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Measuring Adulthood – A Meta-Analysis of the Markers of Adulthood Scale

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Abstract: Adulthood is traditionally inferred from the socio-demographic milestones of marriage, parenthood, and having a stable, long-term career. Yet today these milestones are often delayed or unattainable for young people. We conducted a meta-analysis of studies using the Markers of Adulthood scale across the past three decades to assess (a) endorsement rates (%) of marriage, parenthood, and career as markers of adulthood, and (b) whether people think they have reached adulthood. Across 39 samples ($N = 17,465$), marriage and parenthood were endorsed by a quarter of participants, whereas career was endorsed by 57%, suggesting that in today's society career defines adult status more than marriage and parenthood. Furthermore, half of emerging adults (aged 18–29 years) considered themselves to have reached adulthood despite traditional milestones of adulthood occurring less frequently and later in life than ever before. Our findings have three main implications for measuring adult status including (1) deemphasise on the socio-demographic milestones of marriage and parenthood; (2) include wider age ranges in research; and (3) explore cultural differences. Reducing the focus on socio-demographic milestones and including more diverse samples will improve our understanding of adulthood and advance adults' identity development.

Keywords: adulthood, maturity, meta-analysis, identity, psychological development



Adults are the core pillars of society – without adults there would be no labor markets, no governments, and no healthcare and education systems (Hogan & Astone, 1986; Turturean, 2017). However, little is known about when and why people subjectively feel like adults. A first step to understanding the transition into adulthood is knowing how people define adulthood, and when and why they consider themselves to be adults. This paper explores three frequently endorsed definitions of adulthood (e.g., Arnett, 1994; Norman et al., 2023) and investigates the degree to which these definitions are consistently endorsed across studies and samples. Understanding how adulthood is defined can help us to foster a happier, healthier adult population by supporting young people during their transition to adulthood and aiding healthy identity development.

Adulthood has often been defined by reaching the age of majority, which is typically age 18, or certain socio-demographic milestones such as marriage, parenthood,

and a stable career (e.g., Erikson, 1963; Havighurst, 1956). Psychological models that define adult status via these socio-demographic milestones were conceived based on observations of white, middle-class men in the 1950s and 1960s, a time period during which young people took relatively uniform paths to adulthood as they began careers, married, and had children in quick succession in their early twenties (Blatterer, 2007; Marglin & Schor, 1992). These models are not representative of the wider population and their transitions to adulthood, and they are outdated. Today, transitions to adulthood occur in a world that is increasingly characterized by volatility, uncertainty, complexity, and ambiguity (VUCA; Johansen & Euchner, 2013) – conditions that make young people delay or altogether forgo the traditional markers of adulthood. The transition to adulthood has undoubtedly been volatile, uncertain, complex, and ambiguous across generations, but today's young people face increased variation in the timing and frequency of major life transitions, indicating high levels of VUCA in today's society (Johansen & Euchner, 2013). For example, the average age of first-time marriage in the UK has risen from 25 to 35 years between 1970 and 2019 (ONS, 2012; Stripe, 2019), and marriage rates have fallen by 50% from 1991 to 2019 (Clark, 2023). Career is also delayed in WEIRD (Western, Educated,

Industrialised, Rich, and Democratic) societies, as young people experience prolonged periods of education and frequent job changes before settling down into stable jobs later in adulthood. In the US, Millennials – those born between 1980 and 1996 – are twice as likely to change jobs within a year compared with Generation X (those born between 1965 and 1979), and three times more likely to change jobs than Baby Boomers (those born between 1945 and 1964; Lyons et al., 2015). These changes in the way that young people enter and navigate adulthood today likely reflect VUCA in society (Johansen & Euchner, 2013), but they could also be indicative of other phenomena.

In the context of our changing society, psychological models that view adulthood as a collection of socio-demographic milestones such as marriage, parenthood, and settling into a career (e.g., Erikson, 1963; Havighurst, 1956), could negatively affect the identity development of young adults. When people's expectations are not aligned with their perceptions of reality, mental health tends to suffer (e.g., Carver, 2012). Thus, defining and measuring adulthood by socio-demographic milestones that are out of reach or undesirable for young people today may impair the psychological health of emerging adults, as well as our studies of adult development. At present, this argument is, however, speculative because the link between earlier, likely outdated models of adulthood and young people's mental health is yet to be empirically tested.

This paper aims to investigate the relative importance of three key socio-demographic milestones of adulthood – marriage, parenthood, and career – in a meta-analysis of studies and samples from the past 30 years. The three core milestones of marriage, parenthood, and career were chosen because: (a) they represent the key role transitions to adulthood outlined by Arnett (1994); (b) they have previously been isolated as core markers of adulthood (e.g., Bleidorn et al., 2013); and (c) they reflect social norms and cultural pressures of adulthood (e.g., Grose, 2023; Perry, 2024).

Our findings contribute to improving our understanding of modern adulthood, supporting young people during the transition to adulthood, and promoting adults' psychological well-being.

The Markers of Adulthood Scale

The Markers of Adulthood scale (MoA; Arnett, 1994; 1997; 1998; 2001) is the most frequently used psychological instrument for assessing which characteristics people think are important for defining adult status. The scale consists of between 22 and 40 items that cover traditional socio-demographic milestones, including marriage and parenthood, legal markers such as reaching the age of majority, and psychological characteristics of adulthood relating to

independence and responsibility. Participants indicate whether they believe that these characteristics are important for adult status either on a binary (e.g., “yes” or “no”) or Likert scale (e.g., ranging from 1–4 or 1–5 from *very important* to *not at all important*). This results in a proportion or percentage of participants endorsing each item.

The MoA scale also measures whether people consider themselves to be adults with the item “Do you think you have reached adulthood?”, to which participants respond with “Yes”, “No”, or “In some ways yes, in some ways no” (e.g., Arnett, 1994; Badger et al., 2006; Obidoa et al., 2019). We refer herein to this item as measure of subjective adult status.

Since its conception in the 1990s (Arnett, 1994), the MoA scale has been revised and updated, most recently by Norman and colleagues (2023). Even though the MoA scale has been administered for 30 years, respective data have not been systematically meta-analysed. It is important to ensure that the psychometric measures used in contemporary research reflect modern adulthood. Here, we meta-analyze MoA scale data to address this gap and estimate a meta-analytic proportions of people who endorse (a) marriage, (b) parenthood, and (c) career as important for adult status, and who (d) feel like adults.

