Development of a shortend version of the Latent and Manifest Benefits of Work (LAMB) scale

Carrie Kovacs [1], Bernad Batinic [1], Barbara Stiglbauer [1], & Timo Gnambs [2]

[1] Johannes Kepler University of Linz, Austria

[2] Leibniz Institute for Educational Trajectories Bamberg, Germany

[2]

Author Note

Carrie Kovacs, Johannes Kepler University of Linz, Austria. Bernad Batinic, Johannes Kepler University of Linz, Austria. Barbara Stiglbauer, Johannes Kepler University of Linz, Austria. Timo Gnambs, Leibniz Institute for Educational Trajectories, Bamberg, Germany.

Correspondence concerning this article should be addressed to Carrie Kovacs, Department of Work, Organizational and Media Psychology, Johannes Kepler University of Linz, Altenbergerstrasse 69, 4040 Linz, Austria. E-mail: carrie.kovacs@jku.at

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Scale

Summary

Paid work offers latent benefits (e.g., social contact, time structure) that go beyond mere access to financial resources in predicting individuals' psychological well-being. Despite the importance of the concept for organizational research and practice, available instruments measuring these latent benefits suffer either from psychometric deficiencies or a scale length that makes integrating them into large-scale work/life-surveys cumbersome. Thus, the current two studies ($N = 1,054$ and $N = 677$) report on the development of the Short Latent and Manifest Benefits of Work scale (LAMB-S; cf. Muller, Creed, Waters, & Machin, 2005). The new 18-item instrument showed a clear factor structure, appropriate external validities, and even slight improvements in content and criterion validity for some subscales. Overall, the LAMB-S represents an economical instrument with satisfactory psychometric properties, making it an attractive alternative in situations where participant time is limited.

Keywords: latent benefits; employment; meaning of work; Jahoda; well-being

Introduction

The cornerstone of Jahoda's (1981) latent deprivation theory of unemployment is the idea that employment fulfills basic psychological needs beyond the need for material security. Her assumption that employment provides not only manifest financial benefits but also other, deeply psychologically relevant "latent" benefits has provided a central theoretical framework for understanding the psychological effects of unemployment as well as the relationship between specific job characteristics and psychological health (e.g., Batinic, Selenko, Stiglbauer, & Paul, 2010; Creed & Macintyre, 2001; Hoare & Machin, 2006, 2010; Paul & Batinic, 2010; Selenko & Batinic, 2013; Šverko, Galić, Seršic, & Galešic, 2008). The purpose of the current work is to present a shortened version of a scale to measure individuals' self-perceived experience of these latent and manifest benefits (cf. Muller et al., 2005), the Short Latent and Manifest Benefits of Work Scale (LAMB-S).

Latent and manifest benefits of work

Jahoda postulated that engaging in paid work provides employees with time structure, personal status and identity, social contact with people outside the family, shared goals and purposes, and enforced activity, all of which are psychologically supportive and explain people's need to work more fully than merely the motivation inspired by financial incentives. Conversely, any lack of these so-called "latent benefits" resulting from unemployment is assumed to be psychologically destructive (Jahoda, 1981).

Several studies have empirically tested these assumed links between employment and psychological health, as well as the role of latent benefits in explaining this relationship. Two meta-analyses (McKee-Ryan, Song, Wanberg, & Kinicki, 2005; Paul & Moser, 2009) showed a cross-sectional relationship between unemployment and mental health of $d=.57$ and $d=.54$ across 60 and 323 empirical studies, respectively. In other words, the mental health scores of employed persons were shown to be, on average, more than half a standard deviation higher than the mental health scores of unemployed persons. Moreover, the causality of this effect

was corroborated by longitudinal data showing that mental health decreased significantly following job loss and increased following reemployment, even when personal characteristics could be ruled out as causes of unemployment (i.e., when factory closure led to job loss; Paul & Moser, 2009).

There is also evidence supporting a positive relationship between unemployment and decreased experience of the latent benefits (or, in Jahoda's words, "latent deprivation"). For instance, Paul, Geithner, and Moser (2009) showed that individuals seeking employment reported higher levels of latent deprivation than both employed individuals and individuals out of the labor force not seeking employment (e.g., students, homemakers, retirees). Similarly, Creed and Reynolds (2001) found that unemployment was linked to stronger experiential deprivation than employment. Even working in the black market economy may decrease latent deprivation (Šverko et al., 2008), though higher-status jobs do seem to be related to better psychological health than lower-status jobs (Batinic et al., 2010).

There is also some evidence that this relationship between employment and latent benefits might explain the observed link between employment and mental health. For instance, Paul and colleagues (2009) showed that level of subjective experience of the latent benefits mediated the relationship between unemployment and mental health, even when manifest deprivation (i.e., economic strain) was controlled. However, some latent benefits might be more important than others in driving this relationship. For instance, Batinic and colleagues (2010) found that time structure (and possibly status or social contact) mediated the relationship between job status and psychological wellbeing more strongly than any other latent benefit. Overall, such findings empirically support Jahoda's theory that employment drives subjective experience of at least some latent benefits, which in turn impacts psychological health and well-being.

