A configural approach to aspirations: The social breadth of aspiration profiles predicts well-being over and above the intrinsic and extrinsic aspirations that comprise the profiles

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Acknowledgements: The authors wish to thank Professor Tim Kasser and Associate Professor Frederick Grouzet for their comments on our early analyses. We also thank Enikő Juhász, former student of the Catholic University (Hungary), and Doctor Jessica Fulcher for their essential contributions to the Hungarian and American data collections, respectively. Preparation of this manuscript was supported in part by an Australian Government Research Training Program Scholarship awarded to Doctor Emma Bradshaw.

Abstract

We conducted a person-centered analysis of the Aspiration Index to identify subgroups that differ in the levels of their specific (wealth, fame and image, personal growth, relationships, health, and community giving) and global intrinsic and extrinsic aspirations. In a Hungarian (*N*=3370; 77% female; age: *M* = 23.57), an Australian (*N*=1632; 51% female; age: *M* = 16.6), and an American sample (*N*=6063; 82.2% female; age: *M* = 21.86), we conducted separate bifactor exploratory structural equation models to disentangle the level of higher-order intrinsic and extrinsic aspirations from the shape of specific aspirations by using the resultant factor scores as indicators in latent profile analyses. The analyses yielded three replicable latent profiles: *Disengaged from relationships and health (Profile 1)*; *Aspiring for interpersonal relationships more than community relationships (Profile 2)*; and *Aspiring for community relationships more than interpersonal relationships (Profile 3)*, with Profile 3 reliably experiencing the highest well-being. To demonstrate the incremental value of our approach to more traditional variable-centered methods, we used profile membership to predict well-being whilst controlling for the aspirations that comprise the profiles. Even in these highly conservative tests, profile membership explained additional variance in well-being. These studies make a unique contribution to the literature by identifying replicable latent profiles of aspiring that account for variance in well-being over and above the constituent variables.

Keywords: aspirations; goals; well-being; latent profile analysis; person-centered analysis

The act of goal striving has been associated with high life satisfaction and positive psychological functioning in many studies (Brunstein, 1993; Holahan, 1988; Lowenthal, 1971; Ruehlman & Wolchik, 1988; Wheeler, Munz, & Jain, 1990). However, research also suggests that when it comes to the enhancement of well-being, not all goals are made equal (Ryan, Sheldon, Kasser, & Deci, 1996). For instance, Emmons (1986) proposed that well-being is associated with specific goal characteristics, such as level of goal commitment and perceived probability of success, but more recent evidence suggests that neither the tenacity nor efficacy of goal pursuit is central to fostering well-being. Rather, the *content* of goals is key (Deci & Ryan, 2000; Kasser & Ryan, 1993, 1996, 2001; Ryan et al., 1996).

Self-determination theory (SDT) posits that one's value orientation informs the content of life goals, or aspirations. Through variable-centered analyses, various kinds of aspirations have been found to relate differentially to optimal functioning (Kasser, 2002; Kasser & Ryan, 1993, 1996, 2001). The Aspiration Index (Kasser & Ryan, 1993, 1996, 2001), a widely-used measure of aspirations, distinguishes the intrinsic aspirations of personal growth, close relationships, physical health and giving to the community from the extrinsic aspirations for wealth, fame, and physical attractiveness. The pursuit of intrinsic aspirations is thought to satisfy the psychological needs for autonomy, competence, and relatedness, thus enhancing well-being (Deci & Ryan, 1985; Ryan & Deci, 2017). However, extrinsic aspirations are assumed to, at best, only indirectly satisfy basic needs, and often represent more controlled processes and/or psychological threat, which have been shown to thwart well-being (Sheldon & Kasser, 2008).

Cross-cultural research consistently indicates that, across different cultures, an emphasis on intrinsic aspirations relates positively to well-being related outcomes, such as, life satisfaction and meaning in life (e.g., Martos & Kopp, 2012; Ryan et al., 1999; Zawadzka, Duda, Rymkiewicz, & Kondratowicz-Nowak, 2015), vitality (Kasser & Ryan,

1993, 1996, 2001; Martela, Bradshaw, & Ryan, in press; Yamaguchi & Halberstadt, 2012), mindfulness (Brown & Kasser, 2005; Donald et al., 2019), empathy (Sheldon & Kasser, 1995), and healthy, pro-environment, and prosocial behaviors (Bradshaw, Sahdra, Calvo, Mrvaljevich, & Ryan, 2018; Fu, Liu, Yang, Zhang, & Kou, 2015; Unanue, Vignoles, Dittmar, & Vansteenkiste, 2016). In contrast, a relative extrinsic aspirational focus has been found be associated with, and even to increase ill-being and distress symptoms in a variety of cultures (Kasser et al., 2014; Martos & Kopp, 2014; Ryan et al., 1999; Schmuck, Kasser, & Ryan, 2000; Sheldon & Krieger, 2014).

These insights about the links between aspirations and well-being-related outcomes are based on variable-centered analytic approaches such as linear regression and factor analysis, which have been the mainstay of empirical psychology. The discoveries made through such studies have advanced the field and allowed us to ask new questions about the configuration of aspirations, such as: are extrinsic aspirations generally antithetical to optimal functioning, regardless of the levels of specific kinds of intrinsic aspirations one pursues? Is it possible for people to be extrinsically oriented in one or more ways (e.g., seeking wealth and fame), but still thrive, depending on their levels of one or more intrinsic aspirations (e.g., giving to the community, valuing personal relationships)? Interaction testing in a variable-centered approach could help us begin to answer such questions, but that would require, for instance, regression models with interaction effects of very high order (e.g., a 7-way interaction), which would make interpretations of the results extremely complicated at best and intractable at worst.

Recent advances in statistical modelling provide a more tenable, alternative analytic strategy of mixture modelling, also known as latent profile analysis (LPA) or person-centered analysis (McLachlan & Peel, 2004). Person-centered approaches overcome several assumptions upon which variable-centered methods depend. Specifically, mixture models do

not assume sample homogeneity. Instead they account for each participant's individual response pattern (Isler, Liu, Sibley, & Fletcher, 2016), and explore potential sources of group heterogeneity that may emerge if there are qualitatively discrete subpopulations (Morin, Morizot, Boudrias, & Madore, 2010). Put differently, variable-centered analyses might be used to examine the interaction of two variables across scores on a third variable, on average, in a given sample, whereas person-centered methods address the question of whether the sample contains groups with distinct patterns of interactions (Dyer, Pleck, & McBride, 2012).

Person-centered approaches also make no assumptions about functional form, and thus interactions are not assumed to be linear (Bauer & Shanahan, 2007). Using simulated data, Bauer and Shanahan (2007) compared 2- and 3-way interactions (which are variable-centered) with the results of a (person-centered) LPA, demonstrating that the LPA captured interactions between variables whilst allowing them to be nonlinear. Theoretically-indicated nonlinearity could be addressed in a variable-centered way via the inclusion of polynomial terms in a regression (Bauer & Shanahan, 2007). However, doing so would complicate the interpretability of the results and detract from the parsimonious aim of employing such methods. Indeed, complexity increases as more variables are added to a model. So, variable-centered approaches are *often* simpler, but only to a point.

With respect to the Aspiration Index in particular, it is not obvious how we might pre-specify nonlinear effects, for instance, in a 7-dimensional "hypercube," (which is an extension of the more familiar 3-dimensional cube). As we alluded above, this cumulative complexity presents a conceptual challenge for variable-centered analyses of the Aspiration Index, because there is no existing basis upon which to hypothesize specific interactions from the myriad possibilities. Bauer and Shanahan's (2007) simulation study provides support for the use of person-centered methods to address these conceptual and pragmatic issues.

In addition to the advantages of mixture models outlined above, the correlations and heterogeneity reported in past analyses of the Aspiration Index, also point to the utility of mixture models in future studies (Kasser & Ryan, 1993, 1996; Kasser, Ryan, Zax, & Sameroff, 1995; Martos & Kopp, 2012; Sheldon, Gunz, Nichols, & Ferguson, 2010; Vansteenkiste, Duriez, Simons, & Soenens, 2006). Specifically, intrinsic and extrinsic aspirations are often positively correlated (Kasser & Ryan, 1993; Kasser et al., 1995; Sheldon et al., 2010), which means there might be subsamples that show varied configurations on the different specific intrinsic and extrinsic aspirations. Further, much of the evidence on the role of aspirations in well-being has unexplained heterogeneity (Vansteenkiste et al., 2006) even when demographic variables are controlled (Martos & Kopp, 2012). The source of such heterogeneity may be unobserved (Lubke & Muthén, 2005) and perhaps attributable to the existence of latent subsamples. These possibilities can be tested by an LPA.

We thus suggest that a 'configural', person-centered analysis can complement and further inform what is already known about the links between aspirations and well-being-related outcomes. Such strategies are gaining popularity in empirical psychology and have been successfully employed in person-centered analyses of several constructs, such as, achievement goal orientation (Pastor, Barron, Miller, & Davis, 2007; Tuominen-Soini, Salmela-Aro, & Niemivirta, 2008), work values (Guo, Eccles, Sortheix, & Salmela-Aro, 2018), mindfulness (Bravo, Boothe, & Pearson, 2016; Pearson, Lawless, Brown, & Bravo, 2015; Sahdra et al., 2017), self-concept (Marsh, Lüdtke, Trautwein, & Morin, 2009), and personality traits (Merz & Roesch, 2011).

However, there are few studies employing a person-centered analysis of aspirations. Rijavec, Brdar, and Miljković (2011) provided initial evidence that subgroups of a population can be clustered based on their intrinsic and extrinsic aspirations. Rijavec et al. (2011, p. 698) conducted a K-means cluster analysis of aspiration importance scores, in which they "forced"

a 4-cluster solution based on Kasser and Ryan's (2001) evidence that subgroups can be classified into four groups according to their dominating attainment scores on intrinsic (I) and extrinsic (E) aspirations. Rijavec et al.'s (2011) analysis supported the same four groups reported by Kasser and Ryan (2001): a Low I/High E cluster, a High I/Low E, a High I/High E cluster and Low I/Low E cluster. Both high intrinsic clusters (High I/Low E and High I/High E) contained more females than males, and males were distributed evenly across the four clusters. Additionally, the individuals in the two high-intrinsic clusters reported the most well-being and basic psychological needs satisfaction. In contrast, members of the Low I/Low E cluster reported the least positive functioning. These results indicate that high aspirational engagement is beneficial for well-being in the cluster of people whose aspiration orientation favors intrinsic goals, but also for the group of people for whom both intrinsic and extrinsic goals are above average.

Rijavec et al.'s (2011) finding that more females comprise intrinsic clusters aligns with past evidence that women tend to rate the importance of intrinsic aspirations higher than do men (Kasser & Ryan, 1993, 1996; Kasser et al., 1995) and that men tend to rate the importance of extrinsic aspirations (especially wealth) higher than women (Kasser & Ryan, 1993, 1996). However, in contrast with the substantial existing literature (for a review see Kasser, 2002), Rijavec et al.'s (2011) study also implies that having above average levels in both aspirational domains may be as beneficial as having high intrinsic relative to extrinsic aspirations. While this result seems to be at odds with the notion that a focus on extrinsic aspirations may diminish well-being (Kasser & Ryan, 1993, 1996, 2001), it lends support to the possible existence of subgroups for which extrinsic pursuits are not inherently negative.

The mechanism underlying Rijavec et al.'s (2011) finding is somewhat difficult to elucidate without considering the wider spectrum of specific aspirations. In most studies of aspirations, specific aspirations (e.g., wealth, fame, relationships, giving to the community,

etc.) are a priori divided into two theoretically meaningful higher-order categories of intrinsic and extrinsic aspirations, and statistical analyses are typically conducted on the average scores of the respective intrinsic and extrinsic aspirations items, often with a careful use of control variables to account for the overall importance of aspirations (Kasser & Ryan, 1996). But by using such higher-order aspirations scale scores, as Rijavec et al. (2011) did, the level of specificity of individual aspirations is conflated in the higher-order indicators of the cluster analysis. Although all the information is used when researchers conduct analyses employing only the higher-order scores of intrinsic and extrinsic aspirations based on all available data, an important level of detail can remain hidden.

Perhaps, the devil is in the details. Feasibly, the combination of the higher-order intrinsic and extrinsic scores in the members of Rijavec et al.'s (2011) High I/High E was a function of a particular emphasis on fame aspirations (classified as extrinsically oriented) combined with high community engagement aspirations (intrinsically oriented), and that kind of a combination might have made the extrinsic aspiration of fame function more like an intrinsic aspiration. That is, perhaps being known and respected by many people in a community can be in the service of giving to the community. People might also hold other combinations of specific extrinsic and intrinsic aspirations–some might value money and relationships, but not fame or giving to the community. And even among the wide variety of possible combinations of different aspirations, people might exhibit varying levels of the aspirations–for instance, among those who aspire for wealth, some might value money a moderate amount while others might value it a lot. These ideas are mere speculations until we examine profiles of specific aspirations rather than the profiles derived from the higher-order categories alone.

A K-means cluster analysis of specific aspirations is one possible analytical strategy to utilize the details of the wide range of aspirations. However, we have no a priori basis for

extracting a specific number of clusters when a broader spectrum of aspirations is included. The criteria for selecting clusters in many analyses tend to be opaque due to a lack of reliable confirmatory statistics (Pastor et al., 2007), and thus results obtained from such studies can be prone to confirmation bias. On the basis of robust statistical criteria for classifying subpopulations, Pastor et al. (2007) recommend LPA as a rigorous person-centered approach, which is what we employed in our study of the seven specific aspirations measured by the Aspiration Index.

We used the factor scores from a bifactor exploratory structural equation modelling (B-ESEM; Morin, Arens, & Marsh, 2016a) of the seven aspirations of the Aspiration Index as the indicator variables in an LPA. As we will explain in detail below, combining B-ESEM and LPA allowed us to disentangle the overall level of extrinsic and intrinsic aspirations from the different configurations of specific aspirations. We were then able to assess the additional explanatory power offered by our person-centered method by testing the extent to which profiles of aspirations differ on measures of well-being, while controlling for the comprising intrinsic and extrinsic aspirations. Our goal was to use the most sophisticated statistical tools at our disposal to create an analytical framework addressing the different questions about the links between aspirations and well-being that researchers have thus far been attempting to answer using different kinds of variable- and person-centered approaches, each with their own strengths and weaknesses. With our method, we attempt to answer new questions about how insights gained from our person-centered approach add value to what can be learned from a more parsimonious, purely variable-centered approach of linking aspirations to well-being outcomes.

People differ in both the intrinsic and extrinsic orientations of their aspirations, as well in their overall level of aspiring (Sheldon et al., 2010; Williams, Hedberg, Cox, & Deci, 2000). The latter issue of overall aspiring has been addressed in past studies by controlling

for overall means (total aspirations) to examine relative valuations of higher-order intrinsic versus extrinsic aspiration scores (Kasser & Ryan, 1996). However, as we reasoned above, people can also differ in the extent that they value some of the specific aspirations relative to others despite their overall intrinsic to extrinsic aspirations level. Therefore, the current study sought to disentangle the higher-order orientation effects (the overall levels of extrinsic and intrinsic aspirations) from the pattern of second-order aspirations (the levels of seven specific aspirations) within profiles of aspirations. To achieve this, we used B-ESEM, in which each item is loaded onto two orthogonal factors: (1) a global factor that represents the relevant subscales within the intrinsic and extrinsic domains (e.g., an item of health aspiration is loaded onto a global intrinsic aspiration factor); and (2) a specific factor of the respective subscale (e.g., the same health item also loads on a specific factor of health). The resultant global and specific factor scores were then used as indicators in LPAs to examine the pattern of aspirations in heterogeneous subgroups within the broader samples.