Previous research using the MoA scale suggests that there may be cultural differences in the endorsement of the markers of adulthood. Participants from WEIRD countries tend to endorse more individualistic characteristics such as “accept responsibility for the consequences of my actions” and “decide on my beliefs and values independently” as being important for adult status, whereas participants from non-WEIRD countries endorse more traditional characteristics such as marriage and parenthood (e.g., Badger et al., 2006; Nelson et al., 2004; Rankin & Kenyon, 2008; Seiter & Nelson, 2011; Zhong & Arnett, 2014). For example, participants from China and India place greater emphasis on family obligations compared with US samples, demonstrating that traditional socio-demographic milestones of adulthood may be considered more important for adult status in more collectivist cultures compared with individualistic Western cultures (Badger et al., 2006; Seiter & Nelson, 2011; Zhong & Arnett, 2014). Country of origin has been shown to impact subjective adult status, with samples from nonWEIRD countries reporting that they have reached adulthood at earlier ages compared with samples from WEIRD countries (e.g., Badger et al., 2006; Obidoa et al., 2019; Seiter & Nelson, 2011). For example, in the US, only 28% of those in emerging adulthood – the age group spanning from 18 to 29 years and typically characterized by self-focus, instability, identity explorations, feeling in-between, and a sense of possibility (Arnett, 2000; 2015) – reported feeling that they had reached adulthood (Badger et al., 2006). In contrast, around 60% of emerging

adults in Ghana, Nigeria, India, and China felt that they had reached adulthood (Badger et al., 2006; Obidoo et al., 2019; Seiter & Nelson, 2011).

Responses to the MoA scale also vary by age. Previous research has found that emerging adults show a distinct response pattern to the MoA scale compared with older age groups. First, emerging adults place more emphasis on individualistic criteria such as “accept responsibility for the consequences of my actions”, and less on traditional socio-demographic milestones such as marriage, compared with older adults (e.g., Vleioras, 2021). Second, emerging adults respond to the prompt “Do you think you have reached adulthood?” with “In some ways yes, in some ways no”, indicating that they do not feel fully ‘adult’ (e.g., Arnett, 1994; Badger et al., 2006; Obidoo et al., 2019), reflecting one of the core characteristics of emerging adulthood, the feeling of being “in-between” adolescence and adulthood (Arnett, 2000, 2015). In contrast, studies assessing participants outside of the emerging adulthood age range find that adolescents (below the age of 18) tend to respond to “Do you think you have reached adulthood?” with “No”, and older adults (above the age of 30) tend to respond with “Yes” (e.g., Arnett, 2001; Sirsch et al., 2009). However, few studies focus on diverse age ranges, and to date there has been no longitudinal research, so we are unable to determine whether these distinct responses to the MoA across age groups reflect age differences (e.g., those in emerging adulthood feel differently to those in older adulthood), or generational differences (e.g., those born in the 2000s feel differently about adulthood compared with those born in the 1970s).

While previous research suggests that subjective adult status and the endorsement of characteristics to define adulthood vary systematically across age groups and countries, these differences have not been studied to date.

The Current Study

Here, we searched the literature from the past 30 years to identify studies that administered the MoA scale, using the reported findings to (a) derive meta-analytic estimates of the percentage of endorsement of three socio-demographic milestones that traditionally defined adulthood, including marriage, parenthood, and career, (b) estimate the proportion of people across studies who subjectively identified as adults, and (c) examine the extent to which the endorsement of socio-demographic milestones and subjective adult status varied as a function of age and country of origin.

We expected that the endorsement of marriage, parenthood, and career would differ across countries, with WEIRD samples endorsing traditional markers of adulthood less often than non-WEIRD samples (e.g., Badger et al., 2006; Obidoo et al., 2019; Petrogiannis, 2011; Seiter

& Nelson, 2011; Sheikholeslami et al., 2019; Zhong & Arnett, 2014). We also hypothesized that older samples would endorse marriage, parenthood, and career as defining characteristics of adulthood more often than younger samples (e.g., Sirsch et al., 2009; Vleioras, 2021).

Materials and Methods

Search Strategy

To review the proportions of endorsement of the characteristics that define adult status, we identified articles that reported original, empirical data collected with the MoA scale by screening the citations of four papers that are referenced in the literature for introducing the MoA scale (i.e., Arnett, 1994, 1997, 1998, 2001). We used the databases Web of Science and Scopus to identify all cited works of these four Arnett papers, yielding a total of 2,400 hits (1,033 from Web of Science and 1,367 from Scopus; Figure 1). Articles were exported into an Endnote library, and after duplicates were removed 1,116 eligible articles were exported and screened using Rayyan (Ouzzani et al., 2016).

Study Eligibility Criteria, Screening, and Exclusions

We included publications that met the following criteria: (1) used the MoA scale; (2) conducted an original empirical study (i.e., reviews and meta-analyses were excluded); (3) reported a proportional estimate for the items of interest (i.e., “Do you think you have reached adulthood”, and the MoA items: “Married”, “Have at least one child”, and “Settle into a long-term career”); (4) published in a peer-reviewed journal; and (5) written in English.

We applied the population, exposure, and outcome model (PEO; Moola et al., 2015). All included studies assessed adult samples, who were exposed to the same measure (i.e., the MoA scale; Arnett, 1994, 1997, 1998, 2001). The outcome statistic – the proportion of participants who endorsed each MoA item – was consistent across studies, and where proportions were not reported in the original article, we contacted the study authors for these data.