These differences in the importance of individual benefits for mental health may in part be due to differences in their relationship with employment. Hoare and Machin (2010)

were able to show that reemployment was related to more self-reported time structure and

social contact (as well as greater financial benefits and mental health), but not to any change

in collective purpose, status, or activity. In terms of mental health, Muller, Creed, and Francis

(2004) showed that both time structure and social support had an inverse relationship with

psychological distress, but that this relationship did not hold for the three other latent benefits.

Attempting to unravel the causal structure of these relationships, Selenko, Batinic, and Paul

(2011) found that decreases in latent benefits tended to precede decreases in psychological

health when analyzed over 6-month intervals. However, only the latent benefits of time

structure and social contact – in conjunction with financial strain – significantly mediated the

relationship between unemployment and mental health. Selenko and Batinic (2013) were able

to generalize this result partially to job insecurity, showing some evidence that time structure

might mediate a relationship between job insecurity and mental health.

     In summary, assessment of individuals' subjective experience of specific latent

benefits is an invaluable clue in understanding the relationship between work characteristics

(including the presence or absence of paid employment, but also different kinds of

employment and work environments) and important outcomes such as mental health. In many

cases, (lack of) specific latent benefits may be a mechanism driving lower mental health

among the unemployed, as well as job dissatisfaction, turnover, or decreased psychological

health among the employed. Thus, it seems vital to include measures of latent benefits in any

study attempting to determine the causes of and prerequisites for positive as well as negative

job outcomes.

Assessment of the Latent Benefits of Work

     Several of the studies mentioned above measured latent benefits as an overarching

construct, as a single "latent deprivation" or "experiential deprivation" scale value (e.g., Paul

et al., 2009). For many purposes, such a global measure of latent deprivation is adequate and

informative. However, more detailed information about the context-specific importance of

different latent benefits is vital both in understanding how aspects of (un)employment affect

health and well-being, and in developing concrete strategies to minimize the negative effects

of unemployment. One fairly common measure of individual latent benefits is the "access to

categories of experience" (ACE) scale (Evans & Haworth, 1991). While this scale captures

the individual latent benefits in a relatively short 15-item questionnaire, the reliabilities of its

subscales have been rather poor in practice, reaching values as low as $\alpha=.51$ (Paul & Batinic,

2010, p. 51). Such low reliabilities decrease studies' power to discover important relationships

between the latent benefits and the outcome variables of interest.

An alternative to this measure is the Latent and Manifest Benefits (LAMB) scale,

developed by Muller and colleagues (2005),which has shown considerably higher subscale

reliabilities (ranging between $\alpha=.76$ and $\alpha=.92$). The usefulness of the LAMB scale has been

illustrated by several studies (both in the original English version and in a German translation;

Muller & Waters, 2012) exploring the differential effects of different latent benefits in both

cross-sectional and longitudinal designs (Hoare & Machin, 2010; Muller et al., 2004; Selenko

& Batinic, 2013; Selenko et al., 2011). However, the 36 items of this scale make it a rather

substantial addition to any voluntarily completed questionnaire, presenting an obstacle to its

inclusion in broad studies on employment and health, which already necessarily include a

large number of variables. Differences in advertised questionnaire length (10 min vs. 20 min)

have been shown to decrease response rates in online surveys by as much as 10%, and this

difference becomes more pronounced through greater dropout in the course of longer

questionnaires (Galesic & Bosnjak, 2009). Especially in the context of organizational

research, where scales incorporating less than ten items are the norm (e.g., 253 of 277 scales

examined by Hinkin, 1995, p. 973), the unusual length of the LAMB may deter researchers

from including it in their surveys. In fact, the LAMB scale is further lengthened by its rather

unusual response format, which includes two opposing versions of the same statement at

opposite ends of a rating continuum (e.g. "I often meet new people" vs. "I seldom meet new

people"). While there may be advantages to such a bipolar question format, it also increases

the amount of text needed to be processed by participants without providing additional

information. Reducing this format to a standard Likert-response scale of

agreement/disagreement could help shorten the scale further without sacrificing content.

Present Studies

The purpose of the current work was to develop and test a shortened German version

(Batinic et al., 2010; Paul & Batinic, 2010) of the Latent and Manifest Benefits of Work Scale

(Muller et al., 2005) that can be more easily integrated into broad industrial and

organizational psychology studies. Shortened scales often suffer from substantially reduced

reliability and validity (Gnambs, 2014; Smith, McCarthy, & Anderson, 2000), making it

particularly important to examine and ensure the high quality of their psychometric properties.

In order to achieve both these goals, two studies were performed. Study 1 identified items to

be retained in the shortened scale based on item-level content, criterion, and construct

validity. Study 2 cross-validated the shortened scale properties on an independent sample.

Study 1

The purpose of Study 1 was to shorten the LAMB scale while maintaining a) valid

content, b) comparable criterion validity, and c) a satisfactory factorial structure.

Methods

Participants and procedure.

