

# Emerging Adulthood MoA/IDEA-8 Scale Characteristics From Multiple Institutions



Emerging Adulthood  
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Study of Emerging Adulthood  
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DOI: 10.1177/2167696818811192  
journals.sagepub.com/home/eax



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## Abstract

We tested psychometric properties of the Markers of Adulthood (MoA) importance scale and a revised Inventory of the Dimensions of Emerging Adulthood (IDEA-8) in a large, diverse multisite and multinational sample the Emerging Adulthood Measured at Multiple Institutions 2 project. We used multilevel confirmatory factor analyses and multilevel alphas to examine external validity and internal consistency of the scales. We also performed correlational and exploratory multilevel analyses to determine the extent to which emerging adulthood dimensions overlap across scales. The IDEA-8 subscales demonstrated acceptable psychometric properties. Our research suggests that recent approaches to combine the MoA markers provide four modestly reliable factors, but perceptions of adulthood varied considerably as a function of sample. We recommend that the structure of these marker items be examined for any given sample, since their relative importance seems to vary, not just across time but also sample location.

## Keywords

cross-cultural, identity, measurement, quantitative methods, transitions to adulthood

Historically, developmental periods have been defined by the achievement of developmental milestones that individuals are expected to accomplish by certain ages (e.g., Havighurst, 1948). Over time, researchers identified a marked delay in the achievement of traditional developmental goals in young adults in Western societies, as young adults are establishing careers, relationships, and independent housing at later ages (Arnett, 2000; Demir, 2008; Messersmith, Garret, Davis-Kean, Malanchuk, & Eccles, 2008; Seiffge-Krenke, 2006). Levinson (1986) noted that transitional periods, such as that into early adulthood, can be tumultuous but vary widely by the quality and importance of one's life commitments. Relying too heavily on overt developmental milestones to define adulthood de-emphasizes the importance of these individual differences. Subsequently, Arnett (2000, 2004) proposed that the developmental stage of emerging adulthood is marked not merely by developmental milestones but by psychological experiences such as experiencing possibilities, instability, exploration, self-focus, and feeling in-between.

Despite the widespread citation of Arnett's (2000) seminal work, some researchers dispute the validity of Arnett's construct of emerging adulthood, arguing that it describes merely a subset of young adults with access to more substantial

economic resources and education than others (Côté, 2014). Furthermore, Côté (2014) argues that confirmatory evidence of Arnett's dimensions is lacking, particularly with respect to varied socioeconomic groups. The present study addresses this call for confirmatory evidence of Arnett's dimensions of emerging adulthood. We also agree that it is critical to measure core constructs of emerging adulthood with diverse samples, given

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that the experience of emerging adulthood likely varies both within and between broader cultural groups (Arnett, 2016; Smith et al., 2015).

Given the theoretical differences between milestone-based and psychologically based conceptions of adulthood, different measurement approaches are necessary. Researchers have attempted to define the markers of adulthood (MoA) and group them into meaningful components (e.g., Arnett, 1994; Badger, Nelson, & Barry, 2006; Nelson et al., 2007). However, many of these instruments have received limited psychometric evaluation since their creation. The purpose of this study was to test the internal consistency and validity of, and relationships between, two established and often used measures of emerging adulthood in a large, geographically diverse sample. We examined the milestone-based MoA Scale (Arnett, 2001) and a revised version of the psychologically based Inventory of the Dimensions of Emerging Adulthood (IDEA-8; Baggio, Iglesias, Studer, & Gmel, 2014).

## MoA

Behavioral and demographic markers are commonly used in social science research to investigate the transition to adulthood. MoAs have been used to assess parental and institutional influence on transition to adulthood (Park, 2013), adolescent motherhood (Oxford, Lee, & Lohr, 2010), the universality of concepts about adulthood throughout Europe (Speder, Murinko, & Settersten, 2014), and consumer behavior (Weinberger, Zavisca, & Silva, 2017), among other topics. While most studies include five conventional markers (leaving home, finishing school, employment, marriage or partnering, and having children), there is great variability in which additional markers are employed and how a given set of markers are combined into scales and factors.

The MoA Scale was developed by Arnett (1994, 2001, 2003) to better understand the importance that is tied to traditional experiences and transitions associated with adulthood (i.e., milestone view of adulthood). Studies using variants of this scale have examined emerging adulthood in many regions throughout the world including the United States (e.g., Arnett, 2003; Badger et al., 2006), Israel (Mayseless & Scharf, 2003), Greece (Petrogiannis, 2011), China (Badger et al., 2006; Zhong & Arnett, 2014), and Ghana (Mahama, Tackie-Ofosu, & Nyarko, 2018). Variants of the Arnett MoA Scale have also been used to study how emerging adulthood might be related to factors such as political ideology (Hall & Walls, 2016) and subjective well-being (Sharon, 2016).

The MoA Scale initially consisted of 38–40 items, representing abilities, milestones, and behaviors, where participants indicated whether they thought the item must be achieved for a person to be considered an adult. The items were organized into conceptual themes along seven subscales: individualism, family capacities, norm compliance, biological transitions, legal/chronological transitions, and other. Badger, Nelson, and Barry (2006) compared these factors among U.S. and Chinese college students and suggested a five-factor model to include relational maturity, role transitions, norm compliance, biological/age-

related transitions, and family capacities. These five factors were then used to compare parents and college students, with confirmation of internal consistency noted (Nelson et al., 2007).