The first and second authors independently screened 10% of the records (i.e., 112 abstracts from 1,116 hits) to calibrate the screening process. The authors were in 99% agreement with the calibration process. Following our pre-registered screening and coding protocol (<https://osf.io/8ezqf>), the first author screened the remaining 1,004 abstracts. Overall, 42 articles met our eligibility criteria and were retained for data extraction. Out of the total

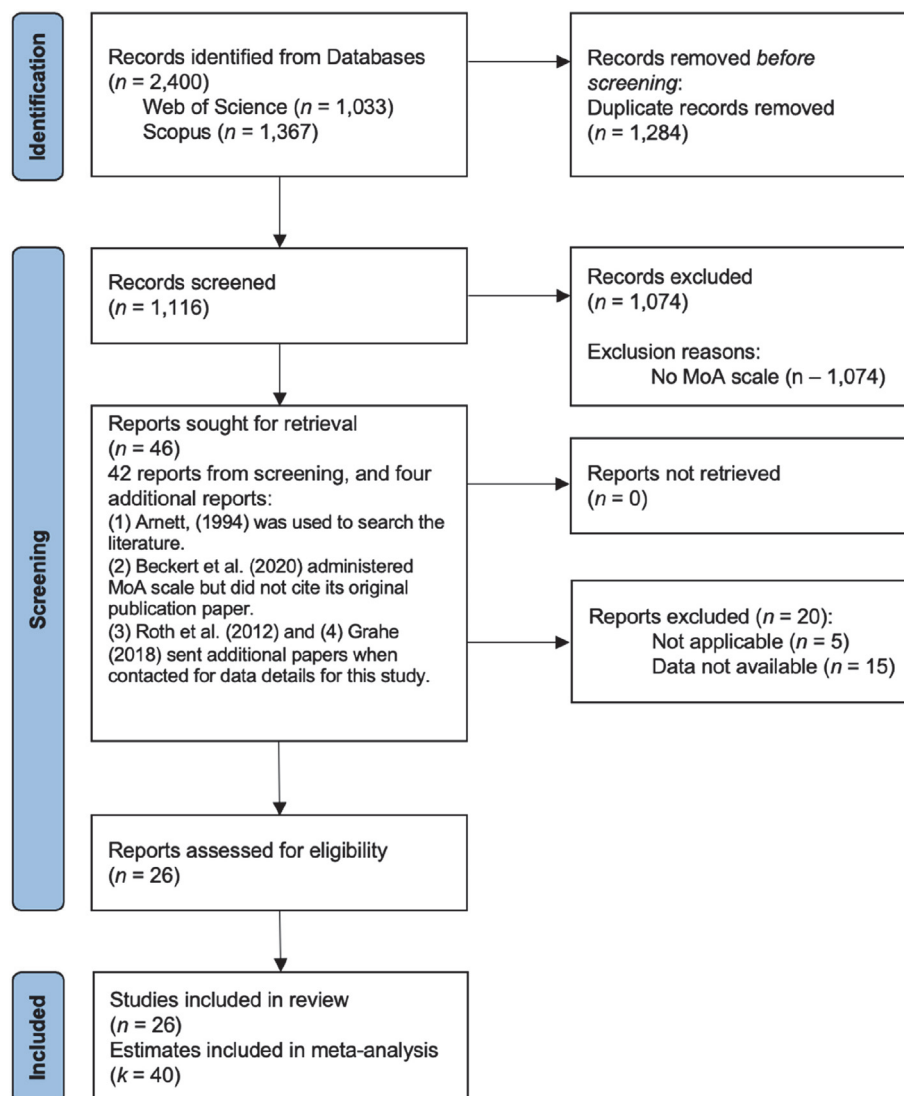


Figure 1. PRISMA flow diagram.

1,116 hits, 1,074 abstracts were excluded for not using the MoA scale. We added Arnett's (1994) paper, which we used to identify citations, as well as two more articles and one dataset, which were brought to the first author's attention when contacting authors of the identified articles for additional information (see Figure 1).

Full texts were downloaded for 46 articles. In cases where relevant data from the MoA scale was not reported in the article, the first author emailed the articles' corresponding authors to retrieve the data. A total of 15 articles were excluded because we could not gain access to the data (Figure 1). The remaining 26 articles, comprising 40 estimates, were included in the meta-analysis.

Seven of the included articles contained multiple estimates. Three articles – Arnett (2001), Oleszkowicz and Misztela (2015), and Sirsch et al. (2009) – each reported three estimates after splitting their samples into teenagers, emerging adults, and adults. Vleioras (2021) also split their sample, resulting in two estimates for parent and student

participants, respectively. Beckert et al. (2020) reported three estimates for participants from Italy, Taiwan, and the US, respectively. Obidoa et al. (2019) produced two estimates for participants from Ghana and Nigeria. Finally, Arnett (2003) reported four estimates for subsamples identified as African American, Latino, Asian American, and White participants. In total, these seven studies contributed 20 estimates to the meta-analysis, with the other 19 articles contributing one estimate each, resulting in 40 estimates across 26 articles. Tables E1–E4 in the Electronic Supplementary Materials, ESM 1, detail the articles and corresponding estimates included in the meta-analysis.

Missing Data

Of the 40 independent samples, 39 samples included estimates for the MoA items “Married”, “Have at least one child”, and “Settle into a long-term career” ($N = 17,465$). Twenty-seven samples included estimates for the item

“Do you think you have reached adulthood?” ($N = 11,477$). Missing data were handled using pairwise deletion, and analyses were conducted separately for meta-analytic endorsement of the MoA items ($k = 39$, $N = 17,465$) and for the extent to which participants felt they had reached adulthood ($k = 27$, $N = 11,477$).

Coding Target Variables

We extracted a range of target variables from the 26 retained publications, including: (a) sample name; (b) sample size; (c) sample youngest age; (d) sample oldest age; (e) sample mean age; (f) sample age SD; (g) country of origin; (h) the proportion of the sample that responded with “Yes” to the subjective adult status item “Do you think you have reached adulthood?”; (i) the proportion of the sample that responded with “In some ways yes, in some ways no” to the subjective adult status item; (j) the proportion of the sample that responded with “No” to the subjective adult status item; (k) the proportion of the sample that endorsed the item “Married” in the MoA scale; (l) the proportion of the sample that endorsed the item “Have at least one child” in the MoA scale; and (m) the proportion of the sample that endorsed the item “Settle into a long-term career” in the MoA scale.

To ensure the quality of data extracted from articles for this meta-analysis, two authors independently coded 20% of included studies (i.e., 5 articles). Intercooder reliability was 100%, and in line with our preregistered screening and coding protocol (<https://osf.io/8eqzf>), the first author independently coded the remaining 21 articles.

One aim of our meta-analysis was to compare the endorsement of MoA scale items across sample ages and countries of origin. To this end, we fitted meta-regression models that included samples’ average age, country of origin (WEIRD or non-WEIRD), and the scale response type (binary or Likert scale) as moderators (details below). Thus, we control for heterogeneity resulting from age, culture, and scale response type.