The LPAs using factor scores derived from B-ESEM are procedures with utility for separating level and shape effects (Morin, Boudrias, Marsh, Madore, & Desrumaux, 2016b; Morin & Marsh, 2015). The global factors of B-ESEM indicate the "level" effects (low, medium, or high responses on all intrinsic or extrinsic items, or, in SDT terms, the "orientation" effects) in the profiles. The relative levels of the global factors indicate the orientation of the higher-order aspirations in the profiles. Equally importantly for our purposes, the level of the seven specific aspirations factor scores (patterns of low, medium, or high scores across these specific factors) indicate the "shape" of the profiles of the specific aspirations. If group heterogeneity is plausible, then we would expect to find replicable profiles that differ substantively in terms of the specific aspirations, above and beyond the ratio of global intrinsic to global extrinsic aspirations that has been emphasized in past

research. These ideas were tested in three large independent samples, one Hungarian sample (Study 1), one Australian sample (Study 2), and one sample from the United States (Study 3).

Overview

We sought to answer two primary research questions in three studies. **Research Question 1**: will the combination of B-ESEM and LPA derive profiles of aspirations that are replicable across multiple independent samples? As detailed above, our analytic strategy involved conducting a B-ESEM of the Aspiration Index, which included two global factors of intrinsic and extrinsic aspirations and seven specific factors of individual aspirations. We then used those factor scores to extract latent profiles of aspirations using LPA. If the assumption of group homogeneity in variable-centered analyses of the Aspiration Index is questionable, we would expect to find distinct profiles of aspirations using our person-centered approach. However, person-centered approaches such as LPA often derive "local solutions" (Hipp & Bauer, 2006, p. 38) that may not replicate in subsequent samples or be phenomenologically meaningful. To address the important question of profile replicability, in Study 1, we first used a Hungarian sample to derive profiles of global and specific aspirations. Then, in Studies 2 and 3, we tested the replicability of the profiles by using the same analytic strategy employing Australian and American samples, respectively. Based on the literature discussed above (Rijavec et al., 2011), we expected to find a profile that would be more intrinsic than extrinsic, and another vice versa. However, because ours is, to our knowledge, the first study to analyze the Aspiration Index using this strategy, we had no a priori hypotheses about the exact shapes of the configurations.

Using the same analytical framework (combining B-ESEM and LPA), and the same instrument for measuring aspirations in three large samples from three different countries and cultures, served as a rigorous test of our first research goal of discovering replicable profiles of aspirations whilst disentangling level and shape effects using B-ESEM. Consistent with

the need for large samples for mixture modelling of B-ESEM factor scores (Morin et al., 2016b; Morin & Marsh, 2015) we used large sample sizes in each study (*N*=3370 in Study 1; *N*=1632 in Study 2, *N*=6063 in Study 3).

The derivation of profiles of aspirations in our initial sample (Study 1) and replication of these profiles in subsequent samples (Study 2 and Study 3), allowed us to address our primary aim **Research Question 2:** does profile membership predict variance in well-being over and above the influence of individual aspirations? This important question assessed the degree to which our person-centered approach added value to what we can learn about aspirations and well-being using traditional variable-centered methods. A broad literature using variable-centered approaches already suggests that aspirations meaningfully relate to well-being (Kasser & Ryan, 1993, 1996, 2001). Since we are proposing a new way of analyzing the Aspiration Index, the question is whether our approach adds value to what is already known from previous research on the Aspiration Index using variable-centered approaches, which are more parsimonious than our analytic framework combining B-ESEM and mixture modelling.

To address Research Question 2, we used hierarchical regression to test the additional explanatory power of profile membership. Specifically, we tested the ability of profile membership to predict outcomes even when controlling for the aspiration factors that comprise the profiles. We compared a model in which each of the outcome variables was regressed on the aspirations, to a model that additionally included the profile membership variable as a predictor (i.e., the second model tested the predictive utility of profile membership controlling for the aspirations). If an ANOVA comparing these two models indicates that the model including profile membership is a better fit for the data than the model using aspirations alone, this would be evidence that our person-centered approach

provides incremental utility over a variable-centered approach. This is what we expected to find in Studies 2 and 3.

Next, we aimed to shed light on the qualitative and phenomenological meaning of belonging to each profile by describing the ways in which the profiles differed. In other words, if profile membership is a meaningful predictor of an outcome, how do the profiles differ on that variable, and what might those differences tell us about the participants characterized by each of the profiles? Based on the evidence outlined above (Rijavec et al., 2011), we expected that individuals typified by the various profile shapes would differ in terms of well-being and other well-being-related variables. Past research and theory suggests that high intrinsic relative to extrinsic aspirations should relate to higher well-being (Kasser, 2002; Kasser & Ryan, 1993, 1996, 2001), life fulfilment (Martos & Kopp, 2012; Ryan et al., 1999), mindfulness (Brown & Kasser, 2005), and basic psychological needs satisfaction (Rijavec et al., 2011). Based on these studies, we expected members of profiles with a more overall intrinsic relative to extrinsic pattern to have higher well-being, life fulfilment, mindfulness, and basic psychological needs satisfaction compared to members of profiles with a more extrinsic orientation.

We also sought to understand the demographic predictors of membership to the different profiles. Based on existing evidence, gender, but not age, was expected to predict profile membership. Specifically, women should be more likely to belong to intrinsically oriented profiles, and men to more extrinsic profiles. Our gender hypothesis is based on existing evidence suggesting the sexes typically differ in their aspirational orientations– women are often more intrinsically oriented than men (Kasser & Ryan, 1996; Kasser et al., 1995; Rijavec et al., 2011), and men tend to be more extrinsically oriented than women (Kasser & Ryan, 1993; Martos & Kopp, 2012). All three studies allowed us to test our

hypotheses regarding the psychological correlates and demographic predictors of profile membership.

Study 1

As described above, the aim of Study 1 was to use our proposed combination of B-ESEM and LPA to derive profiles of intrinsic and extrinsic aspirations. If the B-ESEM fit indices suggest good fit, and the profiles derived by the LPA appear meaningful, such results will provide a foundation for testing the replicability of the profiles derived, as well as establishing their incremental utility, in Studies 2 and 3. Study 1 also assesses the degree to which profile membership is associated with a theoretically relevant outcome variable (anxiety), gender, and age.

Method

Ethical approval

Each of our three studies received ethics approval prior to data collection. Study 1 was approved by the Medical Ethical Research Board of the Semmelweis University (SE TUKEB 13/2002). Study 2 and Study 3 obtained ethical approval from the University of Wollongong Human Research Ethics Committee (HE10/158) and the Australian Catholic University Human Research Ethics Committee (2014-342N) prior to data collection.

Participants and design

The total sample size for Study 1 was 3370 (*n*=2610 female). All participants responded to all items on the relevant scales, as such no data were missing. Participant ages ranged from 18 to 59 years (M = 23.57, SD = 5.17). Participants were recruited by a former student of the Catholic University (Hungary), via online advertising on social media, for the purposes of a master's thesis that was not connected to the current study. Students of Hungarian higher education institutions were invited to participate in an online questionnaire about health and aspirations. All study materials were administered in Hungarian. The

archival data set included the Aspiration Index, the trait scale of the State-Trait Anxiety Scale (STAI; Sipos, Sipos, & Spielberger, 1994; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), the Alcohol Use Disorders Identification Test (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998), and a short version of Rotter's (1966) internal-external locus of control scale. The authors of the current study did not request access to the Bush et al. (1998) or Rotter (1966) items, because these scales were not consistent with our aims. None of the authors of the current study have previously analyzed the variables in this data in conjunction with aspirations, nor have results derived from these data been published except in the master's student's thesis.

The primary aim of Study 1 was to derive our initial profiles of aspirations. We also examined the links between aspirations and anxiety, and we tested the incremental utility of profile membership in the prediction of anxiety, because, as an indicator of ill-being, anxiety was relevant to the aims of our studies. However, while well-being tends to correlate highly with aspirations, correlations between the aspirations and anxiety as measured by the STAI can be small and unreliable (Niemiec, Ryan, & Deci, 2009), so we did not expect anxiety to be associated with profile membership.

Measures

Aspirations. The previously validated Hungarian version (Komlósi, Rózsa, Bérdi, Móricz, & Horváth, 2006) of the 35-item Aspiration Index (Kasser & Ryan, 2001) measures the importance of seven kinds of aspirations in participants' lives. The three extrinsic aspirations are wealth, fame, image, and the four intrinsic aspirations are personal growth, relationships, physical health and community giving. Participants were provided with the sentence stem, "How important is it to you to…" and then presented with five "life goals" for each subscale. Example aspirations include: "To be rich" (wealth), "To be famous" (fame), "To have people comment often about how attractive I look" (image), "To grow and learn

new things" (personal growth), "To have deep enduring relationships" (relationships), "To have a physically healthy life style" (physical health) and "To work to make the world a better place" (community giving). Each item was rated on a scale from 1 (Not at all important) to 7 (Very important). Cronbach's alphas were .67 for personal growth, .75 for relationships, .81 for wealth, .84 for image and health, .86 for fame and .89 for community.

Trait anxiety. Levels of anxiety were measured using the Hungarian version of the STAI (Sipos et al., 1994; Spielberger et al., 1983), which showed satisfactory internal consistency in our sample ($\alpha = .90$). Example items include: "I feel pleasant" (reverse scored) and "I feel that difficulties are piling up so that I cannot overcome them". Participants answered all items on a 1 (Almost never) to 4 (Almost always) scale with regards to how they "generally feel", thus measuring anxiety at the trait (as opposed to state) level.

Results

Inter-correlations of study variables. Table 1 presents the key descriptive statistics for Study 1. The seven subscales of aspirations were all positively related to each other, except for community giving and wealth, which were negatively correlated. The intrinsic aspirations were more strongly correlated with each other than they were with the extrinsic aspirations, and vice versa, supporting the intrinsic/extrinsic distinction commonly used in the literature. However, there were also weak positive links between the importance of aspirations for wealth and health, as well as image, growth, and relationships, suggesting that these variables, despite belonging to different higher-order categories of intrinsic and extrinsic aspirations, were not in opposition to each other. The pattern of correlations we observed in this study is consistent with previous research (Kasser & Ryan, 1993, 1996). Trait anxiety was weakly correlated with wealth, image, and relationships, and weakly negatively correlated with personal growth. The correlations between aspirations and anxiety were similar to those reported previously (Niemiec et al., 2009) [INSERT TABLE 1 HERE].

B-ESEM of the Aspiration Index. We conducted B-ESEM to derive indicators for use in the subsequent LPA (described below). The "exploratory" in exploratory structural equation modelling (ESEM), so-called by its developers Asparouhov and Muthén (2009), refers to the method's combination of some features from both confirmatory factor analysis (CFA) and exploratory factor analysis (EFA; Morin, Marsh, & Nagengast, 2013). CFA assumes that cross loadings between target items (items on a scale) and nontarget factors (the latent factors upon which items load) are zero (Morin et al., 2016a). Constraining cross-loadings to be exactly zero can be unreasonably restrictive, particularly when measures include conceptually-related factors (Morin et al., 2016a), as is the case with the Aspiration Index (all the aspirations reflect aspiring and are thus related). By allowing cross-loadings to be freely estimated in a model, EFA is thought to provide a more realistic account of the data (Tóth-Király, Bõthe, Rigó, & Orosz, 2017). Accordingly, ESEM integrates the methodological advances of CFA whilst allowing small cross-loadings from target items to nontarget factors (for example, from an image item to the intrinsic global factor). Regardless, ESEM methods, particularly when using target rotation as we do here, are generally confirmatory in nature (Marsh, Morin, Parker, & Kaur, 2014).

Furthermore, the "bifactor" element of B-ESEM tests for the presence of a global construct that coexists with more specific elements (Morin et al., 2016a). In the case of the Aspiration Index, the global factors are the intrinsic and extrinsic global domains, each of which is comprised of multiple specific aspirations. The 35 items of the Aspiration Index measure both the global and specific factors, thus the B-ESEM approach was most consistent with our underlying theoretical model and provided an excellent fit for the data. The B-ESEM was conducted in M*plus* Version 7.4 via the MplusAutomation package (Hallquist & Wiley, 2013) in R (R Core Team, 2016), using orthogonal target rotation and MLR estimation to account for violations of non-normality (Muthén & Muthén, 2015). Orthogonal

rotation maintains the interpretability of the bifactor model (according to its assumption that variance in the specific factors is not explained by the global factor/s) by constraining the correlations between both global factors, between the global and specific factors, and between each of the specific factors to be as close to zero as possible (Morin et al., 2016a). Online Supplementary Materials S1 includes R code and example M*plus* input syntax, which can be used to conduct B-ESEM.

In the B-ESEM, each of the 35 Aspiration Index items loaded onto two orthogonal factors: a global factor and a specific factor. Cross-loadings across items are allowed in a B-ESEM but are constrained to be as close to zero as possible. We specified two global factors, an extrinsic global factor (including the wealth, fame, and image items) and an intrinsic global factor (including the personal growth, relationships, health, and community giving items), as well as the seven specific factors. Our selection of a 2-global factors model was guided by the existing theoretical distinction of intrinsic and extrinsic aspirations (Kasser, 2002; Ryan & Deci, 2017) and prior empirical research supporting the 2-factor structure of aspirations (Kasser & Ryan, 1993, 1996). Also, since one of our goals was to disentangle the issue of the relative levels of extrinsic and intrinsic aspirations whilst examining the shapes of the specific aspirations, a 2-global factors model was indispensable for that purpose.

Several goodness-of-fit indices and information criterion are used to confirm adequate model fit. The chi-square test of model fit is sensitive to sample size (Morin et al., 2016a), so we relied more heavily on the comparative fit index (CFI; Bentler, 1990), Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), the root mean square error of approximation (RMSEA; Steiger, 1990), and the standardized root mean square error residual (SRMR; Hu & Bentler, 1999). The fit indices of our 2-global factors B-ESEM model were excellent (χ^2 (316) = 1097.34, $p < .001$, CFI = .97, TLI = .94, RMSEA = .039, SRMR = .01), as per the widely accepted fit criteria of CFI/TLI $\geq$ .90, RMSEA $\leq$ .06 and SRMR $\leq$ .08 (Bentler, 1990; Hu &

Bentler, 1999). Factor scores derived from this B-ESEM separate variance that is due to all subscales within a higher-order domain of intrinsic or extrinsic aspiration, from the variance that is due to a specific factor. Accordingly, using these factor scores as indicators in an LPA (as detailed below) allowed us to account for the global extrinsic and intrinsic level effects while examining the shape of the specific aspirations.

Item factor loadings for the nine factors are reported in Online Supplementary Materials S2. In all three studies, the factor loadings generally support the factor structure of the two global and seven specific factors. Omega coefficients for the two global and seven specific factors are also included in Online Supplementary Materials S3. Bifactor omega estimates the proportion of variance in total scores that can be attributed to a general factor, or in our case, *two* general factors. Subscale omegas reflect the reliability of specific factors controlling for the variance attributable to the general factor (Reise, 2012; Rodriguez, Reise, & Haviland, 2016). In all three studies, it was the case that the omega coefficients for the specific factors were smaller than those for the general factors, this is to be expected because the specific factors are residualized and loadings tend to be higher on the general factor/s than on the specific factors (Rodriguez et al., 2016).

