertwined with disequilibrium and distress.

The application of the three-factor model in person-centered studies has contributed to the advancement of the identity research in multiple directions. First, the application of the three-factor model in conjunction with empirical-based methods of classification (e.g., cluster analysis, latent class analysis) has allowed reliable classification of all respondents into identity statuses categories (e.g., Crocetti, Schwartz, Fermani, Klimstra, & Meeus, 2012; Meeus et al., 2010). Doing so, it has been possible to overcome the criticisms of other identity measures, which resulted in a large number of participants being unclassified, such as the EOM-EIS-II (Bennion & Adams, 1986), or relied on median split criteria to assign participants to identity groups, such as the EIPQ (Balistreri et al., 1995). Second, these advancements in the classification of participants into identity statuses highlighted that the moratorium status described by Marcia (1966) could be further differentiated into two facets, a positive and a negative one. In this way, applications of the three-factor model have offered a new view on contradictory findings reported in the literature (Crocetti, Schwartz, et al., 2012).

The three-factor model can be used to study identity in different domains, such as education, job, and relations (e.g., friendship, romantic relationship). Thus, the model can be used to examine identity processes in one specific domain (e.g., educational identity, Karaś et al., 2014; job identity, Crocetti, Avanzi, Hawk, Fraccaroli, & Meeus, 2014) or to study global identity (e.g., Klimstra, Hale,

Raaijmakers, Branje, & Meeus, 2010; Meeus, van de Schoot, Keijsers, & Branje, 2012) obtained by combining at least one ideological domain (e.g., educational or job identity) and one relational domain (e.g., peer or romantic relationship). Empirical evidence indicates that the pattern of association of identity processes with relevant correlates is similar, despite different domains taken into account (Crocetti & Meeus, 2014).

In the current study, we focused on a specific domain of identity that is of crucial importance for university students, which is educational identity (Arnett, 2004; Erikson, 1968). This domain is related to plans and vocational goals that youth are pursuing for their future occupation (Marcia, 1980). Karaś et al. (2014) found that educational identity processes were related to well-being (with commitment and in-depth exploration being positively related to well-being and reconsideration of commitment being negatively related to it) in university students. In particular, they found a very strong association between educational commitment and a multidimensional latent variable representing well-being, whose indicators were subjective well-being, psychological well-being, and social well-being. Notably, this association was stronger than the link between occupational commitment and well-being and was consistent across university students from Southern (i.e., Italy) and Eastern (i.e., Poland and Romania) European contexts. These findings suggest the relevance of educational identity for psychosocial functioning in university students.

The Utrecht-Management of Identity Commitments Scale

The U-MICS was developed to assess commitment, in-depth exploration, and reconsideration of commitment (Crocetti et al., 2008). Previous studies conducted within a confirmatory factor analysis (CFA) framework provided straightforward support to the three-factor structure of the U-MICS (for a review, see Crocetti & Meeus, 2014). The three-factor solution has been found to be superior to more parsimonious one-factor (consisting of a general identity factor) and two-factor (consisting of commitment and a general exploration process encompassing both in-depth exploration and reconsideration of commitment) solutions. This robustness of the three-factor structure of the U-MICS has been replicated in studies conducted in various nations including the Netherlands (Crocetti et al., 2008), Italy (Crocetti et al., 2010), French-speaking Switzerland (Zimmermann, Mahaim, Mantzouranis, Genoud, & Crocetti, 2012), and Turkey (Morsunbul et al., 2014). Furthermore, a two-nation comparison revealed measurement invariance of the Dutch and Italian versions of the U-MICS (Crocetti et al., 2010), and a three-nation study found invariance for the Italian, Polish, and Romanian versions of the scale (Karaś et al., 2014). Notably, a recent

cross-national study (Dimitrova et al., 2015) established measurement invariance (configural, metric, and partial scalar invariance) for the three-factor structure of the U-MICS across seven European countries including Bulgaria, the Czech Republic, Italy, Kosovo, the Netherlands, Romania, and Slovenia. Thus, extant evidence suggests that the U-MICS is a promising tool for conducting cross-national identity studies.

Furthermore, the three-factor structure of the U-MICS has been further replicated across gender (Crocetti et al., 2008; Crocetti et al., 2010; Morsunbul et al., 2014), age (Crocetti et al., 2008; Crocetti et al., 2014), and ethnic (Crocetti et al., 2008) groups living in the same cultural context. For instance, Morsunbul et al. (2014) established all the various levels of invariance (configural, metric, full scalar, and covariance invariance) across gender and age (early adolescents, middle adolescents, and university students) groups in Turkish youth.

Furthermore, consistent evidence (e.g., Crocetti et al., 2008; Meeus et al., 2010) indicates that the internal consistency of the three factors has been found to be very good for commitment and reconsideration of commitment (with Cronbach's alphas usually $\geq .80$) and good for in-depth exploration (with Cronbach's alphas usually $\geq .70$). In addition, U-MICS convergent validity has been proved in two ways. First, the three processes of commitment, in-depth exploration, and reconsideration of commitment have been found to be meaningfully related to a number of correlates that can be grouped into self and personality characteristics, dimensions of parent-adolescent relationships, and multiple indicators of problem behaviors and adjustment (e.g., Crocetti et al., 2008; Crocetti et al., 2010; Morsunbul et al., 2014). Second, the U-MICS scores have been meaningfully related to participants' scores in other identity measures, such as the Ego Identity Process Questionnaire-Short form (Zimmermann et al., 2012), the Identity Style Inventory (Crocetti, Rubini, Berzonsky, & Meeus, 2009; Zimmermann et al., 2012), and the Functions of Identity Scale (Crocetti, Sica, Schwartz, Serafini, & Meeus, 2013). Thus, this set of evidence suggests that the U-MICS has good internal consistency and convergent validity.