Scale Response Type

Data from the MoA scale is typically collected using a binary response, with participants indicating whether each item is considered important for adult status (i.e., “Yes” this is important for determining adult status, or “No”, this is not important for determining adult status; Arnett, 1994; 1997, 1998, 2001). Of the 39 independent samples that collected data for the MoA items “Married”, “Have at least one child”, and “Settle into a long-term career”, 25 (63%) recorded binary responses. For these samples, data were extracted as they appeared in their respective articles (i.e., as proportions). For studies that administered the MoA

scale using Likert responses, participants indicated how important an MoA item was from 1 (not at all important) to 4 (very important, e.g., Beckert et al., 2020; Grahe et al., 2018; Vleioras, 2021; Wider et al., 2021). We identified 14 articles that reported mean scores from Likert scale ratings, rather than proportions of endorsement. We converted these mean scores into binary variables by combining the proportion of participants who responded with “very important” and “important” into one category of ‘yes’. We modeled the effects of scale response type (Likert vs binary) in our meta-regressions.

One study included in this meta-analysis used a 5-point Likert scale with a neutral response (Tagliabue et al., 2015). For this study, we again combined 1 (“not at all important”) with 2 (“not important”) into one category of “no”, and combined 4 (“important”) with 5 (“very important”) into one category of “yes” to create the binary responses. Regarding the neutral response, Likert scale point 3 (“neither important nor unimportant”) was excluded from the present analysis. We did not have enough data to examine neutral responses in this meta-analysis.

Classifying WEIRD and Non-WEIRD Countries

Samples included in this meta-analysis came from 16 countries, of which 7 were WEIRD (Australia, Austria, Denmark, Italy, Greece, Spain, and the USA), and 9 were non-WEIRD (China, Ghana, India, Iran, Malaysia, Nigeria, Poland, Romania, and Taiwan). Overall, 56% ($n = 22$) of the samples included in this meta-analysis were recruited in WEIRD countries, accounting for 68% ($N = 11,692$) of all participants in this meta-analysis.

Countries were classified as WEIRD (Western, Educated, Industrialised, Rich, and Democratic) or non-WEIRD based on the criteria set out by Hendriks et al (2019). Of the 16 countries represented in this meta-analysis, 9 were classified in the 2018 paper by Hendriks and colleagues, specifically Australia, China, India, Iran, Italy, Malaysia, Spain, Taiwan, and the USA. The remaining 7 countries were classified for the present study according to the criteria set out by Hendriks et al (2019): Austria, Denmark, Ghana, Greece, Nigeria, Poland, and Romania. For more information on country categorization, see ESM 1.

Statistical Analysis

Random-Effects Proportional Meta-Analysis

The R package *metafor* (R core team, 2019; Viechtbauer, 2010) was used to conduct a random-effects meta-analysis using the function *rma()* to derive pooled proportions for each of the four outcome variables: endorsing (1) “Married”,

(2) “Have at least one child”, and (3) “Settle into a long-term career” in the MoA scale, and (4) responses to the item “Do you think you have reached adulthood?”. Proportional estimates were transformed using the double arcsine transformation (Freeman & Tukey, 1950) prior to running the random-effects meta-analysis. Estimates were transformed back to proportions after pooling.

To investigate heterogeneity, we calculated Q and I^2 statistics. The Q statistic represents the weighted sum of squared differences between studies (Huedo-Medina et al., 2006). However, the Q statistic has relatively low power to detect heterogeneity when a meta-analysis has few estimates (Higgins et al., 2003). An alternative is the I^2 statistic, which is not as susceptible to the influence from the number of estimates in a meta-analysis. The I^2 statistic represents the percentage of variability in estimates due to true heterogeneity rather than sampling error (Higgins et al., 2003). Guidelines indicate that an I^2 value above 50% indicates substantial heterogeneity (Huedo-Medina et al., 2006). In other words, the Q test informs on the presence or absence of heterogeneity, and the I^2 test describes the extent to which the heterogeneity cannot be attributed to sampling error.

Meta-Regression

To test for systematic variability in the endorsement of the four items of interest in the MoA scale, we conducted meta-regressions using four moderators: (1) age group of sample (adolescence aged 11-17, emerging adulthood aged 18-29, or adulthood aged 30 and above), (2) gender (% of male participants in each study); (3) country categorization (WEIRD or non-WEIRD), and (4) scale response type (Binary or Likert scale). Scale response type only applies as a moderator for the MoA items (i.e., endorsement of “Married”, “Have at least one child”, and “Settle into a long-term career”).

Publication Bias

Tests for publication bias such as Egger’s test, funnel plots, and p -curves are not recommended for proportional meta-analyses, because they assess publication bias in meta-analyses of comparative data but not of proportional data (Barker et al., 2021). Proportional data are unlikely to suffer from publication bias as there is no recommended effect size or predetermined cutoff value for the statistical significance of a proportion (Barker et al., 2021).

Results

Studies’ Description

We identified 26 publications that used MoA to assess (a) the endorsement of marriage, parenthood, and career as

defining characteristics for adult status, and (b) subjective adult status – the extent to which participants considered themselves to be adults.

For the endorsement of the traditional socio-demographic milestones of marriage, parenthood, and career, our analysis sample consisted of overall $N = 17,465$ from 39 independent samples, each of which contained an estimate for the endorsement of “Married”, “Have at least one child”, and “Settle into a long-term career”. Of these 39 samples, 33 focused on the age group of emerging adulthood, with a mean age between 18 and 29 years ($N = 16,470$, 94% of total N), two samples had a mean age in adolescence, between age 15 and 18 years ($N = 397$, 2% of total N), and four samples had a mean age above 29 years ($N = 598$, 4% of total N). Twenty-two samples were from WEIRD countries ($N = 11,692$, 67% of total N), and 17 were from non-WEIRD countries ($N = 5,773$, 33% of total N). Twenty-eight samples used a binary sampling method ($N = 9,295$, 53% of total N), with the remaining 11 samples using a Likert scale ($N = 8,170$, 47% of total N).