LPA of the Aspiration Index. LPA were conducted in M*plus* 7.4 (Muthén & Muthén, 2015) using the MplusAutomation package (Hallquist & Wiley, 2013) in R (R Core Team, 2016). To avoid local maxima, all LPA were conducted using 5000 random start values, 1000 iterations, retaining the 200 best solutions for final stage optimization (Hipp & Bauer, 2006; McLachlan & Peel, 2004). In LPA, selection of the optimal profile solution is guided by several factors to ensure the profiles are substantively important, theoretically informed, and statistically adequate (Bauer & Curran, 2003; Marsh et al., 2009; Muthén, 2003). To the latter point, pertinent statistical indices include the following: the Akaïke Information Criterion (AIC), the Consistent AIC (CAIC), the Bayesian Information Criterion

(BIC), the sample-size Adjusted BIC (ABIC), the adjusted Lo, Mendell and Rubin's (2001) Likelihood Ratio Test (LMR), and the Bootstrap Likelihood Ratio Test (BLRT). Lower AIC, CAIC, BIC and ABIC values suggest a better-fitting model. A significant *p* value for the LMR and BLRT supports a *k*-1 profile solution (one fewer latent profiles). However, in larger sample sizes, these indices may interminably support the inclusion of additional profiles (Marsh et al., 2009). In such cases, entropy indexes the relative quality of profile classification. Ranging from 0 to 1, entropy is the aggregate posterior probability of class estimation. Scores closer to 1 suggest more precise placement of individuals into the profiles (Dyer et al., 2012). However, entropy alone should not be relied upon to determine the optimal number of profiles (Lubke & Muthén, 2007). Indeed, given the variety of fit indices in LPA–each developed based on a distinct rationale–it is important to focus on the profile solution for which these various indices converge, and to consider the theoretical contribution of each new profile. Model complexity increases with each additional profile, so it is vital that added complexity is commensurate with increased theoretical utility (Bauer & Shanahan, 2007).

We ran LPA up to a 6-profile solution, the results of which can be found in Table 2. As expected, the AIC, CAIC, BIC and ABIC consistently improved (e.g., became smaller) as the number of profiles increased. However, the aLMR and BLRT became non-significant at the 5-profile solution (indicating that the 5-profile solution is not better than the 4-profile solution). Further, the entropy figure within the 4-profile solution (.69) was lower than that of the 3-profile solution (.74), suggesting that the precision of class probability estimation decreased in the 4-profile solution. In addition, the novel profile derived in the 4-profile solution was a relatively flat line close to zero (group average), indicating that the average-scoring participants had been extracted from the prior three profiles, thus compromising the precision of profile estimation without clarifying the shape of specific aspirations over the 3-

profile solution. Taken together, all the results provided us with a strong rationale for selecting the 3-profile solution[1]. [INSERT TABLE 2 HERE].

The observed pattern of means for each profile in the 3-profile solution is depicted in Figure 1 (left panel). The peaks and troughs in the profile shapes in Figure 1 depict the profile-specific scores on the aspiration factors relative to the population mean. For example, Profile 1's trough for the intrinsic global factor is approximately half a standard deviation below the average, meaning Profile 1's intrinsic aspiring is half a standard deviation below the population mean. Thus, the shapes in Figure 1 can be used to describe the ways people typified by each profile differ. However, the aspiration means internal to each profile are unknowable. More concretely, despite the profile shape in Figure 1, we do not know if Profile 1 members' intrinsic aspirations are actually lower than their extrinsic aspirations. All we know is that the intrinsic and extrinsic global scores are both below the population average. Yet, it is important that we be able to build hypotheses based on which goals are rated more or less important within a profile. So, to approximate profile-specific mean scores on the aspirations, we have calculated the nine B-ESEM factor score means each weighted according to the participants' probabilities of belonging to each group. For instance, a participant with a 99% probability of belonging to Profile 1 would contribute more toward the calculation of the Profile 1 aspiration factor score means, than a participant with a 20% probability of belonging to Profile 1. Therefore, the resultant mean scores most strongly reflect the aspirations of participants with the greatest likelihood of belonging to each profile. The weighted profile means are reported in Online Supplementary Materials S5 (for all three studies) along with the R functions and basic code used to calculate them. In all cases the weighted means support the shapes shown in Figure 1. In other words, if an aspiration appears more (or less) important within a profile, most likely it is.

Profile 1 characterized 36% (*n*=1212) of the total sample and consisted of average extrinsic aspirations but well below average intrinsic aspirations, especially for relationship and health aspirations. Based on the shape observed in Profile 1, we labelled this profile *Disengaged from relationships and health*. Profile 2 typified 28.6% (*n*=963) of the total sample. The levels of the global extrinsic and intrinsic aspirations in this profile were comparable, although there was a slight tendency for higher extrinsic relative to intrinsic global aspirations. The levels of the specific factors for Profile 2 showed that relationships and health were relatively higher than the other specific factors, especially community giving. As such, Profile 2 was called *Aspiring for interpersonal relationships more than community relationships*. Profile 3 represented 35.5% (*n*=1195) of the sample. Of the three profiles, Profile 3 individuals reported the highest levels of both intrinsic and extrinsic global aspirations, though also had the highest ratio of intrinsic relative to extrinsic aspirations. The shape of the specific aspirations in Profile 3 showed a peak for the specific factor of community giving amongst intrinsic aspirations and image amongst extrinsic aspirations. We therefore labelled this group *Aspiring for community relationships more than interpersonal relationships*. We hasten to add that the labels of the profiles were considered tentative until further tests in an independent sample (as detailed in Study 2). [INSERT FIGURE 1 HERE]

Incremental validity of profile membership. Variable-centered analyses are more parsimonious than our person-centered approach, so it is important to test the extent to which profile membership tells us things we have not already learned about aspirations and well-being using traditional methods. To examine the incremental value of using profile membership as a predictor of well-being-related variables such as anxiety (Research Question 2), we used hierarchical regression. In the first regression model (M1 in Table 3), anxiety was regressed on the two global and seven specific aspiration factors; not including profile membership. In the second regression model (M2 in in Table 3), we additionally included the

profile membership variable (which is a three-level factor) as a predictor of anxiety (i.e., controlling for aspirations). We then compared M1 and M2 using ANOVA. If M2 accounts for significantly more variance (i.e. if the ANOVA comparing M1 and M2 is statistically significant), it indicates that profile membership has added value in the prediction of anxiety, above and beyond the aspiration variables.

However, because profile membership estimation is probabilistic, participants are not simply "allocated" to one of the profiles. Participants have a *probability* of belonging to *each* of the three profiles. For some, the probability of belonging to a single profile may be high, for others, the probabilities may be roughly equivalent across the three profiles. Put differently, profile membership estimation is uncertain. Accordingly, the groups cannot simply be compared as if they were discrete, as researchers may do for males and females as an example. Instead, to account for the uncertainty associated with profile membership estimation, we conducted 25 pseudo-class based multiple imputations of profile membership (Wang, Hendricks Brown, & Bandeen-Roche, 2005). Pseudo-class based multiple imputation involves using the class probability estimates from the M*plus* output as sampling probabilities to create multiple imputations of profile membership. Participants are placed into the various profiles multiple times–25 in our case–based on the distribution of their posterior probabilities. Meaning participants may be in different profiles across imputations. The ensuing analysis–in this case, hierarchical regression, as we discuss below–is then conducted 25 times (once for each imputation) and the results are pooled across the imputations (Bray, Lanza, & Tan, 2015). We have included example code for comparing models using multiply imputed data sets in Online Supplementary Materials S6.

When comparing regression models using multiply imputed data, the pooling procedure results in a multiple imputation-specific F statistic, referred to as the D_m statistic. Multiple imputations also require the calculation of multiple imputation-specific denominator

degrees of freedom. D_m and the denominator degrees of freedom aim to account for the uncertainty in the data that results from participants' imputed values on variables to which they did not respond. In our case, we have uncertainty due to a) our estimation of the participants' profile membership, and b) missing data. These sources of uncertainty result in three variance estimates: 1) variance within imputations, 2) variance between imputations, and 3) variance attributable to nonresponse. Each of these three sources of variation are modelled in the D_m statistic and the denominator degrees of freedom. If the regression results across the multiple imputations are highly stable (if between and within imputation variance is low), D_m increases and *p*-values become smaller. As variance attributable to nonresponse increases, denominator degrees of freedom decrease. Importantly, in contrast to denominator degrees of freedom in non-multiply imputed data, multiple imputation-specific denominator degrees of freedom are calculated independent of sample size. The formulas for the multiple imputation-specific D_m tests and degrees of freedom are described in detail by Rubin (1987), Meng and Rubin (1992), Barnard and Rubin (1999), van Ginkel and Kroonenberg (2014), and van Buuren (2018). In addition, we provide a conceptual overview of regression model comparisons using multiply imputed data in Online Supplementary Materials S7. We used the datalist2mids and pool.compare functions in the miceadds (Robitzsch, Grund, & Henke, 2014) and mice (van Buuren & Groothuis-Oudshoorn, 2010) R packages respectively, to compare M1 and M2, pooling the results across the 25 imputed data sets.

As shown in Table 3, M2 (regressing anxiety on profile membership as well as aspirations) did not account for additional variance in anxiety. Therefore, participants characterized by the three profiles would not differ on anxiety. This result is consistent with our hypotheses, which were based on evidence suggesting that ill-being variables, in particular anxiety, tend to have less consistent relationships with aspirations than do well-being indices (Niemiec et al., 2009). [INSERT TABLE 3].

Gender and profile membership. Table 4 shows the percentage of females in each of the three profiles. To test the link between gender and profile membership, we again used 25 imputations to account for the uncertainty associated with profile membership estimation. Then, we regressed gender on the profile membership variable using logistic regression, pooling the results across imputations. In this context the concept of prediction is purely statistical, and we do not claim that profile or aspirations cause, or precede, gender. Instead we wanted to clarify whether males or females were more likely to be members of various profiles. We used the mice (van Buuren & Groothuis-Oudshoorn, 2010) and miceadds (Robitzsch et al., 2014) packages in R to conduct pooled logistic regressions. [INSERT TABLE 4 HERE].

As shown in Table 5, males were more likely than females to belong to Profile 1, the *Disengaged from relationships and health* group, and women were more likely than males to belong to Profiles 2 and 3, the *Aspiring for interpersonal relationships more than community relationships* and *Aspiring for community relationships more than interpersonal relationships* groups. However, as we reasoned above, it was also important for us to test if these differences in gender composition across the profiles could be accounted for by the well-documented link between gender and aspirations. Accordingly, we regressed gender on profile membership controlling for the aspiration indices. As shown in Table 5, the 95% confidence intervals for the probability of being female overlapped across all three profiles when controlling for aspirations. The result demonstrates that, once aspirations scores are accounted for, there was not a statistically significant difference in the gender composition of the profiles. [INSERT TABLE 5 HERE].

We also examined age as a predictor of profile membership. Age did not predict membership into any of the three profiles as shown in Online Supplementary Materials S8.

Considering the null result for age and given that the samples in Studies 2 and 3 were youth/young adult samples, we did not examine age in the other studies.

Discussion

The results of Study 1 uniquely informed the existing aspirations literature by showing that subgroups of individuals differed above and beyond the ratio of intrinsic to extrinsic global aspirations, that is, both their levels *and* shapes were distinct. Each of the profiles was characterized by a unique configuration of specific aspirations, with increasing levels of other-oriented specific aspirations from Profiles 1 to 3. The level effects (the intrinsic and extrinsic global factors) observed in Study 1 were in line with past evidence that individuals within subgroups differ in the levels of their higher-order intrinsic and extrinsic aspirations (Rijavec et al., 2011). Two of the configurations Rijavec et al. (2011) described align with the level effects (the ratio of intrinsic to extrinsic orientation effects) observed in Profile 1 (*Disengaged from relationships and health*), and Profile 3 (*Aspiring for community relationships more than interpersonal relationships)*. Rijavec et al.'s Low I/High E cluster was similar to our Profile 1, and their High I/Low E cluster was similar to our Profile 3, which had high intrinsic relative to extrinsic global aspirations. Notably, in our study, Profile 1 had below average levels on both global factors, Profile 2 showed close to average levels and Profile 3 had well above average levels of both global aspirations. Profile membership did not explain additional variance in anxiety, controlling for the aspiration indices.

Preliminary tests suggested that males were more likely to be in Profile 1 and females were more likely to be in Profiles 2 and 3. However, when controlling for aspirations, the probability of profile members being female (or male) was the same across profiles. This suggests that differences in the gender compositions of the profiles are largely a function of aspiration ratings, rather than gender differences in patterns of aspiring. These results demanded a confirmatory test of the replicability of the observed level and shape effects of

the profiles, and further validation tests with respect to the links between the profiles and multiple theoretically relevant outcomes, as detailed below in Study 2.

Study 2

The first goal of Study 2 was to test whether we could replicate the profiles discovered in Study 1 in a sample from a different culture with a different language (Research Question 1). To this end, we employed an Australian sample in Study 2, to whom all measures were administered in English. Study 2 also allowed us to expand on the results of Study 1 by further testing the incremental value of using profile membership to predict a variety of outcome variables. Replicating the level and shape effects of the profiles would bolster our confidence that the profiles reliably differ in terms of the configurations of aspirations, but the differences between the profiles may ultimately be rendered meaningless if profile membership does not account for additional variance in theoretically relevant outcome measures (Research Question 2). A purely variable-centered approach is more parsimonious, so the profiles must prove their true mettle by showing incremental validity by explaining variance in the outcomes above and beyond what can be explained using only the variables of aspirations. We will use again use hierarchical regression to establish the variables for which profile membership provides additional explanatory power above and beyond the constituent variables. We will then shed light on the qualitative meaning of the profile shapes by discussing the ways in which the profile members differ on the outcome variables of interest.

Based on prior theory and evidence (Kasser & Ryan, 1993, 1996, 2001; Rijavec et al., 2011), we hypothesized that those characterized by Profile 1–those expected to show a configuration of a relative extrinsic focus and below average aspirational engagement, if replicated–would show less emotional, psychological, and social well-being, and more psychological ill-being, than would members of Profiles 2 and 3. Due to the relative intrinsic

orientation and high overall level of aspiring in Profile 3 individuals, and the peak for the specific factor of community giving, we expected members of this profile, relative to the other two profiles, to show the highest levels of well-being and highest levels of other theoretically relevant variables, such as, engaged living and mindfulness (Brown, Kasser, Ryan, Linley, & Orzech, 2009; Kasser & Ryan, 1993, 1996, 2001; Rijavec et al., 2011).

In addition to well-being, based on the shapes of the three profiles, we made specific predictions about the links between profile membership and indices of other-orientation. People characterized by Profile 1 have below average relationship aspirations, whereas those in Profile 2 aspire for close personal relationships, but not necessarily community relationships which would presumably involve strangers, acquaintances, and less intimate friends and family. In contrast, people characterized by Profile 3 aspire for community giving, and show the highest extrinsic aspiration for positive image, which, we speculate, relates to interest in how positively the person is viewed in wider communities beyond intimate relationships. Based on these apparent differences in the breadth of social focus, from Profile 1 to Profile 3, we would expect members of Profiles 2 and 3 (individuals with high interpersonal and/or community orientation) to score higher on other-oriented variables such as nonattachment and empathy.

Empathy is clearly other-related, but nonattachment may need some explanation. Nonattachment reflects the tendency to let go of or not cling to inner experiences such as self-indulgent beliefs (e.g., “I am more special than you”). Such letting go is expected to facilitate care for and consideration of others (Sahdra, Ciarrochi, & Parker, 2016; Sahdra, Ciarrochi, Parker, Marshall, & Heaven, 2015). Consistent with this definition, evidence suggests that nonattachment relates positively with generosity and the positive relationships element of eudemonic well-being (Sahdra, Shaver, & Brown, 2010), and increases the likelihood of engaging in prosocial behavior as observed by peers (Sahdra et al., 2015).

Nonattachment also relates positively with empathy (Sahdra et al., 2010), which is a quality reflected by someone "focused more on another person's situation or emotion than on one's own" (Albiero, Matricardi, Speltri, & Toso, 2009, p. 393) and has been associated with a high willingness to help someone in need (Jolliffe & Farrington, 2006). We contend that the breadth of social concern for others is increasing from Profile 1 to 3, so we expect that levels of nonattachment and empathy will also increase from Profile 1 to Profile 3. Statistically significant profile differences in other-oriented-ness may be evidence of progressively broadening social focus.