The Present Study

In this study, we aimed at further advancing testing of the psychometric properties of the U-MICS by examining national measurement invariance of the U-MICS across large samples of university students from 10 different nations located in Europe (i.e., Italy, the Netherlands, Poland, Portugal, Romania, Switzerland), Middle East (i.e., Turkey), and Asia (i.e., China, Japan, Taiwan). As an additional aim, we tested for gender measurement invariance across and within each national group to test if the U-MICS

can be applied equally well for measuring identity in males and females living in different cultural contexts. In fact, gender may be of importance in identity formation (Cramer, 2000). So far, research conducted with the three-factor model has indicated that gender differences in identity processes exist but mainly regard adolescents (Meeus et al., 2010). Specifically, girls are ahead of boys in identity formation in early to middle adolescence, with boys catching up in late adolescence (Klimstra, Hale, et al., 2010). This result is consistent with the review by Kroger (1997) and suggests that earlier physical and cognitive maturation in girls may account for some of this pattern.

Method

Participants and Procedure

A total of 6,118 (63.2% females) university students aged from 18 to 25 years ($M_{age} = 20.91$ years, $SD_{age} = 1.65$) participated in this study. Demographics characteristics of each national sample are reported in Table 1. Since it was not possible to obtain in each country nationally representative samples, we used a convenience sampling approach aimed at involving a heterogeneous student population. Thus, the approached students were enrolled in a variety of university faculties, which can be grouped into the three main areas of study of social sciences and humanities (e.g., economics, educational sciences, law, political sciences, psychology), life sciences (e.g., medical and health science, biology), and engineering and computer sciences (e.g., bioengineering, graphics). Overall, university students were enrolled in 81 universities: 21 universities were located in Italy (e.g., University of Bologna, University of Macerata, and University of Bari), 14 in the Netherlands (e.g., University of Groningen, Utrecht University, and Erasmus University Rotterdam), 2 in Poland (University of Finance and Management and Cardinal Stefan Wyszyński University in Warsaw), 2 in Portugal (University of Porto and University of Aveiro), 2 in Romania (Babes-Bolyai University and Technical University Cluj), 3 in Switzerland (University of Fribourg, University of Geneva, and University of Lausanne), 1 in Turkey (Aksaray University), 1 in China (University of Lanzhou), 11 in Japan (e.g., Nagoya University, Hiroshima University, and Kyushu Sangyo University), and 24 in Taiwan (e.g., Tainan University of Technology, Fu Jen Catholic University, and Taichung University of Education). Students were contacted in university buildings by researchers, provided with information about the study, and asked if they wished to participate in it. They completed an anonymous self-report questionnaire. The participation rate was almost 100% in every country, with sporadic cases of refusals being less than 1% in the total sample.

Measure

Identity commitment, in-depth exploration, and reconsideration of commitment were measured using the U-MICS. The U-MICS has been originally developed in Dutch (Crocetti et al., 2008) and subsequently validated in Italian (Crocetti et al., 2010), French (Zimmermann et al., 2012), and Turkish (Morsunbul et al., 2014). Further studies revealed good psychometric properties of the U-MICS applied also in other languages, such as Romanian (Dimitrova et al., 2015). For the current study, the English version of the U-MICS (cf. Stringer & Kerpelman, 2010, for an application in the United States) was translated in Polish, Portuguese, Chinese, traditional Chinese, and Japanese by at least two independent psychologists following the recommended procedures for the establishment of linguistic equivalence (Van de Vijver & Leung, 1997). The U-MICS consists of 13 items with a response scale ranging from 1 (*completely untrue*) to 5 (*completely true*). The complete list of items is reported in the appendix. Cronbach's alphas are reported in Table 1.

Results

Confirmatory Factor Analyses in the Total Sample and in Each National Group

The first goal of this study was to establish whether the three-factor structure of the U-MICS fitted the data well in the overall sample and in each national group. To reach this purpose, we conducted CFAs in *Mplus* 7.3 (Muthén & Muthén, 1998-2012) with the maximum likelihood robust (Satorra & Bentler, 1994) estimator.

First, we conducted a CFA in the total sample. We tested a solution with three latent variables and a total of 13 observed indicators (five for commitment, five for in-depth exploration, and three for reconsideration of commitment). We examined model fit through the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Values of the CFI higher than .90 are indicative of an acceptable fit with values higher than .95 suggesting an excellent fit, values of the RMSEA less than .05 indicate good fit, and values as high as .08 represent reasonable errors of approximation (Browne & Cudeck, 1993; Byrne, 2012). In addition, we examined the 90% confidence interval of the RMSEA: when the upper bound of this confidence interval is $\leq .10$, the model fit can be considered acceptable (Chen, Curran, Bollen, Kirby, & Paxton, 2008; Rossi, Elklit, & Simonsen, 2010). As a convention, we reported the chi-square statistic; however, we did not use it to test model fit since it is well-known that this statistic is overly sensitive to sample size (e.g., Chen, 2007; Cheung & Rensvold, 2002).

Results of the CFA conducted in the total sample (see Table 2) indicated that the fit of the three-factor model was

overall adequate although the RMSEA was slightly above .08. Modification indices suggested that adding correlations between three pairs of error terms could improve considerably the fit of the model. Measurement error covariances may be due to different reasons (Aish & Jöreskog, 1990), attributable either to the items (e.g., they might represent omitted or unmeasured latent factors) or to the respondents (e.g., they may reflect bias such as yea-saying or nay-saying, social desirability). A common reason for error covariances is a high degree of overlap in item content. This situation, occurring when multiple items are worded similarly and assess the same construct (Byrne, 2012), applies to our case. In fact, modification indices suggested to correlate error terms for Items 4 and 5 of commitment ("My education gives me security for the future" and "My education allows me to face the future with optimism"); 1 and 4 of commitment ("My education gives me security in life" and "My education gives me security for the future"); and 4 and 5 of exploration ("I often try to find out what other people think about my education" and "I often talk with other people about my education"). All of these pairs of items are worded similarly and share similar conceptual contents (Items 4 and 5 of commitment both deal with future certainty, Items 1 and 4 of commitment both tap security, and Items 4 and 5 of exploration both assess the interpersonal side of exploration that involves gathering information from other people), which can create a residual correlation. Thus, we correlated these error terms since these correlations could be theoretically justified (Byrne, 2012). Allowing these errors to be correlated improved the fit of the model and the revised model was found to be very good (see Table 2).