Study 1 drew on existing data gathered in the course of a longitudinal study on the

meaning of work in relation to various job characteristics and outcomes (Batinic et al., 2010;

Paul & Batinic, 2010; Selenko & Batinic, 2013; Selenko et al., 2011; Stiglbauer & Batinic,

2012; Stiglbauer, Selenko, Batinic, & Jodlbauer, 2012). Participants were recruited through a

German online survey panel (www.respondi.com) for the first wave of data collection in

2008. To encourage survey participation, the panel offers incentive points that can be

exchanged for commercial products. Participants who volunteered their contact information

were invited to complete four follow-up questionnaires spaced in six month intervals. For the

purposes of the current study, we draw only upon the first wave of data collection and the

one-year follow-up study. Only participants ($N = 1,054$) who completed all 36 LAMB items

with some variation in their responses to these items ($SD>0$) and had plausible total response

times for the questionnaire (3-25 min for 80 items; $M = 9.58$min, $SD = 3.71$min) were

included in the analyses. Table 1 shows the basic demographic makeup of the resulting

samples. On average, participants were in their late 30's, with a roughly equal gender

distribution. About 70% of participants were engaged in some form of paid employment (full-

time, part-time, freelance/self-employed).

(insert Table 1 about here)

Item selection.

Following the recommendation of Stanton and colleagues (2002), we drew on a

combination of external (item-criterion correlations), judgmental (expert-ratings), and internal

(item means and variances, factor loadings, and cross-loadings) item characteristics in order

to identify an optimal subset of items for retention in the shortened scale. We chose to reduce

each subscale to three items, since this has been recommended as a minimum for subsequent

structural equation modeling (e.g., Kline, 2011). Because the latent benefits of work are

inherently defined as benefits resulting from employment, we considered employment status a

central external criterion by which to judge item quality. Given that both Jahoda's theory and

much of the research focusing on the latent benefits claim a positive effect on mental health

and well-being, we also saw these factors as a fundamental part of the nomological network

surrounding the construct. Thus, individual items from the original LAMB scale were

correlated with employment status and mental health, with strength of association acting as an

indicator of item quality. Judgmental data were gathered in the form of rankings (described in

the Instruments section), though verbal and written comments made by judges in the course of

the rating process were also considered. Rating data were aggregated in the form of minimum,

maximum, and median rankings per item; comments were integrated into the decision process as described in the results section. Internal criteria were assessed via item means and standard deviations, and by strength of loadings and cross-loadings of an exploratory factor analysis (principal axis factoring) assuming six underlying factors and using Promax rotation. Though our decision to treat the LAMB-items as continuous, interval-scaled data in this and subsequent analyses can be thrown into question, the fairly large number of rating categories and roughly bell-shaped frequency distributions for the majority of the items made us feel that this decision was defensible. All selection analyses were based on the first wave of data collection.

Preliminary validation of resulting scale

After item selection, the factor structure of the shortened scale underwent a preliminary cross-validation using data from the one-year follow-up study. We also compared subscale-level criterion validities of the full scale with those of the 18 items identified for retention in the shortened scale. To avoid confusion, we will refer to this set of 18 items, administered as a part of the full scale but analyzed without the other LAMB-items, as the LAMB-18 scale. Due to its centrality to the definition of the latent benefits, the criterion employment status was included in this analysis. However, since item selection was based explicitly on this criterion in the same sample (though at a different collection wave), any improvement in validity coefficients might be exaggerated; in other words, these coefficients might capitalize on chance. A slightly more stringent descriptive comparison was available in the form of our measure of life satisfaction. Life satisfaction results from a broad positive appraisal of the quality of one's life as a whole (Glaesmer, Grande, Braehler, & Roth, 2011). Thus, it can be interpreted as a type of cognitive well-being, making the rationale for including it as a criterion variable equivalent to the rationale for using our measure of mental health. At the same time, life satisfaction was not directly employed in the item selection process and differs conceptually from the affective and health-related aspects of well-being

tapped by the mental health measure. For this reason, we chose to provide coefficients comparing relationships to life satisfaction of the full LAMB and LAMB-18 instead of correlations with mental health (Table 3).

Instruments.

Latent and manifest benefits: The LAMB scale originally developed by Muller and colleagues (2005) was presented to participants in its German translation (Selenko et al., 2011). The scale consists of six subscales encompassing six items each. Five of these subscales assess subjective experience of the latent benefits of work: collective purpose, social contact, status, time structure and activity. The sixth subscale assesses (lack of) financial strain as a manifest benefit of employment. Benefits are assessed by asking participants to rank their own position between two opposing statements on a 7-point scale ranging from -3 to 3. The subscale *Collective Purpose* captures participants' feeling of participation in a larger group or goal. The subscale *Social Contact* asks participants to estimate how often they meet and interact with other people. The extent to which participants feel that others rely on and appreciate them is captured in the subscale *Status*. The subscale *Time Structure* asks participants to estimate the extent to which their days and activities are structured, while the subscale *Activity*[1] consists of questions about the extent to which participants feel that their time is filled. *Financial Strain* indicates the extent to which participants feel that financial problems limit their actions and options (see Table 2 for item texts). Mean completion time for the full LAMB scale was 2min 58sec (SD = 1min 26sec).

Employment status: Employment status was measured by asking participants to classify themselves into diverse employment categories (see Table 1). Since the role of unpaid labor in the form of school or college attendance, vocational training, mandatory military

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[1] The original scale description included a reversal of the scale labels for *Activity* and *Time Structure*, as noted by Selenko and colleagues (2011).

service, and similar "job-like" categories is not fully clear, we chose to omit these participants from the criterion validity analysis.

Mental health: Participants' self-reported mental well-being was measured using the 4-item German version (Batinic et al., 2010) of the General Health Questionnaire (Goldberg & Hillier, 1979). Answers were recoded so that higher values on the four-point response scale corresponded to better mental health. Internal consistency for the scale was $\alpha = .84$.