Method

Participants and design

The participants in Study 2 were part of the Australian Character Study (ACS). The ACS was a five-year longitudinal study of Australian youth. The 1632 (*n*=793 males, *n*=834 females, and *n*=5 did not report gender) participants in the current study were from the Year 12 cohort of students, from 17 Catholic high schools in two dioceses from New South Wales (NSW) and Queensland (QLD), Australia. The schools were in urban, regional, and rural areas throughout the two dioceses, thus ensuring a broad and representative socioeconomic profile. Most of the participants (63.3%) classified themselves as ''Caucasian Australian'' or European (13.7%), followed by ''other'' (11.9%), Aboriginal (3.4%) and New Zealander (1.6%). The mean age of the sample was 16.6 years (*SD*=0.40).

Given the nested structure of these data (students nested within schools), preliminary models were run to assess the impact of school on profile membership. We used school as a clustering variable (using the command, TYPE=COMPLEX in M*plus*) in the B-ESEM and LPA models. The results from this preliminary analysis did not lead to substantively different conclusions (about the level and shape of the profiles) from the results of simpler models in which school was not included as a clustering variable. We therefore report the simplest

models below (but have included a figure showing the results of the model using school as a clustering variable in Online Supplementary Materials S9).

Missing data

All 1632 participants completed all items on the Aspiration Index in Study 2. Therefore, all participants were included in the B-ESEM and LPA that derived the profiles. However, missing-ness varied across the outcome variables. Of the nine outcome variables of interest, seven had some non-planned missing data. By non-planned we mean we did not use a missing data design, nor was missingness systematically related to the variables in the dataset. Following profile derivation, we calculated the number of missing responses in each profile for each of the outcome variables. We compared the missing-ness expected versus missing-ness observed across the profiles using a chi-square. The chi-square was statistically non-significant for six of the seven outcome variables for which data were missing, suggesting that missing-ness did not systematically relate to profile membership. For psychological well-being, the chi-square test was statistically significant, and suggested that more participants were missing from Profile 1 than was otherwise expected. The missing-ness for psychological well-being was well under 5% for each of the profiles, and we used the esc_chisq function in the esc package (Lüdecke, 2018) in R to estimate the effect size of the chi-square result. According to Cohen's (1988) widely accepted cut-offs, the estimated effect size of d=0.16, 95% CI [0.06, 0.26], was trivial. Still we acknowledge this is a potential limitation in Study 2. In the hierarchical regressions and profile comparisons used to establish the incremental utility of profile membership (which we describe in the results below), we allowed missing participants to be excluded. A detailed summary of missing data and the chi-square results are included in Online Supplementary Materials S10 and S11.

Measures

Aspirations. Aspirations were measured using the original English language version of the 35-item Aspiration Index (Kasser & Ryan, 2001) as described in Study 1. In this sample, Cronbach's alphas ranged from .81 for personal growth to .89 for physical health, indicating satisfactory internal consistency.

Subjective well-being. Three aspects of subjective well-being–emotional well-being, social well-being and psychological well-being–were measured using Keyes' (2006) widely-validated 12-item Mental Health Continuum – Short Form (MHC-SF). Emotional well-being is measured via the extent to which participants reported having felt: 1) happy, 2) interested in life and 3) satisfied, during the past month. Other example items include: "In the past month how often did you feel that the way our society works made sense to you?" (social well-being, five items) and "In the past month how often did you feel confident to think or express your own ideas and opinions?" (psychological well-being, four items). All items were responded to on a 1 (Never) to 6 (Every day) scale. This measure has shown good psychometric properties in an Australian sample before (McGaffin, Deane, Kelly, & Ciarrochi, 2015), and showed satisfactory internal consistency in the current study ($\alpha = .90$ for emotional well-being, $\alpha = .84$ for social well-being, and $\alpha = .79$ for psychological well-being).

Psychological ill-being. The General Health Questionnaire (GHQ; Goldberg et al., 1997) is a widely used and reliable measure of psychological ill-being, and screens for psychiatric illness. After being provided with the sentence stem "Have you recently…" participants responded to six positively worded items (example, "Felt capable of making decisions about things?) on a 1 (More so than usual) to 4 (Much less than usual) scale, and six negatively worded items (example, "Been feeling unhappy and depressed?) on a 1 (Not at all) to 4 (Much more than usual). Therefore, high scores indicate psychological distress. In our sample, the GHQ showed good internal consistency ($\alpha = .90$).

Engaged living. The Engaged Living Scale (ELS; Trompetter et al., 2013) measures the extent to which one employs an engaged response style as conceptualized in Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999). The 16-item scale captures engaged living, which is comprised of ten items that measure 'valued living,' that is, a lifestyle that is congruent with one's values, and six items that measure 'life fulfilment', that is, satisfaction with life[2]. Example items include: "I believe that how I behave fits in with my personal wants and desires" (valued living) and "I believe that I am living life to the full right now" (life fulfilment), all answered on a 1 (Completely disagree) to 5 (Completely agree) scale. In the original Dutch study, the ELS was found to be highly reliable (Trompetter et al., 2013), as it was in our sample ($\alpha = .93$).

Mindfulness. We measured mindfulness using a 14-item version of the Mindful Attention and Awareness Scale (Brown & Ryan, 2003). The scale showed good internal consistency in our sample ($\alpha = .90$), as it has in other youth and adult samples (Brown, West, Loverich, & Biegel, 2011), and in several languages other than English (Hansen, Lundh, Homman, & Wångby-Lundh, 2009; Jermann et al., 2009; Soler et al., 2012). Example items include: "I find myself doing things without paying attention" and "It seems I am "running on automatic," without much awareness of what I'm doing", each answered on a 1 (Almost always) to 6 (Almost never) scale, with high scores indicating high mindfulness.

Nonattachment. The 7-item Nonattachment Scale (NAS-7; Elphinstone, Sahdra, & Ciarrochi, 2015) has been shown to be highly reliable in samples of broad age ranges (Sahdra et al., 2016; Sahdra et al., 2017; Sahdra et al., 2015). It measures participants' ability to relinquish attachments to positive experiences and unrealistic expectations about life. Participants reponded to items such as, "I do not get 'hung up' on wanting an 'ideal' or 'perfect' life" and, "I can enjoy pleasant experiences without needing them to last forever",

on a 1 (Disagree strongly) to 6 (Agree strongly) scale. The NAS-7 showed good internal consistency in our sample ($\alpha = .81$).

Empathy. We measured two aspects of empathy (affective empathy and cognitive empathy) using the 20-item Basic Empathy Scale (BES; Jolliffe & Farrington, 2006). Nine items measure cognitive empathy, such as "I can often understand how people are feeling even before they tell me", and 11 items measure affective empathy, for example "After being with a friend who is sad about something, I usually feel sad", all answered on a 1 (Strongly disagree) to 5 (Strongly agree) scale. In our sample, the two subscales showed satisfactory internal consistency ($\alpha = .84$ for cognitive empathy and $\alpha = .83$ for affective empathy).

Disclosures regarding prior use

Data from the ACS have previously been analyzed and published elsewhere. To date, 15 publications have made use of the ACS data. Of the published studies, 10 have at least one variable in common with the current study, though no research has tested our current research questions or hypotheses with the ACS data. Most importantly, no study has examined the full Aspiration Index using the ACS data. A study by Marshall, Ciarrochi, Parker, and Sahdra (2019) is most closely related to the current study, because Marshall et al. (2019) used the community giving subscale of the Aspiration Index as part of a composite index of prosociality, finding that empathy and compassion predicted prosocial behavior. However, Marshall et al. (2019) only analyzed one of the seven life goals measured by the Aspiration Index. Accordingly, Marshall et al. (2019) could not use B-ESEM nor LPA, as we did in our study which aimed to derive profiles of aspiring and test their incremental utility in predicting optimal functioning.

The other nine studies employed some of the same outcome variables used in the current study but were otherwise unrelated to aims of this study. As an indicator of psychological ill-being, the GHQ (Goldberg et al., 1997) is the most commonly used

outcome variable in the ACS data. Marshall et al. (2015) and Ciarrochi et al. (2016) used the GHQ finding, respectively, that compulsive internet use predicts poor mental health, and that self-compassion moderates the negative link between self-esteem and poor mental health. Sheppard, Deane, and Ciarrochi (2018) also used the GHQ, reporting that 9.3% of adolescents with poor mental health have unmet mental health needs. Maiuolo, Deane, and Ciarrochi (2019) found that positive parenting practices correlated with adolescent help seeking, even controlling for psychological ill-being measured with the GHQ. The GHQ was used in conjunction with the 12-item MHC-SF (Keyes, 2006) well-being measure by Ciarrochi, Sahdra, Hawley, and Devine (2019) and Parker et al. (2015). Ciarrochi et al. (2019) found that adolescents characterized by a combination of high empathy and low aggression had more well-being measured on the 12-item MHC-SF. Parker et al. (2015) reported that networks of friends have similar levels of MHC-SF-measured well-being. Finally, empathy was analyzed by Ciarrochi et al. (2017), their study finding that empathy predicts cross-sex friendship nominations for boys, but not girls, and empathy and nonattachment were analyzed by Sahdra et al. (2015), who reported that empathy and nonattachment independently predict peer-reported prosociality. The remaining five studies made use of the ACS data, but did not have any variables in common with the current study. A full list of ACS publications can be found here https://mfr.osf.io/render?url=https://osf.io/u59mr/?action=download%26mode=render.

Results

Inter-correlations of study variables. See Table 6 for inter-correlations, means, and standard deviations of the scale scores of the Study 2 variables. As in Study 1, the Aspiration Index subscales were positively correlated with each other, and within higher-order category correlations were stronger than the correlations between the extrinsic and intrinsic categories. The aspiration variables were also meaningfully related to the other study variables.

Congruent with existing theory (Kasser & Ryan, 1996, 2001), the four intrinsic aspirations, relative to the extrinsic ones, demonstrated consistently higher positive correlations with the well-being related variables and stronger negative associations with mental psychological ill-being. [INSERT TABLE 6 HERE].

B-ESEM and LPA of the Aspiration Index. To replicate the profile structure obtained in Study 1 (Research Question 1) we employed the same B-ESEM and LPA analyses described in Study 1. As in Study 1, a B-ESEM including two global and seven specific factors indicated excellent fit in this sample, $\chi^2(316) = 1097.36$, $p < .001$, CFI = .97, TLI = .94, RMSEA = .04, SRMR = .02. Item factor loadings for the nine factors are reported in Online Supplementary Materials S13. Omega coefficients for the two global and seven specific factors are also included in Online Supplementary Materials S3.

We then ran LPAs up to a 6-profile solution. The results of these analyses can also be found in Table 2. We took a more confirmatory approach to profile selection given the known 3-profile solution from Study 1. Still, we checked whether the 3-profile solution was statistically sound. As in Study 1, the AIC, CAIC, BIC and ABIC consistently improved as the number of profiles increased. The LMR became (and remained) non-significant after the 3-profile solution. The entropy estimate was higher in the 3-profile solution than in the surrounding 2-profile and 4-profile solutions, indicating more precision in classification of individuals in the different profiles in the 3-profile solution. Taken together and considering the pattern of results observed in Study 1, the 3-profile solution was the most informative and statistically sound.

As illustrated in Figure 1 (middle panel), the patterns of means in each profile of Study 2 were similar to the configurations of the profiles in Study 1 (Figure 1, left panel). Profile 1 (32.4% of the sample, *n*=528) was *Disengaged from relationships and health* and again typified by average extrinsic aspirations and well below average intrinsic aspirations,

with nadirs for relationships and health. Profile 2 (50.8%, *n*=830), the *Aspiring for interpersonal relationships more than community relationships* group differed marginally from the respective profile in Study 1 in that the level effects slightly favoured intrinsic over extrinsic aspirations (the levels were reversed in Study 1), though the overall shape was comparable to that of Profile 2 in Study 1, with peaks at the specific factors of relationships and health (though the peaks were lower in Study 2). Profile 3 (16.8%, *n*=274) also depicted the *Aspiring for community relationships more than interpersonal relationships* group. Once more, the *Aspiring for community relationships more than interpersonal relationships* group had the highest level of the global aspirational domains, with the intrinsic global factor showing a relatively higher level than the extrinsic one. Importantly, as in Study 1, this profile also showed a distinctive peak for the specific factor of community giving amongst intrinsic aspirations and image amongst extrinsic aspirations.

Incremental validity of profile membership. To establish the incremental value of using profile membership as a predictor of well-being and well-being-related variables (Research Question 2), we used the same hierarchical regression approach described above in Study 1. In the first regression model (M1 in Table 7), the outcomes were regressed on the two global and seven specific aspiration factors; not including profile membership. In the second regression model (M2 in Table 7), we included the profile membership variable as an additional predictor of the outcome variables (i.e., controlling for aspirations). Again, as per Study 1, we used the pseudo-class based multiple imputation method to create 25 imputations of profile membership and pooled the regression results across the imputations.

As shown in Table 7, M2 (including profile membership as well as aspirations) was a significantly better fit for the data (compared to M1) for five of the nine variables including: emotional, psychological, and social well-being, engaged living, and nonattachment. Profile membership did not predict additional variance for psychological ill-being, mindfulness, or

cognitive and affective empathy. These analyses indicate that profile membership additionally informs what is already known about the link between aspirations and several well-being metrics. [INSERT TABLE 7 HERE]

Profile differences. Next, we explored they ways in which the profiles differed when controlling for the aspiration factor scores. To examine the differences between the profiles, three comparisons were required: Profile 1 compared to Profile 2, Profile 1 compared to Profile 3, and Profile 2 compared to Profile 3. One approach to calculating these three comparisons could involve running two regressions. The first regression would set Profile 1 as the comparison group (i.e. the intercept), deriving the estimates for the differences between Profile 1 and Profile 2, and between Profile 1 and Profile 3. Then, in a second regression, Profile 2 or 3 would be fixed as the intercept to get the final estimate for the difference between Profile 2 and Profile 3. Alternatively, the differences between all three profiles can be estimated from a single regression (again, pooled across 25 imputations of profile membership) by combining the regression result with the popular delta method (Fox & Weisberg, 2010).

We used the delta method to transform the means and standard errors from the regressions into three univariate estimates, which were then referenced to establish if there were statistically significant differences between the three groups. If the standard errors for each pair of profiles overlapped, the difference between the two profiles was not statistically significant. The difference between pairs of profiles was statistically significant if the standard errors did not overlap. Gold, Olin, and Wang (2018) provide an accessible mathematical introduction to the delta method. In addition, Sahdra et al. (2017) demonstrate the combination of regression and the delta method for comparing latent profiles. Online Supplementary Materials S14 includes sample R code for combining regression with the delta method to compare profiles, pooled across 25 imputations of profile membership.

As shown in Figure 2, the profiles meaningfully differed, even when controlling for the aspiration factor scores. Profile 3 members had more social well-being than those of Profiles 1 and 2, and more emotional and psychological well-being than Profile 1 members only. For emotional and psychological well-being, there was no difference between Profiles 1 and 2 or Profiles 2 and 3 when aspirations were controlled for. For engaged living, members of Profile 3 scored higher than those of Profiles 1 and 2, between whom there was no difference. For nonattachment, the mean levels in Profile 3 had higher mean scores than Profiles 1 and 2. Online Supplementary Materials S15 includes the standardized means and confidence intervals for each of the three profiles, on the outcome variables using profile membership as the sole predictor of the outcomes (Model 1) and additionally controlling for aspirations (Model 2). [INSERT FIGURE 2 HERE]

Gender and profile membership. Table 4 shows the percentage of females in each of the three profiles. Once again, we used pseudo-class based multiple imputation to generate 25 imputations of profile membership. We then regressed gender on profile membership, pooling across 25 imputations. As in Study 1, Profile 1 members were more likely to be male, and members of Profiles 2 and 3 were more likely to be female. However, as in Study 1, when we regressed gender on profile membership controlling for aspirations, the gender probability estimates overlapped across all three profiles (see Table 5). Therefore, the probability of being female (or male) did not differ across profiles.