In line with previous studies examining the factorial structure of the U-MICS (Crocetti et al., 2008; Crocetti et al., 2010; Morsunbul et al., 2014), we compared the hypothesized three-factor solution with more parsimonious one-factor (with all items loading on a unique latent variable representing a general identity factor) and two-factor (with two latent variables, namely commitment and a general exploration factor on which indicators of in-depth exploration and reconsideration of commitment loaded) solutions. To examine which was the best fitting solution, we compared the models using Akaike's information criterion and Bayes information criterion indices (i.e., the model with the smallest Akaike's information criterion and Bayes information criterion values is the best fitting one). Consistent with prior studies, findings provided straightforward support to the superiority of the three-factor model (with three error correlations) to the one-factor and two-factor models. Thus, we retained the factor solution displayed in Figure 1 as the final one. Commitment was positively and highly correlated with in-depth exploration, whereas it was negatively related to reconsideration of commitment; and in-depth exploration and reconsideration of commitment were very weakly and negatively related.

Table 1. Sample Statistics and Internal Consistency Scores for the Total Sample and for Each National Sample.

	Total sample	Europe						Middle East			Asia		
		IT	NL	PL	PT	RO	CH	TR	CN	JP	TW		
<i>Sample characteristics</i>													
Sample size	6,118	1,070	588	500	533	854	429	412	256	557	919		
Mean age (standard deviation)	20.9 (1.65)	21.8 (1.81)	21.15 (1.67)	20.52 (1.49)	19.51 (1.48)	20.04 (1.24)	21.30 (1.52)	21.40 (1.97)	20.28 (1.38)	20.52 (1.42)	21.52 (0.50)		
Gender (% of females)	63.2	54.1	57.5	80	64.4	72.5	83.4	56.6	79.3	52.1	54.7		
<i>U-MICS Cronbach's alphas</i>													
Commitment	.89	.84	.82	.88	.86	.88	.84	.87	.85	.84	.92		
In-depth exploration	.74	.70	.71	.78	.76	.74	.67	.71	.70	.82	.81		
Reconsideration of commitment	.87	.81	.87	.87	.89	.89	.87	.87	.72	.85	.80		

Note. IT = Italy; NL = Netherlands; PL = Poland; PT = Portugal; RO = Romania; CH = Switzerland; CN = China; JP = Japan; TW = Taiwan; TR = Turkey; U-MICS = Utrecht-Management of Identity Commitments Scale.

Table 2. Fit Indices for the One-Factor, Two-Factor, and Three-Factor Models for the Total Sample and for Each National Sample.

	χ^2	df	CFI	RMSEA [90% CI]	AIC	BIC
<i>Total sample</i>						
One-factor model	14028.379	65	.543	.187 [.185, .190]	206867.683	207129.723
Two-factor model	11739.112	64	.618	.173 [.170, .175]	203732.596	204001.356
Three-factor model	2728.140	62	.913	.084 [.081, .087]	193543.222	193825.419
Three-factor model with three error correlations	880.504	59	.973	.048 [.045, .051]	191403.261	191705.616
<i>National samples</i>						
<i>Italy</i>						
One-factor model	1900.842	65	.548	.162 [.156, .169]	35375.435	35569.476
Two-factor model	1861.844	64	.558	.162 [.156, .168]	35097.848	35296.864
Three-factor model	560.069	62	.877	.087 [.080, .093]	33858.667	34067.634
Three-factor model with three error correlations	228.880	59	.958	.052 [.045, .059]	33495.175	33719.069
<i>The Netherlands</i>						
One-factor model	1541.147	65	.395	.197 [.188, .205]	18374.700	18545.392
Two-factor model	1254.474	64	.512	.178 [.169, .187]	18077.369	18252.438
Three-factor model	382.967	62	.869	.094 [.085, .103]	17110.404	17294.227
Three-factor model with three error correlations	154.958	59	.961	.053 [.043, .063]	16863.181	17060.134
<i>Poland</i>						
One-factor model	1160.967	65	.618	.184 [.174, .193]	15934.279	16098.649
Two-factor model	984.408	64	.679	.170 [.160, .179]	15662.899	15831.484
Three-factor model	405.490	62	.880	.105 [.096, .115]	15042.944	15219.958
Three-factor model with three error correlations	131.641	59	.975	.050 [.038, .061]	14741.874	14931.531
<i>Portugal</i>						
One-factor model	1833.089	65	.396	.226 [.217, .235]	16387.247	16554.109
Two-factor model	1541.505	64	.495	.208 [.199, .217]	16028.052	16199.193
Three-factor model	636.298	62	.804	.132 [.123, .141]	15066.194	15245.892
Three-factor model with three error correlations	261.026	59	.931	.080 [.070, .090]	14643.061	14835.594
<i>Romania</i>						
One-factor model	2646.564	65	.439	.216 [.209, .223]	28537.369	28722.617
Two-factor model	2180.649	64	.540	.197 [.190, .204]	27893.299	28083.296
Three-factor model	713.865	62	.858	.111 [.104, .118]	26365.982	26565.479
Three-factor model with three error correlations	193.343	59	.971	.052 [.044, .060]	25801.697	26015.444
<i>Switzerland</i>						
One-factor model	1213.160	65	.420	.203 [.193, .213]	14433.125	14591.522
Two-factor model	1094.196	64	.480	.194 [.184, .204]	14262.817	14425.275
Three-factor model	441.801	62	.808	.119 [.109, .130]	13608.264	13778.846
Three-factor model with three error correlations	125.186	59	.967	.051 [.039, .064]	13275.843	13458.609
<i>Turkey</i>						
One-factor model	1084.627	65	.498	.195 [.185, .205]	12557.124	12713.944
Two-factor model	965.883	64	.556	.185 [.175, .195]	12358.785	12519.626
Three-factor model	367.571	62	.850	.109 [.099, .120]	11719.426	11888.309
Three-factor model with three error correlations	119.552	59	.970	.050 [.037, .063]	11445.790	11626.736
<i>China</i>						
One-factor model	415.046	65	.603	.145 [.132, .159]	8786.544	8924.806
Two-factor model	262.883	64	.775	.110 [.097, .124]	8629.551	8771.358
Three-factor model	121.733	62	.932	.061 [.045, .077]	8484.079	8632.977