For subjective adult status, our analysis sample consisted of $N = 11,477$ from 27 independent samples. Of these 27 samples, 23 were emerging adults aged 18 to 29 years ($N = 10,683$, 93% of total N), two samples were adolescents ($N = 397$, 3.5% of total N), and two samples were adults aged 30 to 55 years ($N = 397$, 3.5% of total N). Eighteen samples were from WEIRD countries ($N = 8,108$, 71% of total N), and 9 samples were from non-WEIRD countries ($N = 3,369$, 29% of total N). All samples administered the item “Do you feel that you have reached adulthood?” with the response options “Yes”, “No”, and “In some ways yes, in some ways no”.

Tables E1 and E4 in ESM 1 show sample details including sample size, age range, country of origin, and sampling method (binary or Likert) for each sample included in the meta-analysis.

Random-Effects Proportional Meta-Analysis

We conducted random-effects proportional meta-analyses for (a) the endorsement of marriage, parenthood, and career, and (b) responses to the item “Do you think you have reached adulthood?”. First, the raw proportions of the three traditional socio-demographic milestones varied from an endorsement rate of 3% to 83% for marriage, 3% to 81% for parenthood, and 14% to 95% for career. The meta-analytic proportion for the MoA item “Being married” was .26, $p < .001$ (95% CI from .20 to .33), reflecting a meta-analytic proportion of 26% of people endorsing being married as an important marker of adult status. For the MoA item “Have at least one child”, the meta-analytic proportion was .25, $p < .001$ (95% CI from .19 to .32),

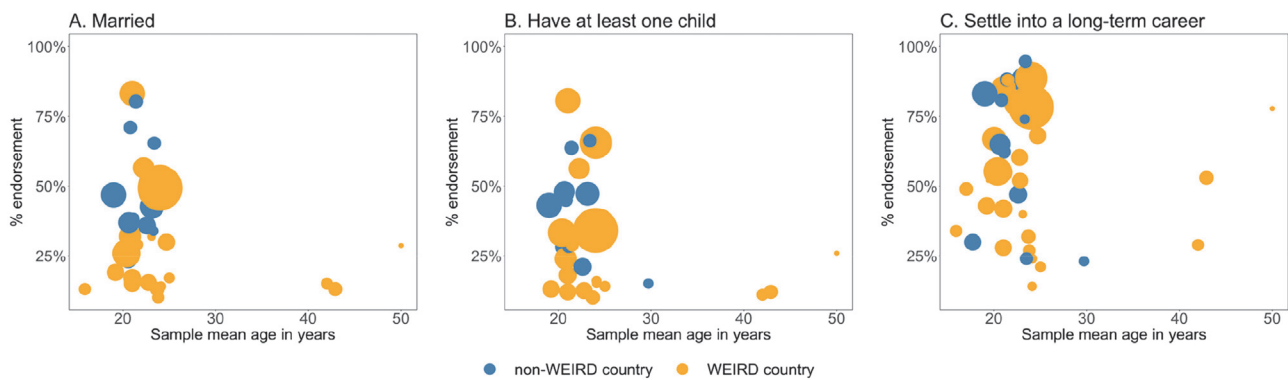


Figure 2. Proportion of people endorsing the items (A) “Married”; (B) “Have at least one child”; and (C) “Settle into a long-term career” to define adult status across mean age and country type (WEIRD or non-WEIRD). Orange circles represent WEIRD (White, Educated, Industrialized, Rich, Democratic) countries and blue circles represent non-WEIRD countries. The size of the shape denotes sample size (larger shapes represent larger sample sizes, smaller shapes represent smaller sample sizes). Figure E7 in ESM 1 shows the proportion of endorsement by country for more detail.

indicating that becoming a parent was considered an important marker of adult status for 25% of people. Finally, the MoA item representing career, “Settle into a long-term career”, had a meta-analytic proportion of .57, $p < .001$ (95% CI from .49 to .65), indicating that 57% of people endorse career as an important marker of adult status.

Second, raw proportions for responses to the item “Do you think you have reached adulthood?” varied from 10% to 86% for “Yes”, 12% to 72% for “In some ways yes, in some ways no”, and 2% to 33% for “No”. The meta-analytic proportions for the subjective adult status item were: .44 for “Yes”, .46 for “in some ways yes, in some ways no”, and .09 for “No”. Thus, across 27 samples, an average of 44% of participants felt they had reached adulthood, 9% felt they had not reached adulthood, and 46% felt they had reached adulthood in some respects but not fully.

Forest plots for all meta-analysis models can be found in ESM 1 (Figures E1-E6).

Meta-Regression

Meta-regression models were conducted for (a) the endorsement of marriage, parenthood, and career, and (b) responses to the item “Do you think you have reached adulthood?”. Four moderators were considered in the meta-regression models: (1) age group (adolescence aged 11–17, emerging adulthood aged 18–29, adulthood aged 30 and above), (2) gender (% of male participants in each sample); (3) country type (WEIRD or non-WEIRD countries), and (4) scale response type (Likert or Binary response methods). The moderators, which were not significantly inter-correlated (see Tables E6 and E7 in ESM 1), were added simultaneously to the meta-regression models.

Figure 2 shows the spread of proportions of endorsement of marriage (Figure 2A), parenthood (Figure 2B), and career (Figure 2C) across estimates by country type (WEIRD or non-WEIRD), and age.

The meta-regression models for the endorsement of marriage and parenthood were significant ($ps < .001$) and explained 39% and 37% of the heterogeneity respectively. However, the only significant moderator was the response method, indicating that for the endorsement of both marriage and parenthood, studies using binary scales had lower endorsement than studies using Likert scales. Age group (teenagers), age group (emerging adults), gender, and country type were not significant moderators ($p = .891, .312, .394$, and $.050$, respectively). Meta-regression outputs for marriage and parenthood are shown in ESM 1, Tables E8 and E9.

The meta-regression model for a career was also significant ($p < .001$) and explained 55% of the heterogeneity across studies in the endorsement of a career as a characteristic of adult status. The corresponding meta-analytic estimate was .56 (95% CI from .45 to .68), a slight decrease from the estimate of .57 from the initial meta-analysis. Gender, country type (WEIRD or non-WEIRD) and response method (binary or Likert) emerged as significant predictors. Results indicate that career was more likely to be endorsed by samples with higher proportions of female participants ($p = .007$), samples with participants from non-WEIRD countries ($p = .020$), and in samples that used a Likert scale for participant response method ($p < .001$). Meta-regression output for career is shown in ESM 1, Table E10.