Additionally, we tested if the links between profile membership and well-being indices differed by gender. We included the interaction between gender and profile membership as an added predictor in the regressions predicting well-being (controlling for aspirations). None of the interactions were significant. We have included the table of interactions in Online Supplementary Materials S16. The pattern of non-statistically

significant interactions between gender and profile membership (in the prediction of well-being) suggests that the correlates of profile membership are common across genders.

Discussion

Study 2 achieved three important aims. First, the results supported the cross-cultural replicability of the three aspiration profiles derived in Study 1 (Research Question 1). Second, the study demonstrated that profile membership provided additional explanatory power beyond the nine aspiration factors derived using B-ESEM, and third, Study 2 shed light on the psychological correlates of belonging to each of the profiles (Research Question 2). Put simply, one's pattern of aspirations matters for well-being.

Apart from some minor configural nuances, the three profiles were similar across the two studies, providing support for our tentative profile labels. In both samples, Profile 1–*Disengaged from relationships and health*–members were well below average on global intrinsic aspiring, with a disinterest in health and relationships. Similarly, Profile 3–*Aspiring for community relationships more than interpersonal relationships*–members were above average for both global aspirations and especially for community aspiring. Profile 2–*Aspiring for interpersonal relationships more than community relationships*–members were notably different across the two studies in that the ratio of global extrinsic to intrinsic aspiring was reversed in Study 2 (e.g., in Study 1 the profile was more globally extrinsic than intrinsic, this pattern was reversed in Study 2), though these peaks were less than a quarter of a standard deviation, so there may be no phenomenological impact. Further, peaks for relationships were key features in Profile 2 in both studies, fitting with this profile's label.

In addition to replicating the profiles, Study 2's key contribution was the establishment of the incremental value of the profiles, over and above the factors used to derive them. Models including profile membership probabilities as a predictor were a

significantly better fit for the data (compared to aspirations alone) for five of the nine variables measured including social, emotional, and psychological well-being, engaged living, and, consistent with our integrative span hypothesis, one index of other-orientation, nonattachment. Profile membership did not improve the model for psychological distress, mindfulness, or cognitive and affective empathy. Participants characterized by Profile 3 were higher than Profiles 1 and 2 in social well-being, engaged living, and nonattachment. Profile 3 members were higher in emotional and psychological well-being compared to Profile 1 members only. The ability of the profiles to account for additional variance in optimal functioning highlights the complementary utility of our approach to traditional variable-centered methods. We also considered the impact of non-planned missing data on the results. However, readers should note that Study 2 had a very small amount of missing data on the outcome variables (not more than 6%). We cannot be sure the degree to which such missing-ness affected the pattern of results, which emphasizes the importance of testing these results in a second sample.

Study 3

In Study 3, we sought to replicate the optimal functioning outcomes described in Study 2, and to examine other theoretically relevant outcome variables. Specifically, we sought to accomplish three things with Study 3. First, using an independent sample of Americans, we aimed to replicate the profiles for a second time in a yet another culture. Second, we attempted to replicate the incremental utility of the profiles for the prediction of well-being, engaged living, and nonattachment. Third, given that intrinsic aspirations are thought to enhance basic psychological needs, and extrinsic aspirations, at best, only indirectly satisfy these needs (Deci & Ryan, 1985; Ryan & Deci, 2017), we included basic psychological needs satisfaction and frustration as outcome variables and assessed the extent to which these variables, central to self-determination theory, relate to profile membership.

We hypothesized that Profiles 2 and 3 would be more needs satisfied than Profile 1, and that Profile 1 would report the most psychological needs frustration given their relatively extrinsic orientation. We again expected that profile membership would uniquely predict these outcomes when controlling for the aspiration factor scores.

Method

Participants and design

Participants from Study 3 were recruited by Qualtrics. The sample was comprised of 6063 participants (*n*=1032 males, *n*=4984 females, and *n*=47 did not report gender) aged between 18 and 25 (*M*= 21.86, *SD*=2.29). We also collected demographic information regarding ethnicity, income, marital status and education. Participants were 10.2% African American, 13.9% Hispanic, 7.7% European, 37.7% European American, 4.8% Asian American, 4.5% Native American, 0.8% South Indian/Indian subcontinent, 5.9% Mixed multi-racial, and 14.5% Other. The median income category was USD$30’000-$40’000. Participants reported being single (49.1%), dating a number of people (1.1%), dating one person (20.8%), married (15.5%), divorced (0.4%), widowed (0.1%), cohabiting (11.6%), or engaged (4.4%). Regarding education level, participants reported: Some high school or less (4.9%), high school diploma or equivalent (26.3%), some college (39.9%), college diploma (21.3%), some grad school (3.9%) and graduate degree (3.7%). All materials were administered in English. These data have not been analyzed or published anywhere except in the current study.

Measures

Aspirations. Aspirations were measured using the English version of the 35-item Aspiration Index (Kasser & Ryan, 2001) as described above. In this sample, Cronbach’s alphas ranged from .81 for personal growth to .89 for physical health, indicating satisfactory internal consistency.

Subjective well-being. Keyes' (2006) 12-item Mental Health Continuum – Short Form (MHC-SF), described above in Study 2, showed satisfactory internal consistency in Study 3 (α = .86 for emotional well-being, α = .84 for social well-being, and α = .76 for psychological well-being).

Engaged living. Also described above in Study 2, The Engaged Living Scale (ELS; Trompetter et al., 2013) was found to be highly reliable in Study 3 (α = .93).

Nonattachment. The NAS-7 (Elphinstone et al., 2015) showed good internal consistency in Study 3 (α = .87), as it did in Study 2 described above.

Basic psychological needs. To assess satisfaction or frustration of the basic psychological needs for autonomy, competence, and relatedness, we used the cross-culturally validated Basic Psychological Need Satisfaction and Frustration Scale (Chen et al., 2015). The measure consists of six subscales: autonomy frustration and satisfaction, competence frustration and satisfaction, and relatedness frustration and satisfaction, each represented by four items responded to on a 1 (Completely disagree) to 5 (Completely agree) scale. Example items include: "I feel that my decisions reflect what I really want" (autonomy satisfaction, α = .79), "My daily activities feel like a chain of obligations" (autonomy frustration, α = .79), "I feel capable at what I do" (competence satisfaction, α = .83), "I feel insecure about my abilities" (competence frustration, α = .83), "I feel connected with people who care for me, and for whom I care" (relatedness satisfaction, α = .82) and "I feel the relationships I have are just superficial" (relatedness frustration, α = .84).

Multiple imputation. Study 3 used a planned missing data design. To reduce participant burden, planned missing data designs involve presenting participants with a random subset from a battery of items (Silvia, Kwapil, Walsh, & Myin-Germeys, 2014). Such strategies guarantee that the missing data mechanism meets the stringent criteria of missing completely at random (MCAR; Enders, 2010). In Rubin's (1976) theory of missing

data, every data point has some probability of being absent. If the probability of being missing is the same for all of the data points, the data are MCAR (van Buuren, 2018). In other words, when data are MCAR the missing data mechanism is not related to any of the observed or missing values in the data set. Our planned missing design meant that we could collect more data from the participants than would be possible if we asked participants to respond to all questions. Further, because data were MCAR the parameter estimates would not be biased as a result of the missing data (Enders, 2010). In addition, multiple imputation strategies can be employed to MCAR data to boost statistical power without introducing bias (Little, Jorgensen, Lang, & Moore, 2013). Demographic information was recorded for all respondents and then participants were randomly presented with approximately 116 items from a pool of 217. The sampling strategy meant that each item was completed approximately 54% of the time for an adequate variance-covariance matrix coverage of approximately 29%.

To account for the missing-ness, we used Amelia II (Honaker, King, & Blackwell, 2011) to create 25 imputations of the data in R (R Core Team, 2016), each of which contained no missing data. Amelia II implements Expectation-Maximization (EM) algorithm with bootstrapping (Dempster et al., 1977; King et al., 2001; Honaker et al., 2011). The package employs multiple bootstrapped samples of the original data to draw EM based predictive distribution of missing data and uses those parameters to automatically fill in the missing values while leaving the observed values intact across the imputations. The uncertainty associated with missing data modelling is captured across multiple imputations, which show minor variations in the imputed values. All 25 of the imputed datasets are used in analyses which employ these data. The same statistical analysis is conducted for each of the imputed datasets, and then the results are pooled across imputations to account for the uncertainty associated with multiply imputed data (van Ginkel & Kroonenberg, 2014). The

EM convergence was normal and EM chain lengths of the imputed datasets were reasonably short and consistent in length.

Results

Inter-correlations of study variables. See Table 8 for inter-correlations, means and standard deviations of the scale scores of the Study 3 variables. As in Study 1 and Study 2, the intrinsic aspirations correlate more highly with each other than with the extrinsic aspirations (and vice versa). Interestingly, both intrinsic and extrinsic aspirations correlate positively with several well-being indices. For the most part, the well-being variables correlate highest with the intrinsic aspirations, though social well-being correlates similarly with all aspirations. Autonomy and competence satisfaction correlate positively with both intrinsic and extrinsic aspirations (though more so for the intrinsic subscales), and basic psychological needs frustration consistently relates positively with extrinsic aspirations, and negatively (or not at all) with the intrinsic aspirations. [INSERT TABLE 8 HERE].

B-ESEM and LPA of the Aspiration Index. To replicate the profile structure obtained in Study 1 and Study 2 (Research Question 1), we employed the same B-ESEM and LPA strategy described in those studies. As in the preceding studies, the B-ESEM (including two global and seven specific factors) indicated excellent fit in this sample, $\chi^2(316) = 4037.94$, $p < .001$, CFI = .97, TLI = .94, RMSEA = .04, SRMR = .01. We ran LPA up to a 6-profile solution. The results of these analyses can also be found in Table 2 and support our use of a 3-profile solution. Item factor loadings for the nine factors are reported in Online Supplementary Materials S17. We also present B-ESEM factor scores weighted according to the profile membership probabilities in Online Supplementary Materials S5. Omega coefficients for the two global and seven specific factors are also included in Online Supplementary Materials S3.

The right panel of Figure 1 shows profile configurations akin to those observed in Study 1 (left panel) and Study 2 (middle panel). Profile 1 (28.7% of the sample, *n*=1742) again depicted the *Disengaged from relationships and health* group, characterizing those with average extrinsic aspirations, below average intrinsic aspirations and a particular disinterest in relationships. Members of Profile 2 (45.9%, *n*=2785), the *Aspiring for interpersonal relationships more than community relationships* group, were slightly more intrinsic than extrinsic (as in Study 2, but not in Study 1) with an emphasis on relationships. Those in the *Aspiring for community relationships more than interpersonal relationships* group again had the highest global intrinsic and extrinsic aspirations, with an intrinsic emphasis. As in Study 1 and Study 2, Profile 3 also had a peak for community giving in Study 3.

Incremental validity of profile membership. Again, we used pseudo-class based multiple imputation to estimate profile membership 25 times, combining the multiply imputed profile membership estimations with the 25 multiply imputed datasets to conduct the hierarchical regressions, pooling the results across imputations. As in Study 1 and Study 2, in M1 (in Table 9) the outcome variables were regressed on the two global and seven specific factors (not including profile membership), and M2 (in Table 9) additionally included the profile membership variable as a predictor. We then compared M1 and M2 using an ANOVA. As shown in Table 9, M2 (including profile membership as a predictor) was a significantly better fit for all the variables measured. These results bolster those from Study 2, again providing evidence for the added value of profile membership in predicting indices of optimal functioning. [INSERT TABLE 9 HERE].

To ensure that the links between profile membership and indices of optimal functioning were not specific to the sample in Study 2, we also ran the Study 3 LPAs by fixing the model command final estimates to match those from the M*plus* output for Study 2. Fixing the values in Study 3 meant that the model command final estimates for the profiles in

this third study become exactly the same as in Study 2. Using the fixed LPA procedure, the Study 3 profile shapes become more similar to those in Study 2 (see Online Supplementary Materials S18), and the Study 3 participants are given class membership probabilities based on the Study 2 output. We then tested the ability of profile membership to continue to predict additional variance in well-being using a constrained LPA in Study 3. As shown in Online Supplementary Materials S19 and S20, the hierarchical regression and profile comparisons using the profile membership probabilities from the constrained LPA, found that profile membership still has additional explanatory power for six of the eleven variables. The ability of profile membership to explain additional variance in the outcome variables in Study 3 using fixed model estimates from Study 2 serves a rigorous test of the utility of profile membership and the reliability of its incremental value. Indeed, to our knowledge, ours is the only mixture modelling study that passes the critical tests outlined by Parker and Brockman (2019).

Deriving similar profile shapes using independent samples serves as the most stringent test of the profile shapes' replicability. In addition, the fit indices were better for the independent models compared to the models using the fixed model estimates (see Online Supplementary Materials S21). On these bases, we have aligned our results with the most statistically sound model, thus focusing on novel profiles that were derived independently from each sample but remain similar across studies. Example M*plus* input syntax is included in Online Supplementary Materials S22, to demonstrate how to fix the model estimates in an LPA.

Profile differences. Again, we used regression combined with the delta method to compare the means and standard errors across the three profiles (still using the 25 imputations of profile membership). Figure 3 depicts the differences between the profiles. Controlling for the two global and seven specific factors, the results indicated that members

of Profile 3 had more social well-being, engaged living, and autonomy and relatedness satisfaction than both Profiles 1 and 2. Profile 3 also had more emotional and psychological well-being, nonattachment, and competence satisfaction than Profile 2 only, and Profile 1 members had more basic psychological needs frustration than Profile 3 only. Online Supplementary Materials S23 reports the means, standard errors, R^2, and $R^2\Delta$ from profile comparisons not controlling for aspirations (Model 1), as well as controlling for aspirations (Model 2). [INSERT FIGURE 3 HERE]

Gender and profile membership. Table 4 shows the percentage of females in each of the three profiles. Here again, we used pseudo-class based multiple imputation (Wang et al., 2005) to generate 25 imputations of profile membership. We then regressed gender on profile membership in a logistic regression. As in Study 1 and Study 2, Profile 1 members were more likely to be male, and members of Profiles 2 and 3 were more likely to be female. Also, as in Study 1 and Study 2, when we regressed gender on profile membership controlling for aspirations, the probability of being female (or male) did not differ across profiles (see Table 5).

As we did in Study 2, we also tested the interaction between gender and profile membership in the prediction of well-being and well-being-related outcomes in Study 3. The interaction between gender and profile membership was not statistically significant for any of the 11 variables. Replication of the pattern of null results suggests that the benefits and consequences of belonging to the various profiles apply equally to males and females. The table of interactions is included in Online Supplementary Materials S24.

General Discussion

In three large studies using samples from different countries, we combined bifactor exploratory structural equation modelling (B-ESEM) and latent profile analysis (LPA) to examine intrinsic and extrinsic aspirations through a person-centered lens. We found support

for our hypothesis that subgroups differ in the configuration of their aspirations and replicated those configurations in three independent samples. The replicable profiles derived in all three samples are easily interpretable and suggest that the Aspiration Index reliably measures meaningful aspiration configurations common across at least three different cultures. Crucially, we demonstrated that a B-ESEM and LPA analytic framework adds value to more traditional variable-centered approaches by finding that profile membership predicts positive functioning, even in conservative tests that control for the global and specific aspiration B-ESEM factor scores used to derive the profiles.

Profile membership predicted optimal functioning particularly for the *Aspiring for community relationships more than interpersonal relationships* group (Profile 3), whose members reported significantly more positive functioning than did those in Profile 1 (*Disengaged from relationships and health*) and Profile 2 (*Aspiring for interpersonal relationships more than community relationships*). This is a key outcome of our study because, while Profile 3 characterized individuals with a relative intrinsic orientation, of the three groups, Profile 3 members also reported the highest extrinsic aspirations. This result provides unique evidence that, for some groups, above average extrinsic aspiring may not be detrimental if such aspiring is done in a highly intrinsic context, especially in combination with aspiring for community engagement and giving (Kasser & Ryan, 2001). It also converges with evidence on the need satisfying impact of civic engagement (Wray-Lake, DeHaan, Shubert, & Ryan, 2017).