Fosse, Grahe, and Reifman (2015) further developed the MoA subscales by coding 20 items using both deductive (literature-based) and inductive (sample-based) approaches. In this 20-item version of the MoA, participants were asked to rate both the *importance* of each item as a marker of adulthood and their own personal *achievement* regarding it. The inductive approach revealed four primary factors: family/career, drugs and alcohol, emotional independence, and financial independence. Using a theoretical/literature-based deductive approach, the authors derived four similar scales: role transitions, norm compliance, relational maturity, and independence (Fosse, Grahe, & Reifman, 2015; also see Fosse & Toyokawa, 2016). The authors concluded that the inductive and deductive approaches measured similar MoA constructs and displayed high inter-method internal consistency.

The studies described above demonstrate an underlying structure to how emerging adulthood is perceived and achieved in relation to MoA. However, it is evident that the inconsistency in item use and format presents a challenge for cross-study comparisons of factor construction. That is, in some cases, researchers have elected to add or remove items from the MoA Scale for pragmatic or conceptual reasons (e.g., the addition of an item on military service in the Israeli study by Mayseless & Scharf, 2003), while in other cases, investigators have abandoned the “yes” or “no” response for each MoA item in favor of a Likert-type scale approach (e.g., Petrogiannis, 2011).

## IDEA

In contrast to the milestone-based view of adulthood, Arnett (2000) also proposed that young adults define adulthood by internal psychologically based qualities. The IDEA assesses individual differences in self-identification during emerging adulthood such as identity exploration, feeling “in-between,” optimistic views about future possibilities, and self-focused independence and responsibility (Reifman, Arnett, & Colwell, 2007). The IDEA has been widely used to assess diverse characteristics of the emerging adulthood population, including drug use (Allem, Sussman, & Unger, 2016), psychopathy (Barlett & Barlett, 2016), self-doubt and mindfulness (Peer & McAuslan, 2016), gender differences in perceived maturation (Skulborstad & Hermann, 2016), and political attitudes (Walker & Iverson, 2016).

The original IDEA consisted of a 31-item inventory with six subscales: identity exploration, experimentation/possibilities, negativity/instability, feeling in-between, self-focused, and other-focused. A revised version (IDEA-R), based on a sample of alternative high school students, included 21 items and three themes: identity exploration, experimentation/possibilities, and independence (Lisha et al., 2014). The IDEA-8 was developed as a simpler measure than the original IDEA and IDEA-R, so that it could easily be used in large-scale surveys (Baggio

et al., 2014) such as the Emerging Adulthood Measured at Multiple Institutions 2 (EAMMi2) project. Subscales include 2 items for each of four factors: identity exploration, experimentation/possibilities, negativity/instability, and feeling in-between. These items were selected due to high factor loadings (equal or above .70). However, the original validity and internal consistency of the IDEA-8 was established in samples of men in Switzerland (Baggio et al., 2014). Recent research by Lisha et al. (2015) examined the internal consistency and validity of the IDEA-8 on a primarily Latino ethnicity high school student sample in Southern California and reduced the measure to 5 items. To date, these are the only published studies that have thoroughly examined the IDEA-8. The present study includes a large sample of men and women in emerging adulthood from diverse ethnicities and multiple countries, representing an ideal opportunity to evaluate the internal consistency and validity of the IDEA-8 Scale.

In comparison to the MoA, where many items test demographic and behavioral markers, the IDEA and IDEA-8 primarily assess psychological issues associated with emerging adulthood (Baggio et al., 2014; Sharon, 2016; Skulborstad & Hermann, 2016). Thus, while the MoA gauges opinions on markers, the IDEA-8 provides psychological self-report. It is logical to expect that the psychological beliefs individuals share about the transition into, and markers of, emerging adulthood would be correlated. However, the precise wording of individual MoA importance items and individual IDEA-8 items might suggest positive, negative, or null relationships in specific subscale to subscale analyses. To our knowledge, the present study is the first to examine the IDEA-8 and MoA together.

## The Current Study

In the current study, we draw on a large multi-institutional sample of emerging adults to examine the psychometric properties of the MoA and IDEA-8 scales. The MoA and IDEA scales are considered valid ways of assessing constructs related to emerging adulthood. However, refinement and item-reduction efforts of these measures have created concerns over their underlying factor structure and predictive utility. Further, few studies have examined the factorial structure of these measures specifically and how standing on these factors varies across different subgroups within the broader population of emerging adults.

The hypotheses for this study were preregistered through the Open Science Framework (OSF; <https://osf.io/fevja/>). First, it was expected that the MoA importance items would factor into 4–5 subscales with four of those subscales demonstrating internal consistency (role transitions, norm compliance, relational maturity, and independence). Second, it was expected that the IDEA-8 items would factor into four subscales with internal consistency (experimentation, negativity, identity exploration, and feeling in-between) with items loading following their intended scaling. Third, it was expected that some MoA importance items and IDEA-8 items would be significantly correlated with each other, either positively or negatively

(depending on precise item wording) albeit not entirely overlapping, reflecting discriminant validity. We chose to correlate the IDEA with the MoA importance items rather than the achievement items because the IDEA and the importance items reflect the participant's beliefs or psychological experience rather than achievement items which rely on external and situational factors.