Following meta-regression, after estimates were transformed back into proportions, the meta-analytic endorsement for marriage rose from .26 to .27 (95% CI from .17 to .40), and for parenthood the meta-analytic endorsement

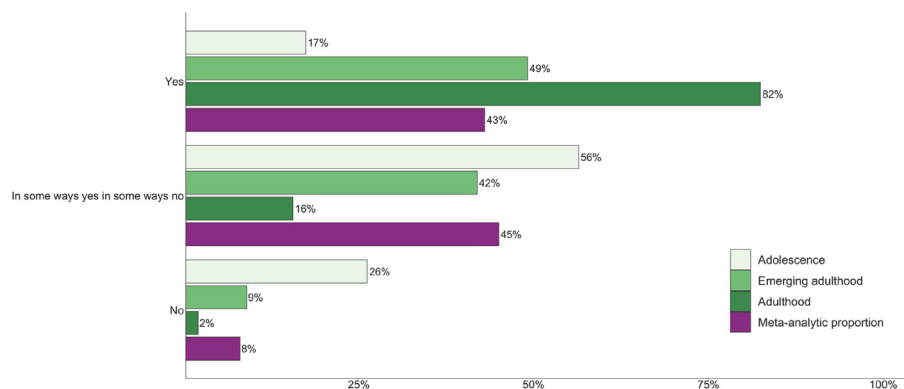


Figure 3. Responses to “Do you think you have reached adulthood?” by age group. Adolescence refers to samples of age 11–17, emerging adulthood refers to age 18–29, and adulthood refers to age 30+. Mean proportions are plotted by age group. The proportion plotted in purple represents the meta-analytic proportion for each response.

rose from .25 to .26, and for career the meta-analytic endorsement fell from .57 to .56.

Meta-regression models were also conducted for the item “Do you think you have reached adulthood?” with age group (adolescence, emerging adulthood, adulthood), gender (% of male participants in each sample), and country type (WEIRD or non-WEIRD countries) as predictors. The meta-regression models for “Yes” were significant ($p < .001$), explaining 27% of the heterogeneity between studies, although the meta-analytic estimate did not change. The age group was the only significant moderator. Results indicated that adolescents and emerging adults were significantly less likely to respond to “Do you think you have reached adulthood?” with “Yes” ($p = .001$ for adolescents, $p = .002$ for emerging adults).

The meta-regression model for the responses “In some ways yes, in some ways no”, and “No” were not significant ($p = .060$ and $.467$, respectively). Meta-regression outputs for responses to the item “Do you think you have reached adulthood?” are shown in ESM 1, Tables E11–E13.

Figure 3 shows responses to the item “Do you think you have reached adulthood?” by age group, indicating that only 17% of adolescents responded with “Yes”, compared with 49% of emerging adults and 82% of adults over the age of 30.

Discussion

This meta-analysis investigated whether people of different ages and cultures classify themselves as adults, and the characteristics they consider to be important for adult status. We aimed to (a) derive meta-analytic estimates of the proportion of endorsement of three traditional socio-demographic milestones – marriage, parenthood, and career – as defining characteristics of adulthood, as well as subjective adult status, and (b) compare the endorsement of traditional socio-demographic milestones of adulthood, and

subjective adult status, across age groups and WEIRD or non-WEIRD countries.

Defining Characteristics of Adulthood

We calculated meta-analytic estimates of the proportion of people who endorsed marriage, parenthood, and career as markers for adult status across a total of 17,465 participants from 39 independent samples. Our results indicated that marriage and parenthood were endorsed by a quarter of the participants as defining characteristics of adulthood. These meta-analytic endorsement estimates were independent of participants’ age, their country of origin, and the scale response type (binary or Likert). We found that endorsements of marriage and parenthood did not vary by age or country of origin. This does not align with previous research which suggested that older individuals and those from more collectivist cultures (e.g., non-WEIRD countries) rated the traditional family-oriented milestones of adulthood as important more often than younger individuals or those from individualistic, WEIRD countries (e.g., Badger et al., 2006; Nelson et al., 2004; Rankin & Kenyon, 2008; Seiter & Nelson, 2011; Vleioras, 2021; Zhong & Arnett, 2014). However, our results may reflect current socio-demographic trends around the world, in particular the decline in marriage and birth rates. In the US, exemplary for a WEIRD country, marriage rates have fallen by 27% and birth rates have declined by 16% in the past 20 years (O’Neill, 2022a; Statista Research Department, 2023). Data suggest that marriage and birth rates are declining not only in WEIRD countries, but globally (Ortiz-Ospina & Roser, 2020; Stone, 2019). It follows that people of all ages and cultures may endorse traditional socio-demographic milestones less frequently as defining characteristics of modern adulthood.

Having a stable, long-term career was endorsed by 57% of participants across studies as defining characteristic of adulthood – more than twice as often as marriage and

parenthood. The emphasis on having a stable career over marriage and parenthood as markers of adulthood suggests that individuals perceive their work life to be more relevant to their adult identity compared to family life in today's society. How young adults prioritize anticipated future roles, such as marriage, parenthood, and career, is thought to reflect how much they intend to focus on these roles and the extent to which they will inform their adult identity (Hall & Willoughby, 2016). In this light, our results suggest that career is a key aspect of adult identity. Individual accomplishments such as careers become a core focus for people in increasingly individualistic and capitalist societies, as people view themselves as somewhat separate from the collective society (e.g., Marginson & Yang, 2022). This may explain why individuals endorse career as being more important for adult status compared with marriage and parenthood.

As attitudes towards marriage and parenthood are shifting, with young people increasingly delaying or forgoing these milestones, attitudes towards careers and work are also shifting, meaning that the importance of a career as a marker of adulthood could change in the future. For example, the COVID-19 pandemic caused diverse challenges in different workplaces which are leading to a change in attitudes towards work, careers, and the importance of work-life balance. For front-line workers such as nurses and teachers, the pandemic highlighted their need for support and vulnerability to burnout (e.g., Goh et al., 2021; Pressley, 2021). For office-based roles, the importance of flexible work schedules and working from home has increased, shifting people's attitudes about what a traditional career looks like (e.g., Lippens et al., 2021). Future studies of adulthood should track these changing attitudes and assess the impact that career has on individuals' subjective adult status and identity development across sectors.