(continued)

Table 2. (continued)

	χ^2	df	CFI	RMSEA [90% CI]	AIC	BIC
Three-factor model with three error correlations	107.715	59	.945	.057 [.039, .074]	8473.841	8633.374
Japan						
One-factor model	1539.018	65	.434	.202 [.193, .211]	19170.977	19339.557
Two-factor model	929.505	64	.668	.156 [.147, .165]	18582.033	18754.935
Three-factor model	337.383	62	.894	.089 [.080, .099]	17911.657	18093.204
Three-factor model with three error correlations	263.037	59	.922	.079 [.069, .089]	17827.792	18022.307
Taiwan						
One-factor model	2064.353	65	.604	.183 [.176, .190]	28479.585	28667.693
Two-factor model	1448.081	64	.726	.153 [.147, .160]	27662.767	27855.699
Three-factor model	424.212	62	.928	.080 [.073, .087]	26445.786	26648.364
Three-factor model with three error correlations	272.438	59	.958	.063 [.055, .070]	26265.894	26482.942

Note. χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; AIC = Akaike's information criterion; BIC = Bayes information criterion. In bold is indicated the best fitting factor solution for each group.

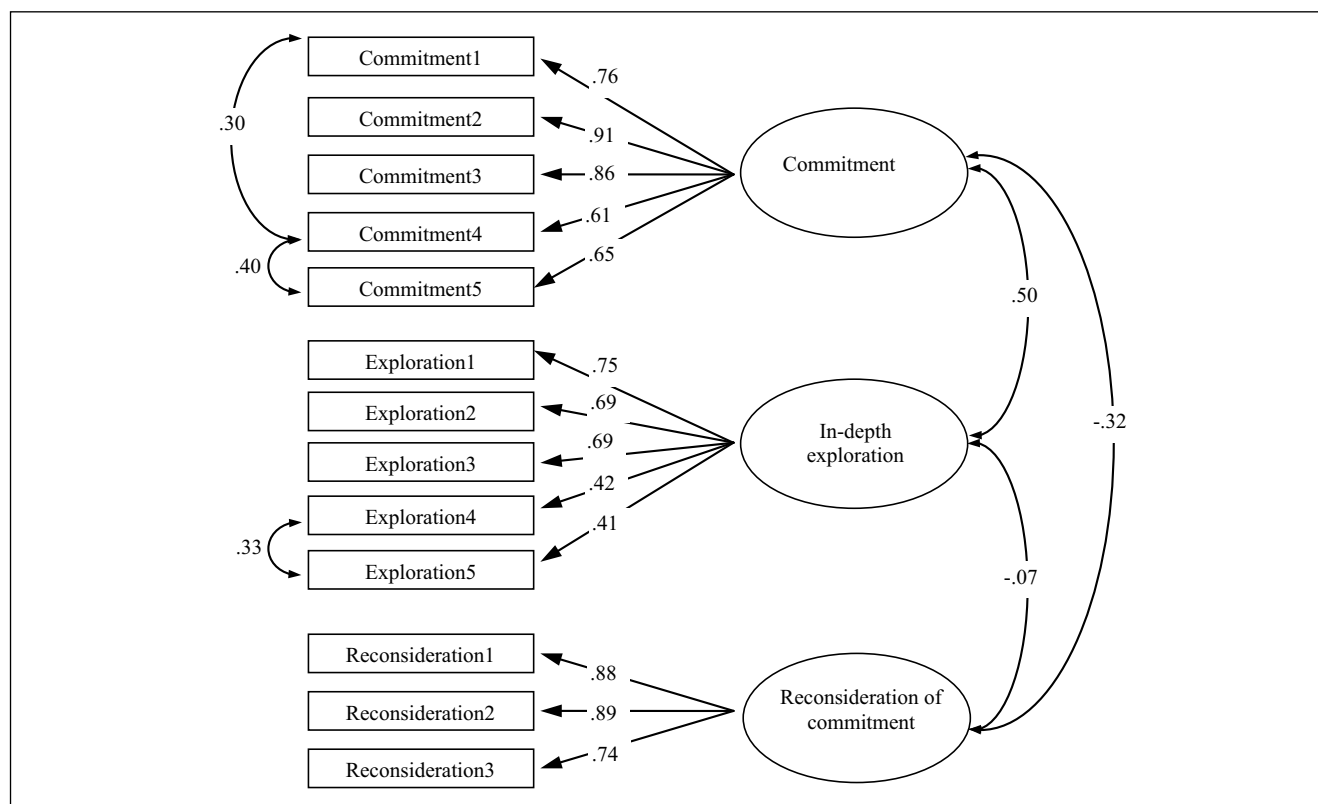


Figure 1. Standardized solution of the three-factor model of the U-MICS ($N = 6,118$).

Note. U-MICS = Utrecht-Management of Identity Commitments Scale. All factor loadings and correlations are significant at $p < .001$.