Replicable profile configurations

Ours is the first study to disentangle intrinsic and extrinsic orientation effects from the shapes of the specific aspirations using innovative B-ESEM methodology. In doing so, we achieved two important outcomes. First, we provided partial support for prior evidence that people can be grouped according to the levels of their higher-order intrinsic and extrinsic

aspiration importance and attainment ratings (Kasser & Ryan, 2001; Rijavec et al., 2011). Specifically, Rijavec et al. (2011) reported four clusters from their K-means cluster analysis. Of the four clusters described, our results support Rijavec et al.'s (2011) High E/Low I and Low E/High I clusters, in that members of Profile 1 were more extrinsic than intrinsic, and Profile 3 individuals had a more intrinsic than extrinsic focus. Importantly, we also demonstrated that, in addition to their relative extrinsic emphasis, Profile 1 members aspired below average in general, while Profile 2 individuals aspired to an average extent, and members of Profile 3–whilst relatively intrinsic–aspired above average in both the intrinsic and extrinsic domains. Second, we expanded past work by including specific aspirations in our analysis. Our person-centered analytic strategy revealed specific aspiration patterns of expanding social breadth. Put differently, each profile tended to increase in the breadth of social connection, from profiles characterized by low aspiration for social connection (Profile 1), higher aspiration for interpersonal connection than community connection (Profile 2), and then higher aspiration for community connection than interpersonal connection (Profile 3). Moreover, the shapes of the profiles were replicated across multiple, independent samples, demonstrating their cross-cultural reliability (Research Question 1).

Profile membership and optimal functioning

Our second research aim involved a comprehensive assessment of the additional utility of considering profiles of aspirations over and above what is known from the aspiration variables alone. We expected that Profile 1 members' relative extrinsic orientation would result in them having less optimal functioning than would members of Profiles 2 and 3. This hypothesis was largely supported. To demonstrate that profile membership provided additional explanatory power over and above the aspirations, we compared the three profiles whilst controlling for the constituent variables, which served as a rigorous test of the added value of our B-ESEM and LPA framework. The three profiles did not show incremental

value in predicting anxiety in Study 1, or mental ill-health and mindfulness in Study 2. Profile membership appears unrelated to indices of ill-being, insofar as we assessed such outcomes. However, profile membership did relate to several well-being indices. Profile 1 showed less emotional, psychological, and social well-being than Profile 3 in Study 2 and more basic psychological needs frustration than Profile 3 in Study 3. Profile 3 members also had more social well-being and engaged living than Profiles 1 and 2.

These tests demonstrate that Profile 1 membership is negatively linked with its members' emotional and psychological well-being, and Profile 3 membership is linked with its members' positivity and belongingness (social well-being), life satisfaction (engaged living), and basic psychological needs satisfaction, even when accounting for the spectrum of aspirations which has already been meaningfully connected to optimal functioning (Kasser, 2002). In other words, even when the specific aspirations were accounted for, those characterized by Profile 1 still had the least optimal functioning and those characterized by Profile 3 had the most. For Profile 1, these results are perhaps intuitive. In general, high goal engagement has been linked to well-being (Emmons, 1986), especially if said goals are intrinsic (Kasser, 2002), and Profile 1 members are below average on intrinsic aspirations, and aspiring in general. However, what may be surprising for some is Profile 3's apparent high degree of optimal functioning despite their above average scores of global extrinsic aspirations.

The discourse surrounding extrinsic aspiring often frames these goals as "materialistic" (Vansteenkiste et al., 2006, p.2892), and more likely than intrinsic aspirations to be psychologically detrimental (Deci & Ryan, 2000). However, important evidence has found that attainment of extrinsic goals can negatively or *neutrally* relate to optimal functioning if in a context of high attainment of intrinsic goals (e.g., Kasser & Ryan, 2001). Our person-centered approach may illuminate the mechanics of these results better than

variable-centered analyses of aspirations, in which, those characterized by different extrinsic and intrinsic aspiration profiles are treated as homogenous and analyzed together. More concretely, those for whom extrinsic aspirations may be detrimental are combined with those for whom they may be neutral (or perhaps even positive) in models that assume a homogenous population.

Profile 3 members' high degree of positive functioning, relative to the other profiles, indicates that there is a subgroup of people for whom above average extrinsic aspirations may not be inherently negative. Perhaps it is the case that Profile 3 members' extrinsic endeavors do not distract from their high level of intrinsic aspiring. Or perhaps the functions of extrinsic aspirations are different when they are in the context of high (Profile 3) versus low (Profile 1) intrinsic aspiring. For example, people who aspire for community values may see wealth as a way to contribute to others. In contrast, someone characterized by the disengaged profile (Profile 1) may see wealth only in terms of personal goals and status. These speculations need to be tested in future research.

Profile membership and integrative span

We understand the differences in the shapes of the profiles in terms of people's integrative span, or their breadth of aspirations for social care and connection. We propose the term integrative span as a theoretical foundation for describing the qualitative differences between the profiles. Specifically, the profiles appear to differ in the extent to which others, both close and distal, are emphasized in the pattern of aspirations. We see this idea of integrative span as potentially related to successful development, as people move increasingly beyond self-focused concerns (Profile 1) to more concern with their relationships (Profile 2) and the larger community (Profile 3). Intrinsic aspirations could be thought to reflect more expansive integrative span given that these pursuits often involve other people (e.g., aspirations for close relationships and community giving). In contrast,

extrinsic aspiring could reflect narrower integrative span because aspirations of this type are thought to be more self-focused, often due to need thwarting and need frustration in one's social context (Nishimura, Bradshaw, Deci, & Ryan, 2019). For example, Kasser et al. (1995) showed that more need depriving (cold and controlling) parenting led to youth developing more materialistic leanings and fewer prosocial interests.

Integrative span also reflects broader inclusion of others. The narrowest span would focus only on one's own needs. The span could then be broadened to include significant others, such as a partner, and then even further to include one's community. As social integrative span increases, people are expected to become more oriented towards satisfying the needs of others. In addition, they are expected to encounter more people who can help them satisfy their own needs. Integrative span may ultimately link to several existing constructs, as well as speculative ideas in the literature. For instance, differences in integrative span may reflect varying degrees of self-actualization (Maslow, 1967), which is manifest in people who are driven by causes "outside themselves" (p.94). Frankl's (1966) self-transcendence thesis emphasizes human interactions as a source of meaning, which is thought to be the ultimate human goal, as do Adler's (1954/1927) seminal writings concerning *gemeinshaftsgefuhl* (community feeling). Broadening integrative span as discussed herein may also connect with the literature of eudaimonia, insofar as eudemonic living emphasizes the pursuit of virtue and one's best potentialities (Huta & Waterman, 2014; Ryan, Huta, & Deci, 2008), and has thus been speculated to relate to a broader scope of concern (Huta, 2016), which is the propensity to consider the well-being others, as well as to think abstractly and see a bigger picture. Perhaps most directly, integrative span connects with McFarland, Webb, and Brown's (2012) construct of identification with all humanity (IWAH), which expands upon work by Adler (1954/1927) and Maslow (1967), among others. Like McFarland et al.'s (2012) work, our Profile 1's self-orientation reflects a

relatively narrow span of identifications, Profile 2 is one level wider by including close others, and Profile 3's emphasis on the community represents the broadest span of identification. Put differently, there seem to be levels or spheres of consideration beyond the self, and wellness may be enhanced the more levels are transcended.

The shapes of the specific aspirations provide support for the idea of expanding integrative span. Profile 1 members have below average relationship and community aspirations (both arguably other-oriented aspirations), while Profile 2 emphasizes relationship aspirations (which refer to more intimate, proximal others). Finally, Profile 3's configuration is centered on giving to the community (which focusses on the broader, more distal community and the world in general). The aspirational focus on increasingly distal others in the configurations is consistent with the idea of a broadening integrative span. Importantly, increasingly integrative span appears to be linked with optimal functioning. Future research might further examine the notion of integrative span, specifically the existence of potential additional spheres of integrative span, perhaps reflecting consideration for non-human animals, the environment, and future generations.

Profile membership, nonattachment, and empathy

Concordant with our conceptualization of integrative span, we hypothesized that levels of the other-oriented variables of nonattachment, and cognitive and affective empathy would increase in line with our theory of increasingly integrative span. Preliminary tests partly supported our integrative span hypotheses. In Study 2, profile membership did not explain additional variance in empathy beyond the aspiration factors. However, we found that Profile 3 members were significantly more nonattached than those of Profile 1 and 2 in Study 2 and Profile 2 in Study 3. These results seem to indicate that Profile 3 members are better able to let go of self-indulgent beliefs (nonattachment), but aspiration profile does not seem to make a difference in the extent to which profile members see themselves as particularly

gifted when connecting with others (empathy), even though Profile 3 members aspire to contribute to the lives of others nonetheless. Of course, we have no evidence that members of Profile 3 were actually serving the community (only aspiring to), although Schwartz (2010) reported that individuals are more likely to respond to those in need if doing so supports their "high priority values" (p. 222). Future research is needed to examine the extent to which members of the three profiles are enacting behaviors congruent with their patterns of aspirations.

Profile membership and gender

Preliminary tests of the profiles' gender compositions indicated that gender was associated with profile membership in all three samples. However, when we controlled for the continuous aspiration indices, there was no difference in the probability of males or females belonging to each of the three profiles. While this result was counter to our expectations, it merely suggests that differences in the gender composition across profiles, reflect the commonly-reported association between gender and aspirations. Males and females differ in the degree to which they subscribe to different aspirations, and those differences account for their belonging to the different profiles of aspirations.

Limitations and conclusions

One potential limitation of these studies is that responses on the self-report aspiration scales may have been influenced by common method variance, such as social desirability or extreme responding. However, a key aspect of our incremental analyses minimized this risk. In examining differences between the profiles, we control for the individual aspiration factors, a procedure that reduces or eliminates shared method variance (Lindell & Whitney, 2001). Nevertheless, it might be interesting for future research to find non-self-report ways to measure aspirations, perhaps finding ways to assess implicit motivation (Schultheiss, Liening, & Schad, 2008).

Indeed, these results provide considerable grist for future investigations. Our study firmly distinguished Profile 3 individuals from those in Profiles 1 and 2, but the characteristics of members of the two latter profiles could be further understood. For example, Profile 1 members' extrinsic emphasis may be demonstrative of insecurities, financial strain, or merely materialism–these ideas can be tested by measuring these constructs in future studies. Profile 2 individuals' focus on close relationships may signify their interest in a romantic partner or perhaps represent more collectivistic values. Longitudinal analyses could also inform factors that predict aspiration profile membership (such as parenting style or cultural factors), and the outcomes associated with profile membership.

In sum, the results of our studies support our claim that subgroups differ in their aspiration profiles and these differences relate to well-being, even when individual aspirations are controlled for. The derivation of these profiles using B-ESEM and LPA has also demonstrated a novel way of examining aspirations, and the results revealed a subgroup of community aspirers, for whom giving to the community is important in combination with their high level of general aspiring. Individuals characterized by this profile reported more social well-being, engaged living, nonattachment, and basic psychological needs satisfaction than those in a group with an aspirational pattern marked by low intrinsic aspirations, and those in a group oriented towards their close relationships and health. The *configuration* of specific intrinsic and extrinsic aspirations meaningfully and incrementally informs the links between aspirations and optimal functioning.

[1]We have presented the shapes of the profiles in the 4-profile solution for each of the three studies in Online Supplementary Materials S4. While fit indices from Study 1 could have led to the selection of the 4-profile solution, the fourth profile derived differed markedly across

the three studies, indicating a lack of replicability. This result, coupled with the replicability of the first three profiles, further demonstrates the strength and reliability of the 3-profile solutions, which, as can be seen from the plots, remain largely unchanged even in the 4-profile solutions.

[2]The pattern of means observed in the 'valued living' and 'life fulfilment' subscales of the Engaged Living Scale were largely equivalent (as can be seen in Online Supplementary Materials S12) so, for the sake of brevity, we have just reported the results for the full scale.

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Table 1. *Inter-correlations, means, and standard deviations of the variables in Study 1 (the Hungarian sample)*

	1	2	3	4	5	6	7	8
1. Wealth	1							
2. Fame	0.48***	1						
3. Image	0.58***	0.48***	1					
4. Growth	0.16***	0.14***	0.21***	1				
5. Relationships	0.09***	0.09***	0.21***	0.47***	1			
6. Health	-0.05**	0.16***	0.15***	0.44***	0.36***	1		
7. Community	0.22***	0.07***	0.32***	0.47***	0.41***	0.33***	1	
8. Trait anxiety	0.04*	-0.01	0.07***	-0.05**	0.04*	0.03	-0.03	1
M	4.56	3.05	4.22	6.32	6.44	5.25	6.40	2.20
SD	1.07	1.23	1.28	0.62	0.65	1.21	0.72	0.52

Note. * = $p < .05$, ** = $p < .01$, p < .001.

Table 2. *Results from the latent profile analyses of the factor scores of the B-ESEM of the Aspiration Index in Study 1 (the Hungarian sample), Study 2 (the Australian sample), and Study 3 (the American sample)*

Study	Model	LL	#fp	Scaling	AIC	CAIC	BIC	ABIC	Entropy	aLMR	BLRT	sm. n
Study 1	1 Profile	-39760.29	18	1.5011	79556.58	79556.79	79666.79	79609.59	–	–	–	3370
Study 1	2 Profiles	-37837.30	37	1.3190	75748.60	75749.44	75975.14	75857.57	0.688	≤ .001	≤ .001	1429
Study 1	3 Profiles	-37243.22	56	1.2528	74598.44	74600.37	74941.31	74763.37	0.736	≤ .001	≤ .001	963
Study 1	4 Profiles	-36882.90	75	1.2634	73915.80	73919.26	74374.99	74136.69	0.688	≤ .001	≤ .001	545
Study 1	5 Profiles	-36617.00	94	1.3344	73422.00	73427.46	73997.53	73698.85	0.719	≥ 0.05	≤ .001	445
Study 1	6 Profiles	-36347.38	113	1.3724	72920.75	72928.67	73612.62	73253.56	0.731	≥ 0.05	≤ .001	310
Study 2	1 Profile	-18613.42	18	1.7350	37262.84	37263.27	37360.00	37302.82	–	–	–	1632
Study 2	2 Profiles	-17425.51	37	1.4024	34925.02	34926.78	35124.73	35007.18	0.760	≤ .001	≤ .001	810
Study 2	3 Profiles	-16928.24	56	1.4815	33968.48	33972.53	34270.74	34092.84	0.775	≤ .01	≤ .001	274
Study 2	4 Profiles	-16629.38	75	1.6164	33408.75	33416.08	33813.57	33575.31	0.758	≥ 0.05	≤ .001	228
Study 2	5 Profiles	-16499.09	94	1.8125	33186.18	33197.80	33693.55	33394.93	0.800	≥ 0.05	≤ .001	106
Study 2	6 Profiles	-16361.67	113	1.3062	32949.34	32966.32	33559.27	33200.29	0.786	≥ 0.05	≤ .001	69
Study 3	1 Profile	-58474.88	18	1.3480	116985.75	116985.92	117106.53	117049.33	–	–	–	6063
Study 3	2 Profiles	-54492.59	37	1.3635	109059.18	109059.63	109307.49	109189.87	0.804	≤ .001	≤ .001	2275
Study 3	3 Profiles	-53101.32	56	1.3632	106314.65	106315.71	106690.41	106512.45	0.736	≤ .001	≤ .001	1536
Study 3	4 Profiles	-52069.36	75	1.4294	104288.73	104289.19	104791.97	104553.64	0.790	≤ .001	≤ .001	521
Study 3	5 Profiles	-51268.16	94	1.2786	102724.33	102724.79	103355.0	103056.36	0.791	≤ .001	≤ .001	188
Study 3	6 Profiles	-50596.29	113	1.3128	101418.57	101419.03	102176.80	101817.71	0.777	≤ .001	≤ .001	185

Note. B-ESEM: Bifactor exploratory structural equation model; LL: Model LogLikelihood; #fp: Number of free parameters; Scaling: Scaling factor associated with MLR loglikelihood estimates; AIC: Akaïke Information Criteria; CAIC: Constant AIC; BIC: Bayesian Information Criteria; ABIC: Sample-Size adjusted BIC; aLMR: Adjusted Lo-Mendell-Rubin likelihood ratio test; BLRT: Bootstrapped likelihood ratio test; sm. n: the sample size of the smallest profile. The model highlighted in gray was selected as the optimal profile solution.