Judgmental data: Items were rated by five researchers familiar with the latent benefits construct, including two co-authors of the present study (expert judgment), as well as two student assistants who were asked to judge the items after being briefed on intended subscale content (face validity). All judges were asked to rank the LAMB items by quality and representativeness for the given latent benefit, leading to rank scores between 1 (best) and 6 (worst).

Life satisfaction: Life satisfaction was measured in the one-year follow-up sample using the German version of the SWLS scale (Glaesmer et al., 2011). Participants rated their agreement with five statements such as "If I could live my life again, I would hardly change anything" on a 7-point scale with the options *completely agree* (7), *agree* (6), *somewhat agree* (5), *neither agree nor disagree* (4), *somewhat disagree* (3), *disagree* (2), and *completely disagree* (1); Cronbach's $\alpha = .91$.

Results

Item selection.

Table 2 summarizes the item qualities of the 36 LAMB items and the final selection decisions. For most scales, item-level validities were low but hypothesis-consistent, though Status and Time Structure included items with relationships to employment status that failed to achieve statistical significance. Agreement between judges on item quality, estimated using the Fisher-z transformed average Spearman Rank correlation, showed substantial variation between scales. We interpreted low inter-rater reliability for a scale as indicating roughly

equal (or equally ambiguous) item quality; thus, we weighted judgment values more heavily in our decision process for subscales where rater-agreement was high (e.g., Status). In general, we followed Stanton and colleagues' (2002) recommended hierarchy of considering first external, then judgmental, then internal scale qualities.

Retention decisions for the subscale Collective Purpose were fairly straightforward: Item 2 was omitted based on low external validities, Items 3-6 remained attractive according to judgment rankings, and of these, Item 3 was omitted due to its relatively high cross-loading.

Item-choice for the subscale Social Contacts was more ambiguous. Correlations with employment status suggested Items 8, 10, and 12, while correlations with mental health were acceptable for all items. Judgment rankings suggested a preference for items 9-12 but were highly inconsistent, indicating only slight differences in item quality. After omitting Item 7 on the basis of its inacceptable (cross-)factor loadings, we reviewed the item content and chose to retain Item 9 over Item 8 because it more clearly captures the concept of social contact with people outside the nuclear family as specified by Jahoda.

The subscale Status showed extremely high inter-rater agreement; in fact, all seven judges assigned the ranks 1 through 3 to the same set of items, agreeing that the remaining items tapped helping behavior more than status. Since other quality indices of the chosen items were acceptable, we based item retention on the judgment rankings.

Criterion validities were fairly uniform for the subscale Activity, leading us to base our decision on a combination of judgment rankings (omission of Items 21 and 23 due to lower median rankings) and factor loadings (omission of Item 24).

The subscale Time Structure was problematic both in terms of criterion validities and judgment rankings. Two of the expert judges explicitly stated that they would omit specific items from the scale (noted in Table 2), arguing that these items reflect conscientiousness more than time structure. Only Item 27 showed consistently acceptable values for all criteria.

We chose to retain Item 29 based on judgment rankings and content but in the face of mixed criterion validities and rather low factor loadings. Item 28 was retained despite one expert vote against it, because of its positive criterion validities and because its content can be argued to relate to subjective time structure demands.

The scale Financial Strain also led to some judgment critiques. While Item 33 unanimously received the highest judgment rank, two items were marked for omission by a judge: Item 32 under the rationale that it tapped the presence of disposable income more than financial strain and Item 34 because of its focus on social comparison. We chose to retain Item 32 despite the former critique, since lack of access to disposable income may be perceived as financial strain in a wealthy society with a strong social security net. Item 32 was preferred to Item 31 because of lower redundancy with Item 33 and less overlap with the concept of social contact. Among the two remaining items, we retained Item 36 due to higher criterion validity and because it was the most direct question about financial security in the scale.

(insert Table 2 about here)

Factorial validity.

Following item selection, the six-factor LAMB structure of the LAMB-18 was tested on the follow-up "cross-validation" sample using confirmatory factor analyses with maximum likelihood estimation. Results showed acceptable model fit, with comparative fit index (CFI) = .959, Root Mean Square Error of Approximation (RMSEA) = .062, and Tucker-Lewis Index value (TLI) = .948 (cf. Schermelleh-Engel, Moosbrugger, & Müller, 2003), though the χ^2-test was statistically significant; $\chi^2(120) = 279, p < .001$. Factor loadings were .80 or higher for all subscales except Social Contact (.82, .80, .57) and Time Structure (.90, .63, .39). Correlations between latent factors ranged from $r = .16$ to $r = .51$ ($M = .33$). Data and full outputs can be found in the electronic supplementary materials.

Criterion validities.

Table 3 shows criterion validities for the full LAMB and LAMB-18 scales in the follow-up sample. All validity coefficients for the LAMB-18 scale were equal to or greater than coefficients calculated on the basis of the full set of items. This was true both for employment status (which had been drawn upon in the course of item selection) and for life satisfaction (which had not been considered in item selection; in fact, the life satisfaction scale was not administered at T1).