Finally, we repeated the set of CFAs performed in the overall sample for each national group. Results (see Table 2) clearly indicated that the three-factor model with three

correlations between errors provided an adequate to good fit to the data within each national sample and was clearly superior to one-factor and two-factor models. Thus, the

Table 3. Tests of U-MICS National and Gender Measurement Invariance.

	Model fit				Model comparisons		
	χ^2	df	CFI	RMSEA [90% CI]	Models	Δ CFI	Δ RMSEA
<i>National invariance</i>							
M1. Configural	1875.007	590	.957	.060 [.057, .063]			
M2a. Metric	2411.523	680	.942	.065 [.062, .067]	M2a – M1	–.015	.005
M2b. Partial metric	2150.471	653	.950	.061 [.058, .064]	M2b – M1	–.005	.001
M3a. Full scalar	4724.080	743	.866	.094 [.091, .096]	M3a – M2b	–.084	.033
M3b. Partial scalar	2531.145	680	.938	.067 [.064, .069]	M3b – M2b	–.012	.006
M4. Covariances invariances	2444.207	680	.941	.065 [.062, .068]	M4 – M2b	–.009	.004
<i>Gender invariance</i>							
M1. Configural	929.612	118	.973	.047 [.045, .050]			
M2. Metric	948.698	128	.973	.046 [.043, .049]	M2 – M1	.000	–.001
M3. Full scalar	1020.569	138	.971	.046 [.043, .048]	M3 – M2	–.002	.000
M4. Covariances invariance	979.254	131	.972	.046 [.043, .049]	M4 – M2	–.001	.000

Note. U-MICS = Utrecht-Management of Identity Commitments Scale; χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; Δ = change in the parameter.

same factor solution applied well to each national group as well as to the total sample.

Measurement Invariance

We tested national and gender measurement invariance by conducting consequential multigroup CFAs (e.g., Chen, 2007; Little et al., 2007; van de Schoot et al., 2012). First, we tested *configural invariance*. It requires that the same number of factors and pattern (or configuration) of fixed and freely estimated parameters holds across groups and can be tested running a multigroup CFA without any equality constraints across groups. The configural model functions as the baseline model, therefore, adequate goodness-of-fit of this model is mandatory. The second level of measurement equivalence is *metric invariance*. It entails equivalence of factor loadings and indicates that respondents from multiple groups attribute the same meaning to the latent construct of interest. The third level of measurement equivalence is *scalar invariance*. It requires invariance of both factor loadings and item intercepts. Thus, scalar invariance indicates that the meaning of the construct (the factor loadings) and the levels of the underlying items (intercepts) are equal across groups. Finally, we examined *covariances invariance*, which implies that covariances among latent factors are equal across groups.

In line with the best practices of the measurement invariance literature (e.g., Cheung & Rensvold, 2002), we tested differences between models representing the various levels of invariance considering changes in fit indices. Specifically, to examine differences between models, we followed Chen's recommendations (2007) according to which a Δ CFI \geq –.010 supplemented by Δ RMSEA \geq .015 would be indicative of

noninvariance. We did not rely on the likelihood-ratio test, also known as the chi-square difference test, since when the sample size is large even a small difference between models may result in a significant value of $\Delta\chi^2$, indicating that the null hypothesis of no difference should be rejected even when the difference is trivial (Cheung & Rensvold, 2002). This would then lead to results in which statistical significance does not imply practical significance (for a broader discussion about the relevance of practical significance over statistical significance, see also Cumming, 2012; Kline, 2013).

National Invariance. As can be seen in Table 3, we found that the configural model fitted the data well. Also the metric model fitted the data well; however, the Δ CFI exceeded the threshold. So, we conducted ancillary analyses to detect which factor loadings could be released to obtain a partial metric invariance model. Specifically, we compared the configural model with 13 models; each of them obtained fixing all factor loadings, except for one, to be the same across groups. As a result, we tested a partial metric model in which factor loadings of Item 4 of commitment, Item 3 of exploration, and Item 3 of reconsideration of commitment (see the appendix for the complete list of items) were free to vary across groups, whereas all the other items were fixed. According to both the Δ CFI and the Δ RMSEA this partial metric model did not differ from the configural model. Similarly, the model assuming equivalence of covariances did not differ from the partial metric model, suggesting that these three levels of invariance (configural, partial metric, and covariance invariance) could be clearly established. In contrast, data did not indicate full scalar invariance. Thus, we conducted ancillary analyses in which we compared the

partial metric model with 13 models; each of them obtained fixing only one item intercept to be equal across groups. In this way, we could identify the items that resulted in lower model fit changes when constrained. These were Items 2 and 3 for commitment, 1 and 2 for the in-depth exploration, and 1 and 2 for reconsideration of commitment. Therefore, these items were constrained to be equal across groups in order to test partial scalar invariance, which can be obtained constraining two intercepts for each latent factor to be equal across groups (Byrne, Shavelson, & Muthén, 1989). Findings indicated that the model with partial scalar invariance slightly exceeded Chen's (2007) benchmark for the ΔCFI , while the $\Delta RMSEA$ was below the cutoff. Thus, latent means should be compared with caution.

We used a Multiple Indicators Multiple Causes (MIMIC) model with continuous factor indicators and a mean structure to explore differences in the latent means (Muthén, & Muthén, 1998-2012). Specifically, we constrained the same factor structure to hold across groups and we regressed the factor indicators of commitment, in-depth exploration, and reconsideration of commitment on covariates representing dummy coded variables corresponding to the country values. We created a dummy coded variable for each country and included all of them in the analyses except for one that served as the reference group (i.e., all the other means were compared with the mean of this group). We repeated the same procedure changing the reference group, to conduct all possible comparisons between countries. The MIMIC model reported an adequate fit ($\chi^2 = 3846.282$, $df = 149$, $CFI = .905$, $RMSEA = .064$ [.062, .065]). Results yielded this pattern of findings for latent mean differences: $JP < TW < CN$, $IT < PL \leq PT$, $CH \leq NL < RO < TR$, for commitment; $TW \leq JP \leq NL < IT$, $CN < TR \leq RO \leq PL \leq PT < CH$, for in-depth exploration; and $NL < PT \leq RO < PL < CH$, $IT < TR \leq JP < TW$, CN , for reconsideration of commitment.¹ These findings indicated that Asian participants reported more identity uncertainty, with a combination of low commitment and high reconsideration of commitment. Ancillary analyses indicated that this pattern of results was consistent across all commitment and reconsideration of commitment items (the complete list of items is reported in the appendix).