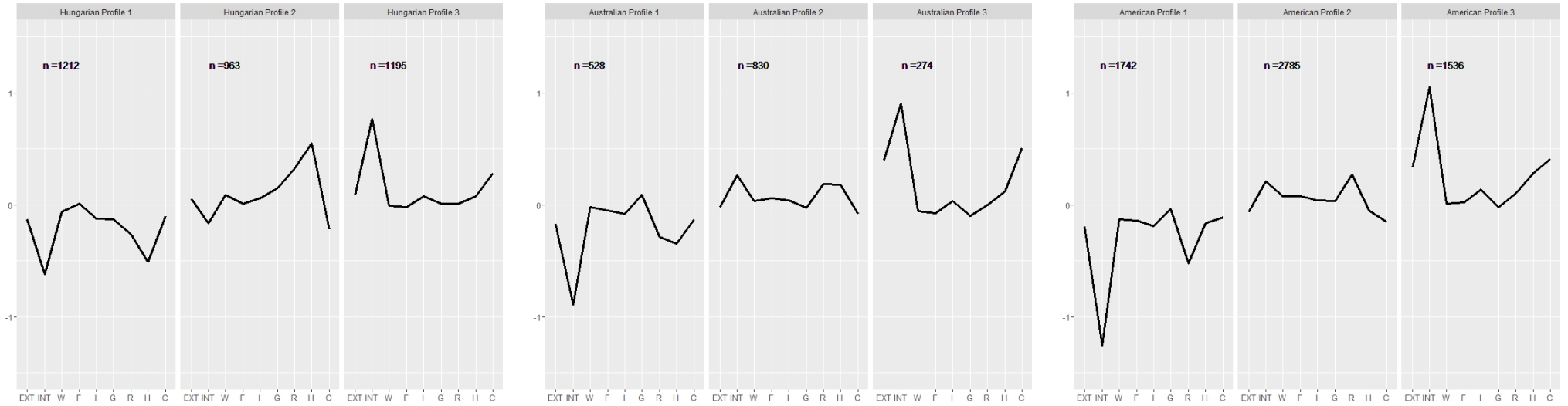

Figure 1. The pattern of mean levels of the two global and seven specific factors of aspirations from a latent profile analysis of the factor scores from a bifactor exploratory structural equation model of the Aspiration Index in Study 1 (the Hungarian sample, left panel), Study 2 (the Australian sample, middle panel), and Study 3 (the American sample, right panel). EXT: Global extrinsic factor; INT: Global intrinsic factor; W: Wealth specific factor; F: Fame specific factor; I: Image specific factor; G: Personal growth specific factor; R: Relationships specific factor; H: Physical health specific factor; C: Community giving specific factor; Profile 1: *Disengaged from relationships and health*; Profile 2: *Aspiring for interpersonal relationships more than community relationships*; Profile 3: *Aspiring for community relationships more than interpersonal relationships.*

Table 3. *Hierarchical regression results comparing a model regressing anxiety on the two global and seven specific aspiration factor scores from a B-ESEM of the Aspiration Index (M1), to a model that also includes profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 1 (the Hungarian sample)*

Outcome variable	Anxiety	
	M1	M2
Aspirations		
Extrinsic G	0.02	0.02
Intrinsic G	0.04*	0.03
Wealth S	0.02	0.02
Fame S	-0.09***	-0.09***
Image S	0.09***	0.09***
Growth S	-0.11***	-0.11***
Relationships S	0.04	0.04
Community S	-0.01	-0.01
Health S	-0.09***	-0.10***
Profile 2		0.02
Profile 3		0.02
Pooled sig. test M1 vs M2	$D_m(2,588) = 0.09$, $p = .92$	
Pooled R^2	0.03	0.03
Pooled R^2 Δ		0.00

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. M1 = Model 1 (regressing anxiety on the two global and seven specific aspiration factor scores); M2 = Model 2 (regressing anxiety on the aspiration variables, plus the profile membership variable). G = Global factor, S = specific factor, WB = well-being. The profile membership estimates included here for Profile 2 (*Aspiring for interpersonal relationships more than community relationships*) and Profile 3 (*Aspiring for community relationships more than interpersonal relationships*) are relative to Profile 1 (*Disengaged from relationships and health*). D_m statistics and denominator degrees of freedom for multiply imputed data are calculated using the pool.compare function in the mice package (Buuren & Groothuis-Oudshoorn, 2010) in R. The degrees of freedom do not reflect sample size (N = 3370), instead they employ the formulas recommended by Meng and Rubin (1992) for use when pooling results across multiple imputations. For brevity, the denominator degrees of freedom have been rounded to the nearest whole number.

Table 4. *The percentage of females in each of the three profiles in Study 1 (the Hungarian sample), Study 2 (the Australian sample), and Study 3 (the American sample)*

Study 1 (77% females overall)	
Profile 1	68%
Profile 2	78%
Profile 3	88%

Study 2 (51% females overall)	
Profile 1	45%
Profile 2	53%
Profile 3	58%

Study 3 (83% females overall)	
Profile 1	75%
Profile 2	86%
Profile 3	87%

Note. Profile 1: *Disengaged from relationships and health*; Profile 2: *Aspiring for interpersonal relationships more than community relationships*; Profile 3: *Aspiring for community relationships more than interpersonal relationships.*

Table 5. *Logistic regression results demonstrating the probability of members from the three profiles being female controlling (right) and not controlling (left) for the aspirations in Study 1 (the Hungarian study), Study 2 (the Australian study), and Study 3 (the American study)*

	Not controlling for aspirations			Controlling for aspirations		
Study 1	Estimate	SE	Pr. [95% CI]	Estimate	SE	Pr. [95% CI]
Profile 1	0.80	0.07	0.69 [0.66, 0.72]	1.47	0.10	0.81 [0.78, 0.84]
Profile 2	1.22	0.09	0.77 [0.74, 0.80]	1.36	0.11	0.80 [0.76, 0.83]
Profile 3	1.90	0.10	0.87 [0.85, 0.89]	1.62	0.12	0.84 [0.80, 0.86]
Study 2	Estimate	SE	Pr. [95% CI]	Estimate	SE	Pr. [95% CI)
Profile 1	-0.21	0.09	0.45 [0.40, 0.49]	0.16	0.14	0.54 [0.47, 0.61]
Profile 2	0.16	0.08	0.54 [0.50, 0.58]	0.05	0.09	0.51 [0.47,0.56]
Profile 3	0.27	0.13	0.57 [0.50, 0.63]	-0.15	0.18	0.46 [0.38, 0.55]
Study 3	Estimate	SE	Pr. [95% CI]	Estimate	SE	Pr. [95% CI]
Profile 1	1.21	0.06	0.75 [0.73, 0.77]	1.72	0.10	0.85 [0.82, 0.87]
Profile 2	1.84	0.06	0.86 [0.85, 0.88]	1.84	0.07	0.86 [0.85, 0.88]
Profile 3	1.88	0.08	0.87 [0.85, 0.88]	1.82	0.10	0.86 [0.83, 0.88]

Note. Estimate = log-odds; Pr. = probability of being female, for ease of interpretation estimates and 95% CIs were transformed from log-odds to probabilities. Profile 1: *Disengaged from relationships and health*; Profile 2: *Aspiring for interpersonal relationships more than community relationships*; Profile 3: *Aspiring for community relationships more than interpersonal relationships.*

Table 6. *Inter-correlations, means, and standard deviations of the variables in Study 2 (the Australian sample)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	17
1. Wealth	1															
2. Fame	.64**	1														
3. Image	.71**	.71**	1													
4. Growth	.20**	.20**	.17**	1												
5. Relationships	.15**	.14**	.18**	.66**	1											
6. Health	.28**	.19**	.29**	.68**	.61**	1										
7. Community	.07**	.21**	.17**	.66**	.51**	.52**	1									
8. Emotional well-being	.02	.03	.02	.25**	.19**	.15**	.24**	1								
9. Social well-being	.06*	.15**	.10**	.18**	.15**	.19**	.18**	.57**	1							
10. Psych well-being	.05	.07**	.04	.30**	.24**	.24**	.30**	.66**	.71**	1						
11. Mental ill-health	-.00	.00	.06*	-.11**	-.04	-.01	-.09**	-.61**	-.45**	-.51**	1					
12. Engaged living	.09**	.14**	.09**	.40**	.29**	.35**	.35**	.47**	.46**	.54**	-.38**	1				
13. Mindfulness	-.07*	-.06*	-.08**	.12**	.13**	.09**	.15**	.32**	.35**	.34**	-.32**	.29**	1			
14. Nonattachment	-.14**	-.11**	-.12**	.28**	.18**	.25**	.23**	.39**	.37**	.43**	-.34**	.52**	.32**	1		
16. Affective empathy	-.12**	-.06*	.01	.15**	.26**	.22**	.13**	-.01	-.01	-.00	.21**	-.04	-.07**	-.21**	1	
17. Cognitive empathy	-.11**	-.09**	-.10**	.32**	.36**	.26**	.25**	.16**	.09**	.24**	-.04	.18**	.14**	.04	.37**	1
M	4.76	4.12	4.25	6.07	6.29	5.68	6.14	4.74	3.65	4.35	2.12	3.69	3.74	3.01	4.05	3.4
SD	1.41	1.46	1.51	0.89	0.96	1.09	0.98	1.09	1.19	1.01	0.57	0.72	0.91	0.64	0.58	0.7

Note. ** $p < .01$, * $p < .05$.

Table 7. *Hierarchical regression results comparing models using the factor scores from a B-ESEM of the Aspiration Index as predictors (M1), to models that also include profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 2 (the Australian sample)*

Outcome variables	Emotional WB		Psych WB		Social WB		Nonattachment		Engaged Living	
	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2
Aspirations										
Extrinsic G	0.00	-0.02	0.03	0.01	0.13***	0.11***	-0.17***	-0.19***	0.09***	0.07**
Intrinsic G	0.27***	0.21***	0.34***	0.29***	0.19***	0.10**	0.31***	0.26***	0.42***	0.38***
Wealth S	-0.03	-0.03	-0.03	-0.03	-0.10***	-0.10***	-0.07**	-0.08**	-0.04	-0.04
Fame S	0.04	0.04	0.02	0.03	0.00	0.01	-0.07*	-0.07*	0.03	0.04
Image S	-0.03	-0.04	-0.04	-0.04	-0.05	-0.06	-0.05	-0.05*	-0.07*	-0.07*
Growth S	-0.08**	-0.07*	-0.06	-0.05	-0.04	-0.02	-0.09**	-0.08*	-0.12***	-0.12***
Relationships S	-0.02	-0.04	-0.03	-0.04	-0.00	-0.01	-0.08**	-0.08**	-0.04	-0.03
Community S	-0.06*	-0.08*	-0.00	-0.03	0.06*	0.03	0.08*	0.04	0.10***	0.07*
Health S	0.07**	0.05	0.08**	0.07*	0.06*	0.04	0.08*	0.06*	0.09**	0.09**
Profile membership (relative to Profile 1)										
Profile 2		0.15		0.07		0.13		0.04		-0.04
Profile 3		0.28*		0.29*		0.42***		0.33**		0.27*
Pooled sig. test M1 vs M2	$D_m(2,958) = 3.09$, $p = .04$		$D_m(2,736) = 3.76$, $p = .02$		$D_m(2,536) = 6.60$, $p = 0.001$		$D_m(2,1169) = 6.57$, $p = .002$		$D_m(2,837) = 6.76$, $p < .001$	
Pooled R^2	0.07	0.08	0.11	0.12	0.06	0.07	0.14	0.15	0.19	0.20
Pooled R^2 Δ		0.01		0.01		0.01		0.01		0.01

Table 7 continued. *Hierarchical regression results comparing models using the factor scores from a B-ESEM of the Aspiration Index as predictors (M1), to models that also include profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 2 (the Australian sample)*

Outcome variables	GHQ/Ill-being		Mindfulness		Cognitive empathy		Affective empathy	
	M1	M2	M1	M2	M1	M2	M1	M2
Aspirations								
Extrinsic G	0.01	0.03	-0.08**	-0.09***	-0.16***	-0.17***	-0.10***	-0.10***
Intrinsic G	-0.11***	-0.05	0.16***	0.11**	0.40***	0.39***	0.21***	0.20***
Wealth S	0.01	0.02	-0.04	-0.05	-0.07**	-0.07**	-0.13***	-0.13***
Fame S	-0.02	-0.02	-0.06	-0.06	0.11***	0.11***	0.06*	0.06*
Image S	0.11***	0.11***	-0.07*	-0.07*	-0.01	-0.01	0.13***	0.12***
Growth S	0.04	0.03	-0.03	-0.03	-0.11***	-0.11***	0.01	0.01
Relationships S	0.08**	0.10**	0.03	0.02	0.10***	0.10***	0.18***	0.17***
Community S	0.11***	0.13***	-0.01	-0.03	-0.02	-0.03	0.13***	0.13***
Health S	-0.05	-0.03	0.09**	0.07*	-0.05*	-0.05*	-0.03	-0.03
Profile membership (relative to Profile 1)								
Profile 2		-0.13		0.13		-0.03		0.07
Profile 3		-0.28*		0.24		0.09		0.03
Pooled sig. test M1 vs M2	$D_m(2,720) = 2.26$, $p = .07$		$D_m(2,819) = 1.72$, $p = .13$		$D_m(2,672) = 0.93$, $p = .33$		$D_m(2,416) = 0.51$, $p = .56$	
Pooled R^2	0.03	0.03	0.04	0.04	0.20	0.20	0.11	0.11
Pooled R^2 Δ		0.00		0.00		0.00		0.00

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. M1 = Model 1 (using the two global and seven specific aspiration factor scores to predict the dependent variables); M2 = Model 2 (using the aspiration variables, plus the profile membership variable to predict outcomes). G = Global factor, S = specific factor, WB = well-being. The profile membership estimates included here for Profile 2 (*Aspiring for interpersonal relationships more than community relationships*) and Profile 3 (*Aspiring for community relationships more than interpersonal relationships*) are relative to Profile 1 (*Disengaged from relationships and health*). Grey highlighting for the pooled significance tests indicates variables for which Model 2 was a significantly better fit than Model 1. D_m statistics and denominator degrees of freedom for multiply imputed data are calculated using the pool.compare function in the mice package (Buuren & Groothuis-Oudshoorn, 2010) in R. The degrees of freedom do not reflect sample size ($N = 1632$, $n = 1620$ for emotional well-being, $n = 1608$ for psychological well-being, $n = 1601$ for social well-being, $n = 1621$ for ill-being, $n = 1565$ for engaged living, $n = 1543$ for nonattachment, $n = 1535$ for mindfulness, n=1632 for cognitive and affective empathy), instead they employ the formulas recommended by Meng and Rubin (1992) for use when pooling results across multiple imputations. For brevity, the denominator degrees of freedom have been rounded to the nearest whole number.