After addressing these hypotheses, the planned exploratory analyses were focused on demographic differences within the sample for the MoA and IDEA-8 scales because the importance of these factors may differ across varied groups. The outcomes from our investigation, regardless of the direction of findings, will help direct future researchers to more effectively use the MoA and IDEA-8 scales.

## Method

The present study originated with the EAMMi2 project (Grahe et al., 2017). Full descriptions of the sample, measures, original data gathering procedures, and cleaning procedures are included in the EAMMi2 OSF project page (<https://osf.io/te54b/>).

### Participants

Initial EAMMi2 respondents included 4,220 participants. Following the EAMMi2 overall project preregistration (see <https://osf.io/yd4jx/>), the EAMMi2 data cleaning team removed participants who spent less than 10 min of time for completing the survey ( $N = 610$ ), participants who missed an attention test ( $N = 195$ ), participants who failed to complete at least 80% of the survey ( $N = 258$ ), and participants with high response bias that failed more than eight checks for repetitive responding ( $N = 4$ ). The total sample available for the present study was then 3,153 participants.

Due to an error in early data collection, age data were missing for 1,044 participants. Of the 2,109 participants for whom age data were requested, 93 participants reported age of 30 or higher (4.4%). We deleted these 93 participants because they were outside of the recruitment target of 18–29 years old ( $Mde = 30$  years), resulting in a sample of 3,060 individuals. Based on the small percentage of nonemerging adults in the known age data, we estimated that no more than 46 individuals of the 1,044 with unknown age would exceed an age of 29. We chose to keep the 1,044 participants, understanding that approximately 46 of the 3,060 participants (1.5%) may fall outside the target recruitment age by a year or two. One participant did not have answers to the MoA nor IDEA-8 items for this study; therefore, our final data set consisted of 3,059 responses. The analysis team was separate from the data cleaning team so that cleaning decisions were not dependent on the particular analytic outcomes in this study.

### Measures

The EAMMi2 project included 20 items from the MoA Scale (Arnett, 2001), used to assess participants' beliefs about what achievements are necessary to attain adulthood. Participants

responded on a 4-point Likert-type scale to rate the importance of each marker from 1 (*not important*) to 4 (*very important*).

The short form of the IDEA (IDEA-8; Baggio et al., 2014) was used in EAMMi2 to assess dimensions of emerging adulthood. IDEA subscales include identity exploration, experimentation/possibilities, negativity/instability, and feeling in-between. Participants used a 4-point Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*) to indicate their level of agreement with a variety of statements about the present 5-year period of their life. Participants also completed a series of demographic questions including gender (male, female, other), educational attainment, racial/ethnic group, service in the armed forces status, household income, and country of residence.

### Analysis Plan

Due to the multi-institution sampling procedure of EAMMi2 (i.e., survey respondents were recruited through 32 different institutions of higher education), we used multilevel analyses to control for nonindependence of the data. When data have a hierarchical structure (e.g., individuals nested within institutions), residuals within statistical analyses may be dependent due to institution-level variability (Geldhof, Preacher, & Zyphur, 2014). This issue arises because participants within a particular institution may have similarities to one another leading to confounding by institution (a question addressed from a theoretical perspective by Grahe et al. (2018)).

For a detailed analysis plan for the present study, please see the Analysis Plan document on the paper's OSF page (<https://osf.io/5s4cm/>). In that document, we describe our plan for determining the degree of nonindependence in our sample (i.e., Intraclass Correlation Coefficient (1) and design effect), reliability (i.e., internal consistency and within-group agreement), and details regarding our factor analyses. Due to large multilevel design effects, we determined that multilevel analyses would be most appropriate throughout our study. To verify the emerging adulthood scales' factor structures and test alternative structures, we utilized confirmatory factor analysis (complex analysis to control for clustering at the institution level) for each scale and multilevel exploratory factor analysis (MEFA), when needed to understand low confirmatory factor analysis (CFA) fit. Further, due to the Likert-type data, we used ordered categorical analyses to properly model the noncontinuous data. To assess model fit, we examined  $\chi^2$  Root Mean Square Error of Approximation (RMSEA) values, Confirmatory Fit Index (CFI), Tucker Lewis Index (TLI), and Weighted Root Mean Square Residual (WRMR).

After establishing the most reliable and valid emerging adulthood subscales, subscale scores for both the MoA importance items and the IDEA-8 were correlated using Pearson  $r$  correlations to test the hypothesis that associations should emerge between the factors within and between the MoA and IDEA-8 scales. Differences in emerging adulthood factors by demographic variables were examined by comparing 95% confidence intervals and inferring differences where there was no overlap.

## Results

As described in the introduction, three hypotheses were preregistered: MoA importance items factoring into 4–5 subscales, IDEA-8 items factoring into four subscales, and significant correlations between the MoA importance and IDEA-8 items, still demonstrating discriminant validity between the two scales. Other analyses are specified as additional steps conducted after data were examined.

### Descriptive Statistics

The MoA importance items are reported in Table 1. At least 50% of respondents reported that 15 of the 20 items were very important to achieving adulthood. This suggests that for many items, there is a ceiling effect in the data. The highest average item was *avoid drunk driving*, and the lowest average item was *have at least one child*. Some extreme responses (highest and lowest) include items that are intended to be part of the same subscales. One set includes *avoid drunk driving* (high) and *avoid becoming drunk* (low) where both are in Normative Compliance. Then, *capable of supporting parents financially* is part of Independence (low), as are *financially independent* (high), *make independent decisions* (high), and *accept responsibility for your actions* (high).