Gender Invariance. Analyses conducted in the total sample revealed that the three-factor model with three error correlations allowed fitted very well in both male ($\chi^2 = 608.810$, $df = 59$, $CFI = .972$, $RMSEA = .049$ [.046, .053]) and female ($\chi^2 = 322.832$, $df = 59$, $CFI = .976$, $RMSEA = .045$ [.040, .049]) subsamples.

We first tested gender measurement invariance in the overall sample. Results (see Table 3) indicated that all levels (i.e., configural, metric, full scalar, and covariance invariance) of invariance were established in the total sample. Then, we further tested gender invariance within each

national group and we found that all levels held within each national group (see Table 4).

A comparison of latent means (see Table 5) conducted in the total sample highlighted that females scored significantly higher than males on commitment and in-depth exploration, whereas males reported higher reconsideration of commitment. An inspection of gender differences within each national group indicated that most differences were not statistically significant.

Discussion

The U-MICS (Crocetti et al., 2008) is a self-report measure that assesses identity processes of commitment, in-depth exploration, and reconsideration of commitment. In this study, we sought to (a) examine its psychometric properties in university students from 10 different nations, (b) test national measurement invariance and compare covariances across nations, and (c) test gender measurement invariance and compare covariances in the total sample and within national groups.

The U-MICS Factor Structure

Results indicated that the three-factor structure of the U-MICS fitted the data adequately in the total sample as well as in each national group under consideration (i.e., Italy, the Netherlands, Poland, Portugal, Romania, Switzerland, Turkey, China, Japan, and Taiwan). Additionally, internal consistency values were good across national samples. Overall, these results are consistent with previous psychometric studies in showing that the U-MICS has a three-factor structure that is superior to alternative one-factor (general identity) and two-factor (commitment and general exploration) solutions (Crocetti et al., 2008; Crocetti et al., 2010; Dimitrova et al., 2015; Morsunbul et al., 2014). Therefore, commitment, in-depth exploration, and reconsideration of commitment represent distinct identity processes.

National Measurement Invariance

A major goal of this study was to test national measurement invariance. In fact, establishment of measurement invariance is a necessary prerequisite for conducting cross-national studies (Byrne et al., 2009; Byrne & van de Vijver, 2010; Selig, Card, & Little, 2008; van de Vijver & Leung, 2000). Results highlighted establishment of configural, partial metric, partial scalar, and covariances invariance (van de Schoot et al., 2012). This is a very relevant result in the context of the available cross-national literature on identity. Indeed, most previous comparisons conducted with other identity measures (e.g., EIPQ, Balistreri et al., 1995; EOM-EIS-II, Bennion & Adams, 1986), mainly limited to pairwise

Table 4. Tests of U-MICS Gender Invariance Conducted Within Each National Sample.

	Model fit				Model comparisons		
	χ^2	df	CFI	RMSEA [90% CI]	Models	Δ CFI	Δ RMSEA
<i>Italy</i>							
M1. Configural	288.555	118	.958	.052 [.044, .060]			
M2. Metric	303.756	128	.957	.051 [.043, .058]	M2 – M1	–.001	–.001
M3. Full scalar	333.683	138	.952	.051 [.044, .059]	M3 – M2	–.005	.000
M4. Covariances invariance	325.596	131	.952	.053 [.046, .060]	M4 – M2	–.005	.002
<i>The Netherlands</i>							
M1. Configural	230.965	118	.954	.057 [.046, .068]			
M2. Metric	242.163	128	.954	.055 [.044, .066]	M2 – M1	.000	–.002
M3. Full scalar	281.373	138	.942	.059 [.049, .069]	M3 – M2	–.012	.004
M4. Covariances invariance	244.023	131	.954	.054 [.044, .065]	M4 – M2	.000	–.001
<i>Poland</i>							
M1. Configural	215.301	118	.968	.057 [.045, .069]			
M2. Metric	223.801	128	.968	.055 [.043, .066]	M2 – M1	.000	–.002
M3. Full scalar	243.479	138	.965	.055 [.044, .067]	M3 – M2	–.003	.000
M4. Covariances invariance	228.541	131	.968	.055 [.043, .066]	M4 – M2	.000	.000
<i>Portugal</i>							
M1. Configural	327.729	118	.931	.082 [.071, .092]			
M2. Metric	334.321	128	.932	.078 [.068, .088]	M2 – M1	.001	–.004
M3. Full scalar	356.394	138	.928	.077 [.067, .087]	M3 – M2	–.004	–.001
M4. Covariances invariance	341.067	131	.931	.078 [.068, .088]	M4 – M2	–.001	.000
<i>Romania</i>							
M1. Configural	255.267	118	.970	.052 [.043, .061]			
M2. Metric	264.482	128	.971	.050 [.041, .058]	M2 – M1	.001	–.002
M3. Full scalar	288.963	138	.968	.051 [.042, .059]	M3 – M2	–.003	.001
M4. Covariances invariance	271.474	131	.970	.050 [.042, .059]	M4 – M2	–.001	.000
<i>Switzerland</i>							
M1. Configural	209.212	118	.956	.060 [.047, .073]			
M2. Metric	218.954	128	.956	.058 [.044, .070]	M2 – M1	.000	–.002
M3. Full scalar	241.686	138	.950	.059 [.047, .071]	M3 – M2	–.006	.001
M4. Covariances invariance	220.364	131	.957	.056 [.043, .069]	M4 – M2	.001	–.002
<i>Turkey</i>							
M1. Configural	204.640	118	.958	.060 [.046, .073]			
M2. Metric	211.101	128	.959	.056 [.042, .069]	M2 – M1	.001	–.004
M3. Full scalar	218.295	138	.961	.053 [.039, .066]	M3 – M2	.002	–.003
M4. Covariances invariance	221.278	131	.956	.058 [.044, .071]	M4 – M2	–.003	.002
<i>China</i>							
M1. Configural	207.423	118	.907	.077 [.059, .094]			
M2. Metric	210.033	128	.915	.071 [.053, .088]	M2 – M1	.008	–.006
M3. Full scalar	223.116	138	.911	.069 [.052, .086]	M3 – M2	–.004	–.002
M4. Covariances invariance	209.787	131	.918	.069 [.051, .085]	M4 – M2	.003	–.002
<i>Japan</i>							
M1. Configural	313.308	118	.925	.077 [.067, .088]			
M2. Metric	325.421	128	.925	.074 [.064, .084]	M2 – M1	.000	–.003
M3. Full scalar	357.775	138	.916	.076 [.066, .085]	M3 – M2	–.009	.002
M4. Covariances invariance	333.887	131	.922	.075 [.065, .085]	M4 – M2	–.003	.001
<i>Taiwan</i>							
M1. Configural	342.398	118	.956	.064 [.056, .072]			
M2. Metric	325.255	128	.956	.062 [.054, .069]	M2 – M1	.000	–.002
M3. Full scalar	371.186	138	.954	.061 [.053, .068]	M3 – M2	–.002	–.001
M4. Covariances invariance	352.595	131	.957	.061 [.053, .068]	M4 – M2	.001	–.001