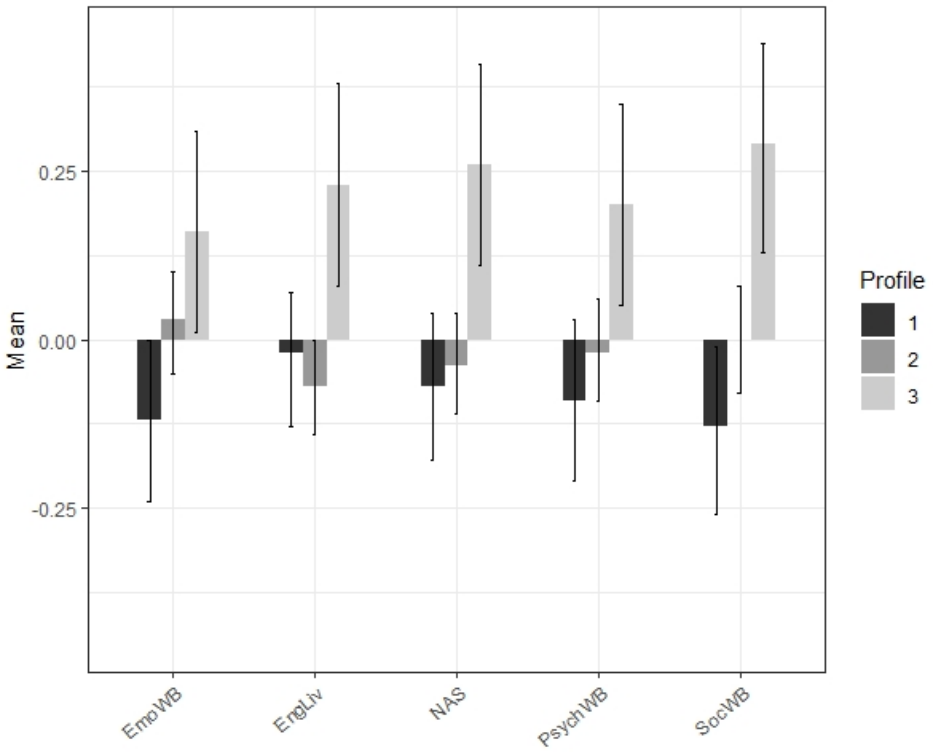

Figure 2. The standardized mean scores (and 95% confidence intervals) for each of the three profiles on each outcome variable/s in Study 2 (the Australian sample). The models regressed the outcome variables on the three-level profile membership variable and the two global and seven specific aspiration factor scores from a B-ESEM of the Aspiration Index, pooled across 25 imputations of profile membership. We then used the delta method to transform means and standard errors from the regression into three univariate estimates. EmoWB = emotional well-being, EngLiv = engaged living, NAS = Nonattachment, PsychWB = psychological well-being, SocWB = social well-being. Profile 1: *Disengaged from relationships and health*; Profile 2: *Aspiring for interpersonal relationships more than community relationships*; Profile 3: *Aspiring for community relationships more than interpersonal relationships.*

Table 8. *Inter-correlations, means, and standard deviations of the variables in Study 3 (the American sample)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Wealth	1																
2. Fame	.63**	1															
3. Image	.67**	.71**	1														
4. Growth	.27**	.13**	.25**	1													
5. Relationships	.20**	.08**	.22**	.70**	1												
6. Health	.36**	.18**	.35**	.69**	.60**	1											
7. Community	.19**	.19**	.24**	.72**	.60**	.61**	1										
8. Emotional well-being	.09**	.07**	.11**	.28**	.28**	.29**	.29**	1									
9. Social well-being	.20**	.34**	.29**	.13**	.09**	.18**	.25**	.61**	1								
10. Psych well-being	.13**	.14**	.16**	.33**	.29**	.32**	.36**	.72**	.68**	1							
11. Engaged living	.14**	.16**	.18**	.33**	.28**	.34**	.38**	.61**	.51**	.62**	1						
12. Nonattachment	.09**	.04**	.08**	.40**	.31**	.37**	.39**	.49**	.37**	.51**	.52**	1					
13. Autonomy Sat.	.14**	.17**	.15**	.28**	.23**	.29**	.30**	.48**	.43**	.48**	.62**	.42**	1				
14. Autonomy Frust.	.23**	.24**	.22**	.04**	-.01	.02	.01	-.17**	.02	-.09**	-.10**	-.08**	-.06**	1			
15. Relatedness Sat.	.05**	.02	.06**	.36**	.40**	.31**	.35**	.49**	.30**	.44**	.53**	.41**	.60**	-.09**	1		
16. Relatedness Frust.	.23**	.26**	.26**	-.10**	-.14**	-.05**	-.06**	-.19**	.07**	-.11**	-.11**	-.12**	-.07**	.62**	-.14**	1	
17. Competence Sat.	.15 **	.13**	.13**	.32**	.29**	.34**	.31**	.49**	.35**	.50**	.60**	.46**	.63**	-.09**	.68**	-.14**	1
18. Competence Frust.	.15**	.18**	.18**	.03	-.05**	-.04	-.02	-.28**	-.08**	-.22**	-.24**	-.17**	-.17**	.64**	.15**	.68**	-.32**
M	4.48	3.40	4.08	5.92	6.05	5.75	5.64	4.38	4.18	3.31	3.71	4.45	3.63	3.12	3.97	2.65	3.82
SD	1.37	1.56	1.42	1.03	1.13	1.11	1.18	1.16	1.13	1.25	0.80	0.97	0.88	1.01	0.87	1.14	0.87

Note. ** $p < .01$, * $p < .05$.

Table 9. *Hierarchical regression results comparing models using the factor scores from a B-ESEM of the Aspiration Index as predictors (M1), to models that also include profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 3 (the American sample)*

Outcome variables	Emotional WB		Psych WB		Social WB		Nonattachment		Engaged Living	
	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2
Aspirations										
Extrinsic G	0.04***	0.04***	0.09***	0.09***	0.24***	0.23***	-0.01	-0.01	0.09***	0.09***
Intrinsic G	0.21***	0.20***	0.21***	0.20***	0.10***	0.08***	0.32***	0.32***	0.23***	0.22***
Wealth S	-0.03	-0.03	-0.04*	-0.04*	-0.14***	-0.14***	0.02	0.02	-0.05**	-0.05**
Fame S	-0.02	-0.01	-0.02	-0.01	-0.03	-0.02	-0.19***	-0.18***	-0.12***	-0.11**
Image S	-0.00	-0.01	-0.02	-0.03	-0.00	-0.01	-0.00	-0.00	-0.01	-0.02
Growth S	0.07	0.07	0.19***	0.19***	-0.26***	-0.25***	0.21***	0.21***	0.21***	0.22***
Relationships S	0.12***	0.13***	0.12***	0.12***	-0.05*	-0.06*	0.02	0.03	0.08***	0.09***
Community S	0.14***	0.13***	0.24***	0.22***	0.17***	0.16***	0.18***	0.17***	0.25***	0.22***
Health S	0.14***	0.13***	0.16***	0.15***	0.06***	0.05**	0.13***	0.12***	0.17***	0.16***
Profile membership (relative to Profile 1)										
Profile 2		-0.03		-0.04		0.00		-0.09		-0.09
Profile 3		0.08		0.11		0.12*		0.04		0.12*
Pooled sig. test M1 vs M2	$D_m(2,324) = 3.14$, $p = .04$		$D_m(2,279) = 6.53$, $p = .002$		$D_m(2,502) = 4.54$, $p = .01$		$D_m(2,353) = 6.37$, $p = .002$		$D_m(442) = 14.76$, $p < .001$	
Pooled R^2	0.120	0.121	0.166	0.168	0.185	0.186	0.205	0.207	0.186	0.191
Pooled R^2 Δ		0.001		0.002		0.002		0.002		0.005

Table 9 continued. *Hierarchical regression results comparing models using the factor scores from a B-ESEM of the Aspiration Index as predictors (M1), to models that also include profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 3 (the American sample)*

Outcome variables	AutSat		AutFrust		CompSat		CompFrust	
	M1	M2	M1	M2	M1	M2	M1	M2
Aspirations								
Extrinsic G	0.11***	0.10***	0.16***	-0.17***	0.07***	0.06***	0.13***	0.13***
Intrinsic G	0.25***	0.23***	0.03	0.06*	0.23***	0.22***	-0.01	0.02
Wealth S	-0.06**	-0.05**	0.05*	0.05*	0.03	0.04*	-0.01	-0.00
Fame S	-0.10*	-0.08*	-0.16***	-0.16***	0.04	0.05	-0.11*	-0.11*
Image S	-0.07*	-0.08**	0.07*	0.08**	-0.09**	-0.10**	0.12***	0.13***
Growth S	-0.06	-0.05	-0.09	-0.09	0.14*	0.15**	-0.18**	-0.18**
Relationships S	-0.00	0.00	-0.07**	-0.05*	0.10***	0.11***	-0.09***	-0.07**
Community S	0.08**	0.06**	-0.07**	-0.06*	0.13***	0.11***	-0.08**	-0.06*
Health S	0.08***	0.07**	-0.12***	-0.11***	0.18***	0.17***	-0.13***	-0.12***
Profile membership (relative to Profile 1)								
Profile 2		-0.06		-0.06		-0.06		-0.07
Profile 3		0.13*		-0.16**		0.12*		-0.17**
Pooled sig. test M1 vs M2	$D_m(2,442) = 14.76$, $p < .001$		$D_m(2,295) = 3.67$, $p = .03$		$D_m(2,326) = 9.99$, $p < .001$		$D_m(2,391) = 3.85$, $p = .02$	
Pooled R^2	0.126	0.130	0.082	0.083	0.148	0.152	0.061	0.063
Pooled R^2 Δ		0.004		0.001		0.004		0.002

Table 9 continued. *Hierarchical regression results comparing models using the factor scores from a B-ESEM of the Aspiration Index as predictors (M1), to models that also include profile membership probabilities from an LPA of the factor scores as a predictor (M2), pooled across 25 imputations Study 3 (the American sample))*

Outcome variables	RelSat		RelFrust	
	M1	M2	M1	M2
Aspirations				
Extrinsic G	-0.01	-0.01	0.22***	0.22***
Intrinsic G	0.31***	0.29***	-0.13***	-0.10***
Wealth S	-0.02	-0.02	-0.02	-0.02
Fame S	-0.08*	-0.07	-0.24***	-0.24***
Image S	-0.03	-0.04	0.10***	0.11***
Growth S	0.08	0.09	0.03	0.03
Relationships S	0.20***	0.21***	-0.06*	-0.04
Community S	0.11***	0.10***	0.03	0.04
Health S	0.05*	0.04*	-0.07	0.00
Profile membership (relative to Profile 1)				
Profile 2		-0.04		-0.10*
Profile 3		0.11		-0.16**
Pooled sig. test M1 vs M2	$D_m(2,268) = 6.91$, $p < .001$		$D_m(2,388) = 3.91$, $p = .02$	
Pooled R^2	0.192	0.195	0.157	0.158
Pooled R^2 Δ		0.003		0.001

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. M1 = Model 1 (using the two global and seven specific aspiration factor scores to predict the dependent variables); M2 = Model 2 (using the aspiration variables, plus the profile membership variable to predict outcomes). B-ESEM = bifactor exploratory structural equation model, LPA = latent profile analysis. G = Global factor, S = specific factor, WB = well-being. The profile membership estimates included here for Profile 2 (*Aspiring for interpersonal relationships more than community relationships*) and Profile 3 *(Aspiring for community relationships more than interpersonal relationships*) are relative to Profile 1 (*Disengaged from relationships and health*). Grey highlighting for the pooled significance tests indicates variables for which Model 2 was a significantly better fit than Model 1. D_m statistics and denominator degrees of freedom for multiple imputations are calculated using the pool.compare function in the mice package (Buuren & Groothuis-Oudshoorn, 2010) in R. The degrees of freedom do not reflect sample size (N=6063, with no missing data), instead they employ the formulas recommended by Meng and Rubin (1992) for use when pooling results across multiple imputations. For brevity, the denominator degrees of freedom have been rounded to the nearest whole number. AutSat = autonomy satisfaction, AutFrust = autonomy frustration, CompSat = competence satisfaction, CompFrust = competence frustration, RelSat = relatedness satisfaction, RelFrust = relatedness frustration.

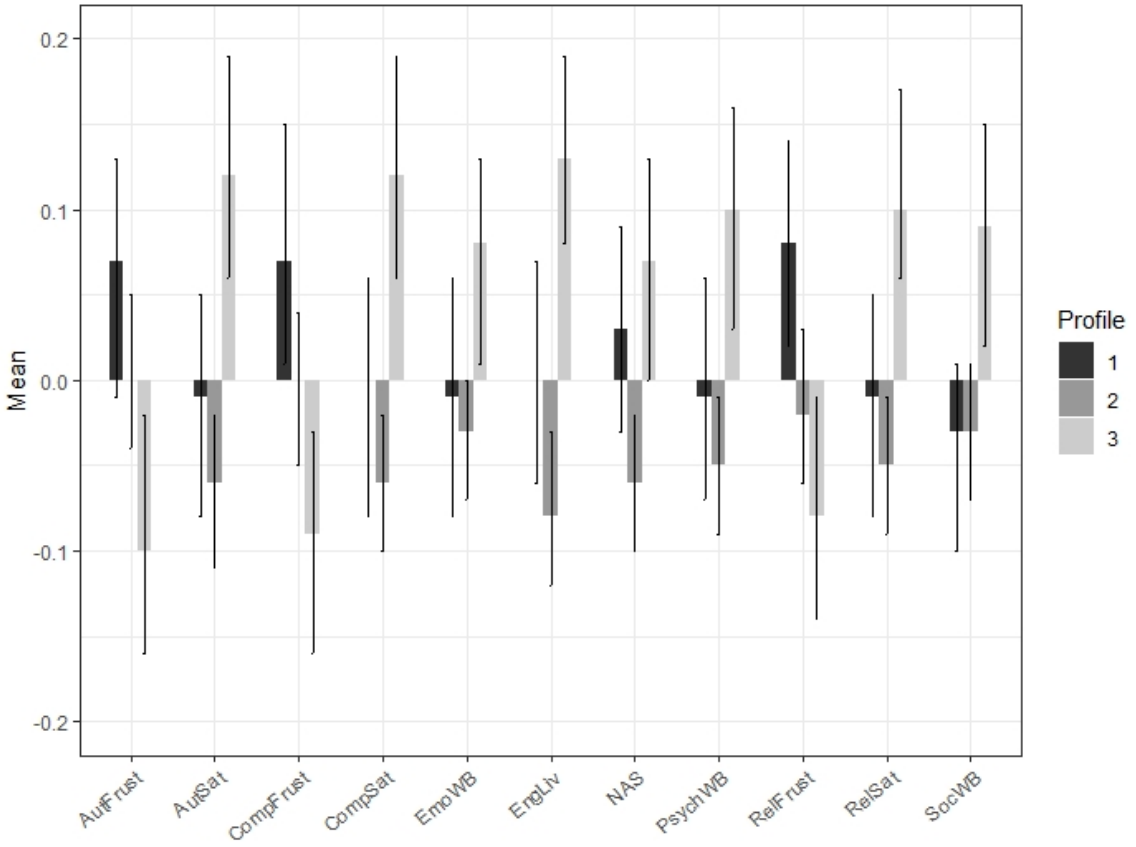

Figure 3. The standardized mean scores (and 95% confidence intervals) for each of the three profiles on each outcome variable in Study 3 (the American sample). The models regressed the outcome variables on the three-level profile membership variable and the two global and seven specific aspiration factor scores from a B-ESEM of the Aspiration Index, pooled across 25 imputations of profile membership. We then used the delta method to transform means and standard errors from the regression into three univariate estimates. AutFrust = autonomy frustration, AutSat = autonomy satisfaction, CompFrust = competence frustration, CompSat = competence satisfaction, EmoWB = emotional well-being, EngLiv = engaged living, NAS = Nonattachment, PsychWB = psychological well-being, RelFrust = relatedness frustration, RelSat = relatedness satisfaction, SocWB = social well-being,. Profile 1: *Disengaged from relationships and health*; Profile 2: *Aspiring for interpersonal relationships more than community relationships*; Profile 3: *Aspiring for community relationships more than interpersonal relationships.*