The IDEA-8 items are reported in Table 2. All eight IDEA-8 items had  $Mdn = 4$ , which again suggests potential ceiling effects in the data. Further, the highest (*many possibilities*) and lowest (*feeling adult in some ways*) scored items showed a restricted range. Correlations were examined for all 28 items, and the full grid is available on OSF (<https://osf.io/7p24q/>).

### Confirmatory Factor Analyses

The standardized factor loadings from the CFA four-factor model for MoA when clustered by school are displayed in Table 3. The model fit information was  $-\chi^2(164) = 1915.82$ ,  $p < .00001$ , RMSEA = .059, 90% CI [.057, .062], CFI = .913, TLI = .899, and WRMR = 3.51. The standardized factor loadings from the CFA four-factor model for IDEA-8 when clustered by school are displayed in Table 4. The model fit information was  $-\chi^2(14) = 96.77$ ,  $p < .00001$ , RMSEA = .044, 90% CI [.036, .053], CFI = .987, TLI = .974, WRMR = 1.11.

### Exploratory Factor Analyses (EFAs)

The following EFAs were conducted after examining the data relevant to the preregistered hypotheses. For the MoA items, multiple models were tested using MEFA in MPlus with school used as the cluster variable (table available on OSF—<https://osf.io/b8gqt/>). Five factors indicated the best overall model fit,  $\chi^2(100) = 432.66$ ,  $p < .00001$ , RMSEA = .03, CFI = .99, TLI = .95 (see Table 5 for geomin-rotated factor loadings); though the four-factor model still had reasonable model fit,  $\chi^2(116) = 646.52$ ,  $p < .00001$ , RMSEA = .04, CFI = .98, TLI = .93 (see Table 6). Unlike the confirmatory tests, exploratory tests offer an opportunity for speculation when considering differences

**Table 1.** Descriptive Statistics of Markers of Adulthood (MoA) Importance Items.

Item Code and Name	Mean	SD	Median	% of 1s	% of 2s	% of 3s	% of 4s
Degree this is an important milestone in achieving adulthood (1 = not, 2 = slightly, 3 = quite, 4 = very)							
Financially independent	3.71	0.59	4	1.1	3.7	18.1	77.1
No longer living in parents' household	3.43	0.79	4	3.5	8.9	29.5	58.1
Finished with education	3.46	0.88	4	5.8	9.2	18.5	66.5
Married	2.47	1.12	3	26.2	23.6	26.7	23.6
Have at least one child	2.29	1.18	2	36.5	21.2	19.7	22.5
Settled into a long-term career	3.28	0.91	4	6.6	12.0	28.2	53.2
Avoid becoming drunk	2.48	1.13	2	25.0	29.1	20.1	25.8
Avoid illegal drugs	3.10	1.09	4	13.3	16.1	19.8	50.8
Use contraception if sexually active and not trying to conceive a child	3.41	0.91	4	7.1	8.4	21.8	62.7
Committed to long-term love relationship	2.96	1.08	3	14.4	17.6	26.0	42.0
Make independent decisions	3.82	0.42	4	0.1	1.1	15.3	83.5
Become capable of supporting a family financially	3.47	0.85	4	4.8	9.6	20.8	64.8
Become capable of caring for children	3.22	0.97	4	7.8	15.1	25.2	51.9
Accept responsibility for your actions	3.86	0.39	4	0.2	0.9	11.8	87.1
Be employed full time	3.49	0.77	4	3.1	8.1	26.1	62.7
Avoid drunk driving	3.83	0.52	4	1.3	3.0	7.00	88.7
Establish a relationship with parents as an equal adult	3.38	0.78	4	2.5	11.2	33.1	53.3
Learn always to have good control of your emotions	3.45	0.68	4	1.2	6.9	37.6	54.2
Become less self-oriented, develop greater consideration for others	3.47	0.71	4	1.5	8.3	32.9	57.3
Capable of supporting parents financially	2.88	0.97	3	9.4	24.6	34.5	31.5

Note.  $N = 3,059$ .

**Table 2.** Descriptive Statistics of IDEA-8 Items.

Item Code and Name	Mean	SD	Median	% of 1s	% of 2s	% of 3s	% of 4s
Think of this time in your life. By "time in your life" we refer to the present time, plus the last few years that have gone by, and the next few years to come, as you see them. In short, think of a roughly 5-year period, with the present in the middle							
Is this period of your life a time of...? (1 = strongly disagree to 4 = strongly agree)							
Many possibilities	3.68	0.55	4	0.5	2.7	24.2	72.6
Exploration	3.57	0.64	4	1.0	4.2	29.9	64.9
Feeling stressed out	3.54	0.66	4	1.2	5.6	30.8	62.4
High pressure	3.57	0.64	4	0.9	5.0	29.9	64.1
Defining yourself	3.57	0.62	4	0.8	4.0	32.3	63.0
Deciding your own beliefs and values	3.59	0.63	4	0.8	4.2	28.8	66.1
Feeling adult in some ways but not others	3.51	0.70	4	1.4	4.7	32.1	61.9
Gradually becoming an adult	3.57	0.67	4	1.0	3.9	28.7	66.4

Note.  $N = 3,059$ . IDEA = Inventory of the Dimensions of Emerging Adulthood.

among models, which can lead to important suggestions about using the MoA items in research.