Following meta-regression, the estimate for endorsement of a career as a marker of adulthood did not change dramatically, but our model revealed that country type (WEIRD or non-WEIRD) and gender were significant moderators.

First, we found that samples from non-WEIRD countries were significantly more likely to endorse careers as an important marker of adult status compared with WEIRD countries. This finding aligns with previous research which suggested that WEIRD samples endorse individualistic and psychological markers of adulthood, such as "Accepting responsibility for the consequences of my actions" and "Deciding on beliefs and values independently", over and above having a stable career (e.g., Arnett, 1994; Wright & von Stumm, 2023). For example, among 722 participants from the UK, 80% endorsed "Accepting responsibility for the consequences of my actions" as being important for

adult status but only 40% endorsed having a career (Wright & von Stumm, 2023). By comparison, in recent studies from India, Ghana, and China, career was endorsed as a marker of adulthood by 65%, 81%, and 88% of the respective samples (Bao et al., 2023; Obidoo et al., 2019; Seiter & Nelson, 2011).

Second, samples with a lower percentage of male participants were significantly more likely to endorse a career as a marker of adulthood compared with samples with a high proportion of male participants.

Subjective Adult Status

We derived a meta-analytic proportion of .44 for subjective adult status, meaning that 44% of participants of all ages responded "Yes" to the item "Do you think you have reached adulthood?" across 27 independent samples ($N = 11,477$). Subjective adult status varied as a function of age: adolescents and emerging adults (aged 11 to 17 and 18 to 29, respectively), were less likely to respond with "Yes" compared to older adults. Participants over the age of 30 were 4.8 times more likely to report they had reached adulthood compared with adolescents, and 1.7 times more likely than emerging adults. While emerging adults were less likely to report that they had reached adulthood compared with adults over the age of 30, almost half of emerging adults believed they had reached adulthood (49%). Roughly the same proportion of emerging adults responded with "In some ways yes, in some ways no" (42%), indicating that they felt "in-between" adolescence and adulthood. These findings challenge the concept that emerging adults as a group are stuck 'in-between' adolescence and adulthood and do not feel like adults (Arnett, 2000, 2015). Instead, we found that a slightly higher proportion of emerging adults across the studies meta-analyzed felt they had reached adulthood.

Our findings have implications for both the psychological measurement of emerging adulthood, and the support offered to emerging adults to assist with their development and adjustment.

Implications for Measuring Adulthood

The Markers of Adulthood (MoA) scale is frequently used in the psychological literature to measure adulthood by assessing subjective adult status and the defining characteristics of adulthood. Our meta-analysis aimed to assess the validity of using the MoA scale to assess modern adulthood, and our review highlights three considerations for researchers when using the MoA scale.

First, we found that sample country type was a significant moderator of the endorsement of career as a marker of

adulthood, with samples from non-WEIRD countries endorsing career more than those from WEIRD countries. This suggests that the culture in which an individual was raised may influence their perception and expectations of adulthood. This is an area of research that requires more investigation, especially due to the increase in globalization since the conception of the MoA scale in the 1990s. The MoA scale was conceptualized by US researchers working from a Western perspective (Arnett, 1994; Norman et al., 2023). Cross-cultural examinations of the defining characteristics of adulthood not addressed by the MoA scale are crucial for gaining a full understanding of the meaning of adulthood across the globe.

Second, our findings indicate that emerging adults *do* feel like adults, contrary to previous research. Previously, individual studies have found evidence to suggest that emerging adults feel ‘in-between’ (e.g., Arnett, 2000, 2015). However, in our meta-analysis, almost half of participants aged 18–29 reported feeling that they had reached adulthood. By collating data from the past 30 years, we show that the picture is more complex than previously thought, and adult identity is not defined by age group. Future research should consider this and investigate individual differences within emerging adulthood to identify variables that affect subjective adult status in this age group.

Third, while emerging adulthood has been the focus of research on subjective adult status and the defining characteristics of adulthood, our meta-analysis provides evidence that assessing wider age groups is key to understanding adulthood. Out of the 27 studies included in this meta-analysis for subjective adult status, only four included samples outside of the 18–29 age range of emerging adulthood. Our meta-regression revealed that age was a significant moderator of subjective adult status, with younger participants being more likely to report that they have not yet reached adulthood. We implore future studies to include wider age ranges when assessing the MoA scale in order to identify age effects in measures of adulthood.

Implications for Mental Health and Well-Being Research

Adulthood has traditionally been defined as a life stage reached when one attains certain socio-demographic milestones including marriage, parenthood, and settling into a career. However, our meta-analysis showed that adulthood is not defined by marriage and parenthood, and that most people consider themselves to be adults despite these socio-demographic milestones becoming less attainable and occurring later in life. Improving our understanding of the psychology of adulthood may require us to redefine this phase of life as a time of continuous psychological growth and change, rather than focusing on the idea of a

fixed adult status that follows from marriage, parenthood, and career. Redefining adulthood in this way could have a positive impact on adults’ identity development. Identity development can be impaired when people’s reality and their ‘ideal’ or expected experience are disconnected (e.g., Carver, 2012). That is, if people feel that they must marry or have children in order to become adults, but these milestones are out of reach or undesirable for them, they may face an identity crisis as they transition into and through adulthood. Emphasizing the rich and dynamic development that takes place throughout adulthood could also inform how we support young people on the verge of adulthood. These young people may be more likely to identify with the wider social group of adults if they view adulthood as a positive and enjoyable time of life (Wright & von Stumm, 2024). Redefining adulthood as a time of continuous, positive psychological growth may promote a well-adjusted, happy, and healthy adult population (e.g., Wright & von Stumm, 2023).

Limitations

Our study makes three novel contributions to the psychological measurement of adulthood. First, we synthesized three decades of research using the MoA scale and meta-analyzed the proportional endorsement of the traditional socio-demographic milestones of adulthood – marriage, parenthood, and career – and subjective adult status. Second, we examined the relationship between attitudes towards adulthood and participant age group (i.e., adolescence, emerging adulthood, or adulthood) and country of origin (i.e., WEIRD or non-WEIRD), revealing that the effect of these moderators is more complex and nuanced than previously assumed. Finally, we have provided recommendations for researchers studying and measuring adulthood, in the hope that this meta-analysis will enrich and inform future research into adulthood.