Note. U-MICS = Utrecht-Management of Identity Commitments Scale; χ^2 = chi-square; df = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; CI = confidence interval; Δ = change in the parameter.

Table 5. Gender Differences in Latent Identity Means for the Total Sample and for Each National Sample.

	Total sample	Europe						Middle East	Asia		
		IT	NL	PL	PT	RO	CH	TR	CN	JP	TW
Commitment	4.215***	-1.484	0.258	0.786	-2.998**	4.756***	0.185	3.657***	1.650	-0.561	-1.010
In-depth exploration	6.681***	1.309	1.686	0.600	2.123*	2.909**	1.297	1.661	0.589	0.733	-0.657
Reconsideration of commitment	-3.645***	-0.213	-2.448*	0.168	-1.021	-0.098	-0.892	-3.312***	-0.143	-1.816	2.017*

Note. IT = Italy; NL = Netherlands; PL = Poland; PT = Portugal; RO = Romania; CH = Switzerland; CN = China; JP = Japan; TW = Taiwan; TR = Turkey. Reported values are z scores (i.e., estimate/standard error). Males are used as the reference group, thus positive scores indicate that females scored higher than males.

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

contrasts involving the United States and only one other country, did not conduct any test of invariance (e.g., Graf et al., 2008; Jensen et al., 1998; Low et al., 2005) or failed in establishing this (Berman et al., 2011). In contrast, studies using the U-MICS yielded consistent findings showing that these various levels of invariance could be established also in two-nation (Crocetti et al., 2010) and seven-nation (Dimitrova et al., 2015) studies conducted with European adolescent samples.

Different levels of measurement invariance are required dependent on research aims. If researchers are interested in comparing construct variances and covariances or path coefficients across groups, only establishment of configural and metric invariance is required because the estimation of construct variances and covariances and path coefficients does not involve item means and intercepts (Cheung, 2008). Thus, the current results suggest that the U-MICS can be employed in cross-national studies aimed at comparing how identity processes are interrelated to other relevant correlates (e.g., Karaš et al., 2014).

In contrast, if researchers are interested in comparing latent means across groups, configural, metric, and scalar invariances are all necessary (Cheung & Rensvold, 2002). Full scalar invariance is difficult to achieve and it has been suggested that at least two invariant indicators per latent factors are required as a prerequisite for valid latent mean comparison (i.e., partial scalar invariance; Byrne et al., 1989; van de Schoot et al., 2012; Vandenberg, 2002). In contrast, analyses of observed composite mean differences are only warranted in conditions of full measurement invariance (Steinmetz, 2013). Thus, since in this study we found support for partial instead of full scalar invariance, we did not compare observed mean scores but we cautiously compared latent means. We tested MIMIC models and we found that Japanese, Taiwanese, and Chinese participants were characterized by identity instability. In fact, they reported a combination of low commitment and high reconsideration of commitment. Contrariwise, Dutch and Romanian respondents showed the most stable identity pattern. Indeed, they

exhibited a combination of high commitment and low reconsideration of commitment. Future cross-national investigations are needed to identify which factors can explain this pattern of findings.

Gender Measurement Invariance

A further main aim of this study was to test gender measurement invariance. In this respect, findings provided straightforward support to all levels of equivalence (configural, metric, full scalar, and covariance invariance) both in the total sample and also within each national group. Thus, the three-factor identity model applies equally well to males and females and associations among identity processes are consistent across gender groups.

On the basis of these findings, we could explore differences in latent means. Analyses conducted in the total sample revealed that females reported higher commitment, higher in-depth exploration, and lower reconsideration of commitment than males. Thus, these findings suggest that females have a more stable identity than males. Although gender differences were significant in the total sample, inspection of gender effects conducted within each national group indicated few differences that reached statistical significance. These results confirm that most gender differences that emerge in adolescence and are probably related to differences in pubertal timing and cognitive development are likely to have disappeared by late adolescence (Klimstra, Hale, et al., 2010).