When considering the four-factor structure, the variables load in understandable ways. The variables revealing the highest loads (i.e., .70 or higher) on Factor 1, Family Capacity, included married, have a child, capable of caring for children, and committed to long-term relationship but also included variables with loadings above .35 related to employment, education, and care for family. Factor 2, Career, had no really high item loadings, but the items that loaded above .35 were all related to some role transition (*moving out*, *finishing education*, *career*, or *financially independent*). Factor 3, Normative Compliance, included 3 of the 4 items related to risky behaviors (*avoid getting drunk*, *avoid illicit drugs*, and *avoid drunk driving*). The missing item, *use a condom when avoiding pregnancy* (.28), was not above the arbitrary .35 cutoff, but it

actually had a higher loading (.33) on the Role Transition factor. Factor 4, Relational Maturity, included the other items related to financial capacity, controlling emotions, and treating parents as equals, though none of the items had high loadings. Overall, it is notable that only 1 item failed to load on any factor, but there are 4 items loading above .35 on both Factor 1 and another factor.

When expanding the analysis to a fifth factor, there is increased discrimination between the factor structures requiring slightly different factor names. For instance, the four-factor structure had considerable overlap with items regarding family, education, and career all loading on one factor. However, in the five-factor structure, Factor 1, Finances and Employment, the only family related items are regarding capacity to care for family rather than the presence of family. Instead, these items load strongly onto Factor 2, Family

**Table 3.** Standardized Factor Loadings for CFA Four-Factor MoA Model.

Item Name	Factor Loading	SE
Relational maturity		
Committed to long-term love relationship	.80	.01
Establish a relationship with parents as equal adult	.47	.02
Learn always to have good control of your emotions	.55	.02
Become less self-oriented, develop greater consideration for others	.46	.02
Role transitions		
No longer living in parent's house	.39	.02
Finished with education	.68	.02
Married	.88	.01
Have at least one child	.89	.01
Settled into a long-term career	.75	.01
Be employed full time	.68	.01
Norm compliance		
Avoid becoming drunk	.72	.02
Avoid illegal drugs	.84	.02
Use contraception if sexually active and not trying to conceive	.48	.03
Avoid drunk driving	.73	.04
Independence		
Financially independent	.47	.02
Make independent decisions	.43	.03
Become capable of supporting a family financially	.85	.01
Become capable of caring for children	.81	.01
Accept responsibility for your actions	.42	.03
Capable of supporting parents financially	.62	.01

Note.  $N = 3,022$ . MoA = Markers of Adulthood.

**Table 4.** Standardized Factor Loadings for CFA Four-Factor IDEA-8 Model.

Item Name	Factor Loading	SE
Experimentation		
Many possibilities	.71	.02
Exploration	.81	.02
Negativity/Instability		
Feeling stressed out	.82	.03
High pressure	.88	.03
Identity exploration		
Defining yourself	.78	.02
Deciding your own beliefs and values	.71	.02
Feeling in-between		
Feeling adult in some ways but not others	.63	.02
Gradually becoming an adult	.70	.02

Note.  $N = 3,024$ . IDEA = Inventory of the Dimensions of Emerging Adulthood.

Present, including *married*, *have a child*, and *committed to long-term relationship*. Factor 3, Normative Compliance, loads the same 3 items as in the four-factor structure. However, in this iteration, *avoiding drunk driving* (along with *using contraception to avoid pregnancy*) both load with the items identified as Relational Maturity previously. Finally, Factor 5, Family Capacity, includes items that signal ability to have a family,

**Table 5.** Standardized Factor Loadings for Four Factors in EFA MoA Items Clustered by School.

Item Name	1	2	3	4
1. Financially independent	.16	<b>.56</b>	-.18	.12
2. No longer living in parent's house	.23	<b>.38</b>	-.20	.08
3. Finished with education	<b>.43</b>	<b>.56</b>	.03	-.04
4. Married	<b>.90</b>	.09	.04	-.12
5. Have at least one child	<b>.94</b>	-.05	.00	-.01
6. Settled into a long-term career	<b>.50</b>	<b>.48</b>	.03	-.01
7. Avoid becoming drunk	.06	-.07	<b>.77</b>	.07
8. Avoid illegal drugs	.09	.03	<b>.88</b>	-.01
9. Use contraception if sexually active and not trying to conceive	-.07	.33	.28	.14
10. Committed to long-term love relationship	<b>.71</b>	.08	.15	-.01
11. Make independent decisions	-.03	.23	-.10	<b>.55</b>
12. Become capable of supporting a family financially	<b>.68</b>	.01	-.06	.34
13. Become capable of caring for children	<b>.76</b>	-.28	-.02	<b>.44</b>
14. Accept responsibility for your actions	-.13	.07	.05	.71
15. Be employed full time	<b>.42</b>	.33	.01	.21
16. Avoid drunk driving	-.06	.29	<b>.38</b>	.33
17. Establish a relationship with parents as an equal adult	.18	-.01	.06	<b>.50</b>
18. Learn always to have good control of your emotions	.16	.05	.11	<b>.51</b>
19. Become less self-oriented, develop greater consideration for others	.10	-.01	.13	<b>.49</b>
20. Capable of supporting parents financially	<b>.39</b>	.01	.04	<b>.35</b>

Note.  $N = 3,057$ . MoA = Markers of Adulthood. The bold value significant is  $p < .01$ .

in the future distinguishing it from Factor 2, Family Present, which included items reflecting current presence of a spouse or children. Because these exploratory factors do not provide a convincing alternative to the factor structure tested with the CFA, we present further findings focused on the four MoA subscales.