However, our study is not without its limitations. First, a key limitation of this work is the cross-sectional nature of the data available, which did not allow us to assess whether differences in the age group were age differences (i.e., emerging adults respond differently to those in older adulthood) or due to generational differences. For example, we found that older participants had higher subjective adult status, as those over the age of 30 were 4.8 times more likely to report that they had reached adulthood compared with younger participants. These differences may reflect a time effect – participants may respond differently to this item as they age. Alternatively, this may reflect generational differences in social values and perceptions of adulthood. That is, participants born in different generations may respond differently to this question, regardless of their age at the time of assessment. Future research should

investigate generational changes in subjective adult status and the significance of markers of adulthood.

Second, another limitation of our analysis is that most samples for which MoA data was available were emerging adults, and only four estimates were drawn from solely younger or older samples. Therefore, our estimates for the proportions for the endorsement of markers of adult status are heavily weighted to samples that included the ages of 18 to 29 years.

Third, we did not have sufficient data to assess the effect of socioeconomic status (SES) on the endorsement of marriage, parenthood, and career. Variations in SES and life circumstances influence the timing and frequency of the attainment of traditional milestones of adulthood. For example, individuals from lower SES backgrounds are less likely to attend university (Britton et al., 2021), and they tend to marry and have children at younger ages than those from higher SES backgrounds (Mooyaart & Liefbroer, 2016; van Roode et al., 2017). These demographic differences could influence the relative endorsement of marriage, parenthood, and career for adult status across SES groups. Future research is needed to address if SES affects the endorsement of marriage, parenthood, and career.

Fourth, the distinction of countries as WEIRD or non-WEIRD, while common in psychological studies (e.g., Hendriks et al., 2019), may not be an optimal way to assess cultural differences. Grouping countries based on their status as Western, Educated, Industrialised, Rich and Democratic nations means that in this meta-analysis the countries of China, Ghana, and Poland were grouped together, although they have distinct social and cultural norms (e.g., Anedo, 2012). Classifying countries as WEIRD or non-WEIRD offers a broad cross-cultural comparison, and a solution that was achievable in the scope of this meta-analysis, but future studies could consider comparing individual countries to achieve a more detailed perspective of the impact of cultural differences on people's attitudes towards adulthood.

Fifth, to compare studies that collected data using binary and Likert scales, we transformed Likert responses to binary by combining responses on a 4-point Likert scale into 2 points. This was necessary to compare all existing evidence, but by compressing the Likert scale data we inevitably lost detail in responses, and the comparison of Likert and binary datasets is not wholly reliable. We found overall that samples who responded on a Likert scale were more likely to endorse all three markers – marriage, parenthood, and career. This is likely due to the fact that participants have more options for endorsement on a Likert scale (e.g., when assessing the importance of a characteristic they can choose between “very important”, “important”, “not very important”, and “not important at all”, compared with “Yes” or “No” in a binary scale).

Finally, we chose to assess the markers of marriage, parenthood, and career here to provide meta-analytic proportions for the traditional socio-demographic milestones of adulthood, but the MoA scale includes an additional 19 markers of adulthood which were not the focus of the current study (cf. Norman et al., 2023). We selected marriage, parenthood, and career because they represent the three milestones traditionally associated with attaining adult status. Future studies on the proportional endorsement of other MoA items will further elucidate our understanding of perceptions of adulthood today. For example, MoA includes items that assess psychological development in adulthood (e.g., “Accept responsibility for the consequences of my actions”), and comparisons between the endorsement of traditional milestones and these more psychological traits are an interesting avenue for future research.

Conclusion

Adulthood is typically defined by reaching the age of majority (i.e., age 18) and attaining traditional socio-demographic milestones such as marriage, parenthood, and a stable career. In this meta-analysis of publications using the Markers of Adulthood scale (Arnett, 1994, 1997, 1998, 2001) across the last three decades, we found that the traditional milestones of marriage and parenthood were endorsed by less than 25% of participants as markers of adulthood. In contrast, settling into a stable career was endorsed by 57% of participants, suggesting that today, people define adulthood by career status more than marital or parental status. We also found that fewer than half of participants thought they had reached adulthood (meta-analytic proportion of 44%), and age at the time of assessment significantly moderated whether people perceived themselves as adults. Emerging adults (aged 18–29) were 1.7 times less likely to report feeling adult compared with adults over the age of 30. However, 49% of emerging adults did feel they had reached adulthood, indicating marked individual variation in emerging adults' perceptions of adulthood. Our review suggests that the socio-demographic markers included in the MoA scale may not be the best measure of modern adulthood. Our findings have implications for supporting emerging adults with the transition to adulthood and improving adults' mental health and identity development by redefining the markers of modern adulthood.

Electronic Supplementary Materials

The following electronic supplementary material is available with this article at <https://doi.org/10.1027/1015-5759/a000873>

ESM 1. Details of studies included in the meta-analysis; country categorization; forest plots; bubble plot; references.

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Authorship

Megan Wright, Sophie von Stumm jointly conceived of the idea for this meta-analysis. Megan Wright, pre-registration and protocols on the OSF, literature search, paper screens and codes, data

analyses and cleaning, writing – manuscript. Florence Oxley, screened and double-coded 10% of hits. Megan Wright, Sophie von Stumm, Florence Oxley, manuscript – editing.

Open Science

We report how we determined our sample size, all data exclusions (if any), all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established prior to data analysis, all measures in the study, and all analyses including all tested models. If we use inferential tests, we report exact *p* values, effect sizes, and 95% confidence or credible intervals.

Open Data: The information needed to reproduce all of the reported results is openly accessible on the Open Science Framework: <https://osf.io/ahceq/> (Wright et al., 2024).

Open Materials: The information needed to reproduce all of the reported methodology is not openly accessible. The material is available on request from the author(s).

Preregistration of Studies and Analysis Plans: This study was preregistered with an analysis plan on the Open Science Framework: <https://osf.io/ahceq/> (Wright et al., 2024).

Open Analytic Code: I confirm that all the scripts, code, and outputs needed to reproduce the results are provided on the Open Science Framework: <https://osf.io/ahceq/> (Wright et al., 2024).

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