Associations Among Identity Processes

In this study, we examined associations among identity processes cross-nationally. Results highlighted cross-national and gender equivalence of covariances among latent factors. Therefore, correlations among commitment, in-depth exploration, and reconsideration of commitment were similar across male and female respondents from the 10 nations under investigation. Specifically, commitment was positively

and highly correlated with in-depth exploration, whereas it was negatively related to reconsideration of commitment. Moreover, in-depth exploration and reconsideration of commitment were weakly and negatively related.

These results replicate, to some extent, and differ, in other aspects, from previous patterns of correlations detected in adolescence. The main similarity concerns the correlation between commitment and in-depth exploration. Both in adolescence (Crocetti et al., 2008; Crocetti et al., 2010) and in emerging adulthood (Luyckx et al., 2006; Zimmermann et al., 2012), these two processes go together, suggesting that strongly committed individuals continue to intensively explore the domains of their choices, whereas individuals characterized by a low degree of exploration are also weakly committed. This interplay between commitment and in-depth exploration is at the basis of the maintenance cycle (Meeus, 2011), which serves to maintain a sense of identity coherence or synthesis (i.e., the positive pole of the continuum, delineated by Erikson, 1950, 1968).

A different pattern of results characterizes the correlation between commitment and reconsideration of commitment. In fact, in previous studies with adolescent samples, this correlation was found to be nonsignificant and close to zero, whereas a negative correlation had been anticipated (Crocetti et al., 2008; Crocetti et al., 2010). In the current study, this correlation was negative. These findings underscore that in emerging adulthood, more than in adolescence, commitment and reconsideration function as opposite forces (i.e., the identity revision cycle; Meeus, 2011), with reconsideration involving questioning and rethinking the sense of self, and, thus, leading to identity confusion (i.e., the negative pole of the continuum, delineated by Erikson, 1950, 1968).

Finally, we found that in-depth exploration and reconsideration of commitment were weakly (and negatively) related, whereas this link was stronger (and positive) in adolescence (Crocetti et al., 2008; Crocetti et al., 2010). These results suggest that in emerging adulthood the identity formation and maintenance cycle and the identity revision cycle become more differentiated and distinct from each other. Additional longitudinal studies are needed to shed further light on this issue.

In sum, in this study, we have found that among university students, the identity formation and maintenance cycle (based on the interplay between commitment and in-depth exploration) and the identity revision cycle (based on the interplay between commitment and reconsideration of commitment) are more distinct, whereas in adolescents they are more overlapped. These results were consistent across the national groups taken into account. Therefore, they refer to developmental pathways common to university students from different cultural contexts.

Limitations and Suggestions for Future Research

This study should also be considered in light of some limitations. First, our results are limited to university students and, therefore, are not generalizable to emerging adults that do not attend university courses. Future studies are needed to test whether our results apply also to other emerging adult groups, such as youth who are in the job market or those who are unemployed. This is a priority to shed further light on these groups (Arnett, 2000). In fact, within each country, young people are those who suffer more for the effects of economic crisis, as clearly showed by huge and increasing rates of unemployment and precarious contracts that are affecting this segment of the population. Therefore, it is important testing if the U-MICS could be used to meaningfully study identity also in nonstudent groups of emerging adults from different cultural contexts.

Second, in this study, we found preliminary differences on latent mean scores reported by university students from different nations. However, in order to gain a better understanding of this pattern of results, it would be necessary to integrate quantitative research with qualitative data (cf. Watzlawick & Born, 2007). In this way, it could be possible to capture perspectives of university students and catch specific difficulties they face in defining their identities in different contexts.

Conclusions

The final take-home message of this study is the U-MICS can be used to assess identity commitment, in-depth exploration, and reconsideration of commitment in university students of both genders from a variety of Western and non-Western nations (i.e., Italy, the Netherlands, Poland, Portugal, Romania, Switzerland, Turkey, China, Japan, and Taiwan). Specifically, the establishment of configural and partial metric national invariance indicates that U-MICS can be employed in future cross-national studies aimed at unraveling associations between identity processes and relevant correlates across youth from different cultural contexts. In contrast, establishment of partial instead of full scalar invariance suggests that mean comparisons should be cautiously conducted only using the latent means and not the observed composite scores. The establishment of all levels of gender measurement invariance within each national group highlights that the U-MICS can be used to meaningfully compare identity means of males and females and/or study associations between identity and other factors in male and female subgroups living in the cultural contexts considered in this study.

Appendix

The Utrecht-Management of Identity Commitments Scale (English Version)

Educational Identity. Below are a number of questions about you and your education.

In each case, place a cross in the box that most closely matches your opinion.

Response categories				
Completely untrue	Untrue	Sometimes true/ sometimes not	True	Completely true
1	2	3	4	5

Commitment

1. My education gives me security in life.
2. My education gives me self-confidence.
3. My education makes me feel sure of myself.
4. My education gives me security for the future.
5. My education allows me to face the future with optimism.

In-depth exploration

1. I try to find out a lot about my education.
2. I often reflect on my education.
3. I make a lot of effort to keep finding out new things about my education.
4. I often try to find out what other people think about my education.
5. I often talk with other people about my education.

Reconsideration of commitment

1. I often think it would be better to try to find a different education.
2. I often think that a different education would make my life more interesting.
3. In fact, I'm looking for a different education.

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Note

1. These results mirrored those that we obtained assuming partial scalar invariance and comparing latent means. Specifically, we tested a number of models in which, in turn, each national group was considered as the reference group (it means that the factor means for this group were fixed to 0) and it was compared with all the other groups. For instance, we first considered the Italian sample as the reference group (i.e., the means for this group were fixed to 0) and did pairwise comparisons to see if this group was significantly different from the Dutch, Portuguese, and other groups. Then, we repeated the same procedure changing the reference group (e.g., we specified that the Dutch group was the reference group). We proceeded in this way until each group was compared with each of the other groups.

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