### Internal Consistency of MoA and IDEA Subscales

The internal consistency of the four MoA subscales and four IDEA-8 subscales are reported in Table 7. The MoA was a reliable scale when considering all 20 items ( $\alpha = .86$ ), but the internal consistency varied between the four hypothesized subscales between .56 and .80. The IDEA-8 was a reliable scale when considering all 8 items ( $\alpha = .72$ ). However, again, the internal consistency varied for the four subscales between .32 and .56. As a reminder, each IDEA-8 subscale only consisted of two variables, so it was not reasonable to expect to reach conventional benchmarks for internal consistency in those subscales.

### Correlation Among Emerging Adulthood Factors

See Table 8 for estimates of associations among the various subscales. The highest correlation was between MoA Role Transition and MoA Independence ( $r = .66$ ). The lowest

**Table 6.** Standardized Factor Loadings for Five Factors in EFA MoA Items Clustered by School.

Item Name	1	2	3	4	5
1. Financially independent	<b>.38</b>	.04	-.18	<b>.44</b>	-.11
2. No longer living in parent's house	.15	.25	-.23	<b>.38</b>	-.10
3. Finished with education	<b>.74</b>	.00	.05	.09	-.02
4. Married	.04	<b>.91</b>	.04	-.00	-.06
5. Have at least one child	.06	<b>.87</b>	.01	-.11	.10
6. Settled into a long-term career	<b>.78</b>	.03	.05	-.00	.05
7. Avoid becoming drunk	.02	.01	<b>.78</b>	-.01	.05
8. Avoid illegal drugs	.06	.05	<b>.88</b>	.02	-.04
9. Use contraception if sexually active and not trying to conceive	.15	-.09	.27	<b>.37</b>	-.05
10. Committed to long-term love relationship	-.02	<b>.74</b>	.15	.10	.00
11. Make independent decisions	.05	-.04	-.13	<b>.61</b>	.23
12. Become capable of supporting a family financially	<b>.44</b>	.28	-.06	.02	<b>.45</b>
13. Become capable of caring for children	-.03	<b>.64</b>	-.02	.03	<b>.45</b>
14. Accept responsibility for your actions	-.11	-.08	.02	<b>.68</b>	.33
15. Be employed full time	<b>.53</b>	.06	.02	.17	.17
16. Avoid drunk driving	-.02	.03	<b>.35</b>	<b>.57</b>	.03
17. Establish a relationship with parents as an equal adult	.08	.05	.04	<b>.31</b>	<b>.36</b>
18. Learn always to have good control of your emotions	.08	.05	.09	<b>.38</b>	.34
19. Become less self-oriented, develop greater consideration for others	-.03	.07	.11	<b>.39</b>	.30
20. Capable of supporting parents financially	<b>.46</b>	-.04	.05	-.03	<b>.45</b>

Note. *N* = 3,057. MoA = Markers of Adulthood. The bold value significant is  $p < .01$ .

correlations were between IDEA Negativity/Instability and MoA subscales and between IDEA Feeling In-Between and MoA subscales. While almost all eight factors were positively related to each other, the MoA subscales correlated with one another ( $+ .31 < r < + .66$ ,  $M_r = + .49$ ) and the IDEA subscales correlated with one another ( $+ .13$  to  $+ .47$ ,  $M_r = + .31$ ), more than the MoA subscales did with the IDEA subscales ( $-.04 < r < .16$ ,  $M_r = + .06$ ).

### Demographic Comparisons

The following analyses did not have preregistered hypotheses before data were examined. Demographic information for the four MoA subscales and four IDEA-8 subscales were compared (see table on OSF <https://osf.io/ujqbh/> to review MoA and IDEA-8 demographic scale comparisons. Full data output can viewed at <https://osf.io/pzxfm/>). First, women were found to have higher MoA scores than men (Hedges'  $g = .20$ ). Additionally, those who did not self-identify as male nor female responded with lower MoA important scores than those who

**Table 7.** Internal Consistency and Validity of MoA and IDEA-8 Subscales.

Name of Scale	Internal Consistency <sup>a</sup>	rWG <sup>b</sup>	MSEM Alpha Within <sup>c</sup>	MSEM Alpha Between
MoA importance 20 items	.86	.97	.86	.94
Relational maturity	.56	.93	.55	.82
Role transitions	.80	.92	.79	.93
Norm compliance	.62	.90	.60	.75
Independence	.65	.96	.65	.86
IDEA-8	.72	.97	.72	.90
Experimentation/Possibilities	.42	.90	.59	.44
Negativity/Instability	.56	.88	.74	.86
Identity exploration	.56	.90	.58	.98
Feeling in-between	.32	.89	.50	.80

Note. MoA = Markers of Adulthood; IDEA = Inventory of the Dimensions of Emerging Adulthood; MSEM = Multilevel Structural Equation Modeling.

<sup>a</sup> Internal consistency for MoA items and overall IDEA-8 is Cronbach's  $\alpha$  while internal consistency for IDEA-8 subscales is Spearman's  $\rho$ . <sup>b</sup> rWG = index comparing agreement between observed and null variance. <sup>c</sup> More details about the MSEM  $\alpha$  within and between procedures available on the OSF analytical plan page: <https://osf.io/5s4cm>.