Study 2

Overall, the omission procedure in Study 1 seems to have led to a shortened scale with acceptable factorial structure and improved scale content and criterion-based validity. Nevertheless, the cross-validation procedure in Study 1 raises a few concerns. First, while factorial structure of the shortened scale was tested on a different sample than the one used for item selection, this does not constitute a true cross-validation. The two samples were dependent, meaning that any idiosyncrasies in the participant sample could be expected to repeat themselves throughout both data sets, leading to unrealistically consistent and possibly biased results. True replication of the study on an independent sample is necessary in order to obtain a more realistic measure of the factor structure of the shortened LAMB version.

A second limitation of the "virtual" item omission approach used by Study 1 is, of course, that the effects of omitting items in analysis are not necessarily identical to omitting items in practice. Though the LAMB-18 showed satisfactory structural fit, being presented with items embedded in a thematically consistent six-item group may have led participants to answer items within a subscale more consistently than they would when presented with fewer thematically matched items. Effects of item order or length of the scale might also change response behavior when only part of a scale is presented. Ultimately, before assuming that the statistical characteristics of the LAMB-18 generalize beyond the context of the full LAMB scale, it seems prudent to allow an independent sample of participants to complete the instrument in its shortened form in practice.

These two aspects alone would justify the need for a follow-up validation study using the shortened LAMB scale. However, we chose to make one further item revision which necessitated a follow-up study. Beyond the relatively large number of items in the original scale, the response format using poles labeled with positive and negative formulations of the same sentence is less than parsimonious. Since the German translation of the scale already contains almost 40% more text than the original English version (3794 vs. 2731 characters), changing the response format to reduce as much redundant text as possible seems an effective way of lessening cognitive load and response time for participants without sacrificing content. Thus, our final revised LAMB-S scale consisted of the LAMB-18 items presented with a shortened response format (unipolar items with standard 7-point agreement scale).

In short, Study 2 set out to address the psychometric properties of the LAMB-S scale in a new, truly independent sample. The study's main goals were a) comparison of the original LAMB-18 factor structure to the LAMB-S structure in a new set of observations, and b) calculation of criterion-related validities of the LAMB-S in this new sample.

Methods

Participants and procedure.

Participants were again recruited through the same German survey panel and completed the online survey in October 2016. Though 868 participants began the questionnaire, only participants who correctly answered the control question (consisting of instructions to select a specific answer option) and completed all items of the short LAMB version with some variation in their responses ($SD > 0$) were included. This led to a sample of $n = 677$; demographic characteristics are shown in Table 1. In comparison to Study 1, the Study 2 sample was slightly older and included a substantially larger proportion of participants who were out of the labor force.

Validity analyses.

In order to determine whether presenting only the shortened version of the LAMB scale outside the context of the entire scale changed the functioning of the scale's items, confirmatory factor analyses tested for configural, factorial, and intercept invariance across the data sets of Study 1 (T1, LAMB-18) and Study 2 (LAMB-S). In the configural invariance model, size of factor loadings was free to vary but factorial structure was constrained to be equal in both data sets; in contrast, the factorial invariance model additionally constrained factor loadings to be equal across data sets. The intercept invariance model additionally constrained item intercepts to be equal, a prerequisite for interpreting mean differences between groups. While $\Delta\chi^2$ is a common test for invariance, problems with this test lead some authors to recommend either ΔCFI > .01 (Cheung & Rensvold, 2002) or ΔCFI > .005 and ΔRMSEA $\geq$ .010 (Chen, 2007) as a preferable alternative criterion to rule out invariance. For this reason, we report and interpret both the results of the $\Delta\chi^2$ test (α-level 5%) as well as whether the values of ΔCFI and ΔRMSEA exceed the suggested limits.

Criterion validities in the Study 2 sample were compared with available validities for the full LAMB and the LAMB-18 from Study 1 (employment status and life satisfaction). In addition to these variables, we added two other variables not measured in Study 1. First, we included a measure focused on affective components of well-being (the WHO well-being scale). We expected relationships between latent benefits in this scale to echo the results of life satisfaction and mental health found in Study 1. Since three of the six subscales (Collective Purpose, Social Contact, and Status) could be considered aspects of the quality of an individual's social integration, we also included a measure of social isolation with the expectation that it should be negatively related to these three subscales.

Instruments.

Latent and manifest benefits: Participants completed the LAMB-S scale, consisting of the 18 LAMB items identified in Study 1 presented with a revised response format. They indicated their level of agreement on a scale from *disagree* (1) to *agree* (7). The matching

contradictory second statement from the original LAMB scale was omitted. Mean completion time for the LAMB-S scale was 1min 47sec (SD = 1min 58sec).

Employment status: Employment status was assessed dichotomously as in Study 1, with participants who reported being in school, college, or vocational training excluded from analysis.

Life satisfaction: Life satisfaction was assessed via the 5-item German SWLS, as in Study 1. Cronbach's alpha in the Study 2 sample was α = 92.

Well-being: Well-being was assessed using the five-item WHO Well-Being Index (World Health Organization, 1998). Participants rated how often they had felt aspects of well-being (e.g. being "cheerful and in good spirits" or "calm and relaxed") over the last two weeks by choosing one of the options *at no time* (0), *some of the time* (1), *less than half of the time* (2), *more than half of the time* (3), *most of the time* (4), or *all of the time* (5); Cronbach's α = .92.