**Table 8.** Correlations Between MoA and IDEA-8 Subscales.

Variables	1	2	3	4	5	6	7
1. MoA relational maturity	—						
2. MoA role transition	<b>.58**</b>	—					
3. MoA normative compliance	<b>.43**</b>	<b>.31**</b>	—				
4. MoA independence	<b>.61**</b>	<b>.66**</b>	<b>.35**</b>	—			
5. IDEA experimentation	<b>.10**</b>	<b>.07**</b>	-.002	<b>.09**</b>	—		
6. IDEA negativity/instability	<b>.06**</b>	<b>.07**</b>	.01	.03	<b>.13**</b>	—	
7. IDEA identity exploration	<b>.16**</b>	<b>.10**</b>	<b>.05**</b>	<b>.11**</b>	<b>.47**</b>	<b>.21**</b>	—
8. IDEA feeling in-between	<b>.04*</b>	<b>.06**</b>	-.04*	<b>.05**</b>	<b>.37**</b>	<b>.25**</b>	<b>.40**</b>

Note. *N*s range from 3,142 to 3,151. MoA = Markers of Adulthood; IDEA = Inventory of the Dimensions of Emerging Adulthood.

\* $p < .0001$ . \*\* $p < .00001$ .

did state a specific gender (Hedges'  $g$  with females =  $-.84$ ; with males =  $-.60$ ). This difference was not present in the IDEA-8 responses. No known evidence comparing those who self-identify as male or female to those who select "other" as a classification for gender is thought to exist. Those in lower income brackets scored lower on both the MoA and IDEA-8 (see table on OSF). Individuals who served in the military scored higher on the MoA ( $g = .20$ ), but lower on IDEA-8 ( $g = -.70$ ). Finally, U.S. residents achieved higher MoA ( $g = .26$ ) and IDEA-8 ( $g = .32$ ) scores.

## Discussion

The current study examined the utility of the MoA and IDEA-8 through systematically analyzing the measures using a large, multi-institutional, and multinational data set. More specifically, the study addressed the current debate related to role-based versus psychologically based markers of adult role attainment through analyzing of two valid measures of the transition from emerging adulthood to young adulthood. While providing evidence to more effectively describe different ways of measuring this transition, these findings suggest directions on how to most effectively use these measures.

The MoA importance items were highly correlated with each other, which suggests use as a large, single scale. However, the internal consistency of subscales varied, leading to only partial support of the first hypothesis. Given this, the use of one combined scale for MoA importance items is recommended unless interest in specific subscales is present. If so, balancing the theoretical value and internal consistency of items is recommended before doing so. These analyses highlight issues that exist with the MoA factorial structure demonstrating the difficulty with developing a reliable factor structure for this measure. The findings also reveal the potential conflict and factorial messiness that can result from treating prior studies as a panacea for how factors should be structured. If future researchers are interested in MoA subscales, an initial factor analysis should be completed prior to subsequent statistical analyses being done. Researchers interested in such an approach could use our analyses as a starting point. There are other scoring options such as comparing responses from the MoA importance and achievement items (see Sharon, 2016) to identify match or discrepancy in the transition phase. This and other approaches to use a single, combined scale invite researchers to study the overall concept of MoA rather than specific subscales.

The second hypothesis that the IDEA-8 would factor into four reliable subscales was also partially supported. Internal consistency among items was confirmed; however, the "Feeling In-Between" subscale displayed internal consistency below .70. Again, conventional benchmarks with internal consistency were not expected due to each subscale only consisting of 2 items. It is concluded that, given the brevity and high internal consistency, the IDEA-8 is valid when used in large, multi-survey studies. Further, across the two sets of scales, the correlations between MoA subscales ( $Mdnr = .51$ ) were generally larger than between the IDEA-8 scales ( $Mdnr = .31$ ) suggesting greater discriminant validity between the IDEA-8 subscales.

Findings associated with the third hypothesis revealed a small, yet theoretically useful, relationship between MoA and IDEA-8 items. The highest correlation between MoA and IDEA-8 subscales was  $r = .16$  (MoA Relational Maturity and IDEA-8 Identity Exploration). This is theoretically relevant as low correlation between the measures suggests the presence of discriminant validity. This points to the potential differences between the MoA importance items as a measure of what

constitutes being an adult versus the IDEA-8 items as a measure of being in a transitional state. For example, the MoA items in the Relational Maturity subscale ask participants to indicate the degree to which a set of milestones (*committed to a long-term love relationship; establish a relationship with parents as an equal adult; learn always to have good control of your emotions; and become less self-oriented, develop greater consideration for others*) are important in achieving adulthood. In contrast, the IDEA items in the Identity Exploration subscale ask each participant to think of this time in their life and indicate how much they agree with the statements "Is this period of your life a time of defining yourself?" and "Is this period of your life a time of deciding your own beliefs and values?" Thus, exploration of comparisons between items within the scales reveals differences between the measures and likely two unique ways of contemplating this transition. As these surveys appear to be measuring contrasting factors, this provides the opportunity for researchers to utilize the measures for different types of research questions associated with the transition to adulthood. As the findings support, the MoA may be used for research questions that focus on importance or achievement of behavioral markers that denote the attainment of adulthood while the IDEA-8 is suitable for those questions focusing on being in a self-perceived transitional state. Also, as research continues to explore the diversity among the emerging adulthood population, using the MoA and IDEA-8 will be important to compare them to the traditional populations that are well studied in the literature (e.g., college students).

Further, these scales are recommended for use with young adults in their 30s in order to determine whether there are overlapping qualities with emerging adults. Skulborstad and Hermann (2016) reported an interesting curvilinear relationship between age and the IDEA in a similar study. They found that the decline in experiencing the IDEA constructs was greater in older respondents, yet there was still variability at all age levels. In other words, these scales should not be restricted to populations that we only consider emerging adults. Indeed, these scales could also provide an effective avenue for identifying those who have already made the transition to young adulthood.

Related, these scales will be helpful as cohorts age. Researchers who use these measures are capturing data from the current sociohistorical context. Current researchers could benefit from having access to measures like the MoA and IDEA-8 to study how important markers of emerging adulthood and adulthood (such as time frames associated with marriage and parenthood) have changed over time. Similarly, utilizing these measures to gauge research questions related to how the meaning and timeliness of these markers change over successive generations is likely to produce relevant and important findings.

The exploratory analyses conducted on demographic variables should be helpful for researchers who use the MoA or IDEA-8 scales to examine specific populations in order to compare their descriptive statistics with these results for

consistency. Additionally, it points to the need for the continued development of MoA and IDEA measures to be inclusive of all subgroups of emerging adults.

### Limitations and Future Directions

The findings from the current study should be considered within the context of several limitations. First, the generalizability of the current findings is limited by characteristics of the sample. A larger and more diverse sample of institutions used for data collection would provide more robust data analyses and ability to generalize to a larger group of emerging adults. Further, related to the observed item means, a more diverse age range would likely also alter mean scores as there likely exists a substantive relationship between the average age of respondents and the mean item scores. Obtaining a more diverse age sample would likely provide respondents who are at various points along the emerging adult developmental continuum, thus reducing mean scores for the factors on the IDEA-8.

The findings may also be impacted on how items were written. For example, the item, “use contraception if sexually active and not trying to conceive” was one of the longest items and includes two parts. The other longest phrase, “become less self-oriented, develop greater consideration for others” contains two parts. This wording may have created confusion among participants, thus impacting their responses. Next, the potential for socially desirable scoring among participants must also be considered. The surveys included questions that might be considered sensitive subjects for many. This may have influenced participants to underreport their thoughts and behavior. Additionally, counterbalancing was not used in the ordering of the surveys presented to participants, which limits the ability to rule out the impact of ordering effects within the study.

The EAMMi2 project includes 15 other psychosocial measures beyond those reported here. Future research should examine these relationships both using these as single-factor scales and exploring other scoring techniques (such as the 5 factors identified in the EFA). Additionally, this analysis only included the MoA importance items, meaning that we did not consider participants’ behavioral attainment of these markers. It seems likely that emerging adults who indicate high levels of identity exploration or experimentation/possibilities on the IDEA may be more likely to achieve various MoA in the future. Future investigations should explore this hypothesis.

Further research should also explore whether an updated list of MoA might provide a more reliable underlying factor structure. As mentioned earlier, some items were confusing. Also, some items might not be as relevant in 2018 as they were in 1997. For instance, the item measuring “illicit drugs” as a marker could be confusing to modern youth who live in states where marijuana is legal. Other items such as “capable of caring” for parents or children are ambiguous at best. Other studies that specifically test the scale examining milestones should employ items with better clarity, particularly when testing across diverse populations or cultures.

Finally, we believe that there is much variation from person to person in how well the traditional MoA relate to their experiences. As society continues to evolve, it may be prudent to include new items to reflect modern cultural contexts in marking adulthood. This would likely lead to a two-factor scale: traditional MoA and modern MoA. Such a revised MoA Scale would allow for direct measurement of traditional and modern MoA, giving researchers greater understanding of variability among participants.

### Conclusions

This study highlights the utility of the MoA and IDEA-8 as separate and distinct measures of the attainment of adulthood. Utilizing a large, geographically diverse sample, the findings supported that both measures have strengths and weaknesses. Comparisons of the measures revealed an opportunity for researchers to explore both behaviorally based and psychologically based markers of emerging adulthood while also providing the potential to explore various, important research questions concerning this transition. Having this level of theoretical and exploratory flexibility is critical to advancing our knowledge of this important period within the lifespan.

### Author Contributions

C. Faas, J. McFall, J. Peer, M. Schmolesky, H. Chalk, and J. Grahe contributed to conception and design and acquisition, analysis, and interpretation, drafted the manuscript, critically revised the manuscript, gave final approval and agree to be accountable for all aspects of work ensuring integrity and accuracy. A. Hermann, W. Chopik, D. Leighton, J. Lazzara, A. Kemp, and V. DiLillio contributed to conception and design and acquisition, drafted the manuscript, critically revised the manuscript, gave final approval and agree to be accountable for all aspects of work ensuring integrity and accuracy.

### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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### Open Practices



All data and materials have been made publicly available via the Open Science Framework and can be accessed at <https://osf.io/fevja/>. The complete Open Practices Disclosure for this article can be found at <http://journals.sagepub.com/doi/suppl/10.1177/2167696818811192>. This article has received the badges for Open Data, Open Materials, and

Preregistration. More information about the Open Practices badges can be found at <http://www.psychologicalscience.org/publications/badges>.

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