Social isolation: Social isolation was assessed with the loneliness scale of Hughes, Waite, Hawkley, and Cacioppo (2004). On a scale ranging from *very often* (5), *often* (4), *sometimes* (3), *seldom* (2), to *never* (1), participants rated how often they felt socially isolated, like "outsiders," or that they were missing the company of others (3 items, Cronbach's α = 83.).

Results

Factorial structure.

The factor structure of the LAMB-S was tested using confirmatory factor analysis with maximum likelihood estimation. Results showed acceptable model fit, with CFI = .972, RMSEA = .058, and TLI = .964 (cf. Schermelleh-Engel et al., 2003), though the χ^2-test was statistically significant; $\chi^2(120) = 395$, $p < .001$. Standardized factor loadings for the subscale items were uniformly high for the subscales Collective Purpose (.88, .92, .96), Status (.88, .92, .93), and Financial Strain (.91, .94, .94). They were slightly lower for the subscales

Activity (.85, .85, .88) and Social Contact (.76, .78, .86), while Time Structure showed the

most heterogeneous loadings (.58, .77, .89). Correlations between the latent factors ranged

from $r = .31$ to $r = .63$ ($M = .45$); Social Contact showed the strongest relationships with

Collective Purpose ($r = .63$) and with Status ($r = .61$), while Financial Strain showed the

weakest relationships with Activity ($r = .31$) and with Status ($r = .33$).

Table 4 summarizes the results of the multi-group comparisons. A test of factorial

invariance was performed to determine the extent to which LAMB-18 items from the Study 1

follow-up data set showed the same factor loading pattern when they were presented in

isolation, with a revised response format (LAMB-S) in Study 2. Model fit of both the

configural invariance model and the factorial invariance model were acceptable (Schermelleh-

Engel et al., 2003). Both the $\Delta\chi^2$-test and ΔCFI / ΔRMSEA failed to indicate a substantial

change in model fit, leading to the assumption of factorial invariance. The assumption of

intercept invariance, however, was not clearly supported. While $\Delta\chi^2$-test showed a statistically

significant result and the ΔCFI value exceeded Chen's (2007) .005 cutoff value, suggesting

lack of invariance, Chen's other invariance criterion (ΔRMSEA $< .01$) was met, as was the

ΔCFI cutoff (.01) suggested by Cheung and Rensvold (2002). Data and full outputs can be

found in the electronic supplementary materials.

(insert Table 4 about here)

Criterion-validities.

Scale-level criterion-related validities of the revised LAMB-S scale are reported next

to analogous results from Study 1 (Table 3). For the criterion life satisfaction, the LAMB-S

scale showed higher validity coefficients than both the full LAMB and the LAMB-18 scales

across all subscales. In terms of employment status, the LAMB-S outperformed the full

LAMB and LAMB-18 for the subscales Collective Purpose, Social Contact, and Status. It

showed slightly lower validities, however, for the subscales Time Structure and Financial

Strain, as well as a substantially lower validity coefficient for the subscale Activity. LAMB-S

validities in regard to well-being ($M = 3.8$, $SD = 1.17$) were roughly comparable to life satisfaction validities, though the correlations with Status, Activity, and Financial Strain had somewhat lower absolute values. Contrary to expectations, the relationships between the loneliness scale ($M = 1.4$, $SD = 0.95$) and the LAMB-S were fairly uniform across all scales.

Discussion

The present study drew on a combination of statistical and content criteria in order to shorten and revise Muller and colleagues' Latent and Manifest Benefits of Work (Muller et al., 2005) scale (Study 1), before validating the resultant LAMB-S scale on an independent sample (Study 2). Group comparisons of the LAMB-S scale from Study 2 with the corresponding LAMB-18 items from Study 1 showed clear configural and factorial, but not intercept invariance. In other words, actually administering the shortened version to participants with a revised response format produced no unexpected changes in the factor loadings of the scale, but mean comparisons between LAMB-18 and LAMB-S scores may be unadvisable. During item selection, a few problems with the original scale were identified. First, the subscale Status in the original version strongly taps helping behavior, which constitutes a misfit to Jahoda's definition as well as to common conceptions of social or occupational status (e.g., Coie, Dodge, & Coppotelli, 1982; Ganzeboom, De Graaf, & Treiman, 1992). Even the items remaining in the shortened version capture only a very local aspect of status (i.e. status among friends and "the people around me"), though this immediate experience of status may arguably have more impact on mental health than abstract perceptions of one's status in a broader social hierarchy. Similarly, several items in the original subscale Time Structure seem to be more related to conscientiousness than to the intended concept. In contrast, the shortened scale focuses much more directly on the level of structure experienced by participants in their daily lives. As a whole, we feel that the reduction of scale length corresponded to an improvement in content validity for these subscales.

This improvement was echoed in the LAMB-S scale's criterion validities. For most subscales, selecting items based in part on their external item qualities led to higher validities in the shortened scale than in the original version – even though the shortened scale was administered to a new sample and validities were assessed using a different indicator of well-being (life satisfaction) than the indicator considered during item selection (mental health). The only coefficient that saw a substantial drop in the final LAMB-S version was the subscale Activity, and this drop was only observed for validity as related to employment status, not as related to life satisfaction.

Relationships to general well-being were roughly comparable to validities for life satisfaction, though the subscales Activity and Financial Strain showed somewhat lower absolute values. To our knowledge, there is no strong theoretical foundation that might explain this difference; perhaps level of activity and financial strain are simply stronger predictors of life satisfaction than of subjective well-being.

In contrast to our expectations, loneliness showed no discriminant/convergent validity in relation to the socially oriented LAMB-S subscales (Collective Purpose, Social Contact, Status) and the scales with a weaker theoretical link to social integration ($.41 < |$ all $r| < .47$). While the theoretical underpinnings of this postulated link are not as strong as for the other validity coefficients, this lack of variation raises a concern that the LAMB may tap a global positive/negative affect dimension more than desired.

This concern is closely related to a general limitation of our study. Online survey methodology relies primarily (in our case exclusively) on self-reports. Thus, the items of the LAMB appropriately focus on participants' subjective experience of the different latent benefits. This is in line with most other quantitative measures of the construct. Nevertheless, Jahoda's theory implies physically observable differences in experiences for at least five of the six constructs measured by the LAMB scale (since Collective Purpose can be construed as a purely subjective experience, the potentially objective nature of this subscale is debatable).

To our knowledge, no attempts have yet been made to quantify the objective predecessors of subjective experience of the latent benefits. In an age of big data and massive self-tracking (e.g., Boyd & Crawford, 2012; Manovich, 2012; Swan, 2013), objective indicators of social contact, activity, time structure, or even status and financial strain may be within feasible reach of researchers. It is precisely these behavioral indicators – in addition to employment situation and mental health – that constitute the nomological net surrounding the latent benefits. We believe that instruments assessing the latent benefits can profit greatly through the assessment of these external indicators in future validation research, and can help us better understand the level of response bias and overall affectivity currently assessed by the LAMB(-S).

We would like to note one final limitation in the form of demographic differences between our Study 1 and Study 2 samples. Because Study 1 was strongly focused on effects of the working environment, more than half of all participants were employed. In contrast, Study 2 drew upon a sample that was roughly equally divided between employed participants and participants who were out of the labor force. This latter distribution is better suited to answer questions regarding Jahoda's theory (premised on the benefits of working versus not working). It also, however, makes differences between validity coefficients more difficult to interpret. Particularly in the case of employment status, higher validities may be a side effect of different frequency distributions and should thus be interpreted with caution. This caveat does not apply as strongly to the life satisfaction scale, where means and variances were shown to be roughly equivalent between samples.

Conclusions

Despite these remaining sources of uncertainty, we feel that the LAMB-S is a workable alternative to the full LAMB scale for researchers interested in exploring the latent and manifest benefits of work. The LAMB-S showed satisfactory fit to the postulated six-factor model, as well as satisfactory internal consistencies and relationships with relevant

external criteria. For some subscales (particularly the subscales Status and Time Structure),

we argue that LAMB-S content is actually closer to Jahoda's theory than the original full

version. For other subscales (e.g., Social Contact or Activity), reducing the scale length may

have some disadvantages in decreasing scale breadth. Overall, however, when marked

benefits result from using a shorter instrument, researchers may consider the good content and

criterion validities of the LAMB-S scale to counterbalance possible trade-offs between length

and accuracy.

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Table 1

Mean age and frequency distribution for gender and employment status of the samples in

Studies 1 and 2

Variables/values	Study 1 T1	Study 1 follow-up	Study 2
	n=1,054	*n*=348	*n*=677
Gender			
Male	493 (47%)	163 (47%)	374 (55%)
Female	538 (51%)	184 (53%)	299 (44%)
Not reported	23 (2%)	1 (0%)	4 (1%)
Employment status			
Not employed	282 (27%)	79 (23%)	301 (45%)
Job-like status	199 (19%)	43 (12%)	49 (7%)
Other	83 (8%)	36 (10%)	252 (37%)
Full-time employment	556 (53%)	189 (54%)	254 (38%)
Part-time employment	120 (11%)	47 (14%)	51 (7%)
Freelance/self-employed	73 (7%)	19 (5%)	61 (17%)
Not reported	23 (2%)	14 (4%)	10 (1%)
Mean age (SD)	33.24 (10.30)	36.51 (11.37)	46.71 (13.28)

Note. "Job-like status" refers to participants who reported attending
school, college, vocational training, or mandatory military/civilian service.

Table 2

Item texts and indicators of external, judgmental, and internal item qualities (Stanton et al., 2002) upon which item selection for the LAMB-S scale

was based.

First statement of LAMB item	External		Judgmental				Internal		
	Employ-ment Status	Mental Health	Best rank	Worst rank	Median Rank	r_s	M (SD)	Factor loading	Highest cross-loading
Collective Purpose						.38			
1. I usually feel very much a part of my community/ In der Regel empfinde ich mich in sehr starken Maße als Teil meines sozialen Umfelds	.11	.19	3	6	5		4.9 (1.50)	.54	.49
2. I regularly participate in fundraising events for my church, sporting, or community group/ Ich beteilige mich regelmäßig an Wohltätigkeitsveranstaltungen meiner Kirche, meines Sportvereins bzw. meiner Kommune	.00	.07	2	6	5		2.8 (2.06)	.48	.32
3. I contribute greatly to my community/ Ich trage in hohem Maße etwas zu meinem sozialen Umfeld bei	.12	.10	1	5	4		4.5 (1.57)	.74	.51
4. I often feel that I make a meaningful contribution to society/ Ich habe oft das Gefühl, dass ich einen sinnvollen Beitrag für die Gesellschaft leiste	**.13**	**.19**	**1**	**4**	**1**		**4.4 (1.66)**	**.84**	**.37**
5. I often feel a valuable part of society/ Ich nehme mich häufig als einen wertvollen Teil der Gesellschaft wahr	**.12**	**.24**	**2**	**4**	**2**		**4.3 (1.55)**	**.83**	**.38**
6. I hold a valuable position in society/ Ich habe eine wertvolle Stellung in der Gesellschaft inne	**.12**	**.20**	**1**	**6**	**4**		**4.1 (1.63)**	**.77**	**.31**
Social Contact						-.14			

7. I regularly engage in social activities with others/ Ich beteilige mich regelmäßig an sozialen Aktivitäten	.03	.14	2	6	4	3.9 (1.84)	.55	.64
8. I usually spend a lot of time with other people/ Ich verbringe für gewöhnlich viel Zeit mit anderen Menschen	.11	.18	1	6	4	5.0 (1.65)	.75	.47
9. I often meet new people/ Ich lerne oft neue Leute kennen	**.05**	**.18**	**1**	**6**	**3**	**4.3 (1.72)**	**.79**	**.43**
10. I often go out and meet with others/ Ich gehe oft aus und verabrede mich	**.11**	**.17**	**1**	**6**	**2**	**3.9 (1.72)**	**.74**	**.32**
11. I regularly engage in social activities with people I don't know/ Ich beteilige mich regelmäßig an gesellschaftlichen Aktivitäten mit Menschen, die ich bisher nicht kenne	.02	.16	1	5	3	3.3 (1.64)	.72	.49
12. I usually have a lot of opportunities to mix with people/ Ich habe normalerweise viele Möglichkeiten unter Leute zu kommen	**.10**	**.23**	**1**	**6**	**3**	**4.6 (1.67)**	**.74**	**.42**
Status						.85		
13. My friends usually value my company/ Meine Freunde legen üblicherweise großen Wert auf meine Gesellschaft	**.08**	**.09**	**2**	**3**	**3**	**5.3 (1.20)**	**.79**	**.39**
14. I am often valued by the people around me/ Ich erfahre von den Leuten um mich herum häufig Wertschätzung	**.08**	**.19**	**1**	**2**	**1**	**5.2 (1.23)**	**.76**	**.35**
15. I am usually important to my friends/ Ich bin meinen Freunden für gewöhnlich wichtig	**.04**	**.12**	**1**	**3**	**2**	**5.5 (1.18)**	**.84**	**.34**
16. I often help others/ Ich helfe oft anderen	.04	-.03	4	6	6	5.6 (1.24)	.72	.31
17. My assistance is greatly welcomed by my family and friends/ Meine Unterstützung wird von meiner Familie und meinen Freunden sehr gerne angenommen	.07	.06	4	6	5	5.7 (1.16)	.82	.29
18. People often rely on me for help/ Menschen verlassen sich	.07	.03	4	6	5	5.5 (1.23)	.73	.32

häufig auf meine Hilfe

Activity						.20			
19. I often have nothing to do/ Ich habe häufig nichts zu tun	**.27**	**.22**	**1**	**5**	**2**		**5.5 (1.65)**	**.83**	**-.35**
20. I often wish I had more things to do to fill up the time in my days/ Ich wünsche mir häufig, dass ich mehr zu tun hätte, um meinen Tag zu füllen	**.24**	**.15**	**1**	**6**	**2**		**5.5 (1.75)**	**.78**	**-.31**
21. I often have a lot of time on my hands/ Ich habe oft viel Zeit zur Verfügung	.21	.11	1	6	5		5.0 (1.68)	.83	-.23
22. There is usually too much spare time in my day/ Typischerweise habe ich am Tag zu viel freie Zeit	**.28**	**.11**	**2**	**5**	**3**		**5.5 (1.56)**	**.88**	**-.32**
23. Time usually drags for me/ Normalerweise zieht sich die Zeit für mich sehr in die Länge	.23	.19	4	6	5		5.7 (1.52)	.75	-.37
24. I usually keep busy most of the day/ Ich bin normalerweise den ganzen Tag beschäftigt (reverse scored)	.21	.15	1	6	2		5.3 (1.69)	.65	-.30
Time Structure						.50			
25. I usually do all the things I have to/ Normalerweise erledige ich alles, was ich zu erledigen habe	.01	.22	1	6**	5		4.6 (1.70)	.69	.21
26. I always catch up with the things I have to do/ Ich erledige immer alles fristgerecht	.05	.16	2	6	4		5.0 (1.62)	.71	.22
27. My days are usually well organized/ Meine Tage sind normalerweise gut organisiert	**.18**	**.26**	**1**	**3**	**1**		**4.8 (1.51)**	**.86**	**.30**
28. I find it useful to structure my time/ Ich finde es nützlich meine Zeit zu strukturieren	**.12**	**.12**	**2**	**6***	**4**		**5.2 (1.43)**	**.57**	**.30**
29. I have a good balance in my day between responsibilities and free time/ Mein Tageablauf weist ein ausgeglichenes	**.09**	**.25**	**1**	**4**	**3**		**4.1 (1.63)**	**.47**	**.21**

Verhältnis zwischen Verpflichtungen und freier Zeit auf

30. I rarely need others to push me to do things/ Es ist nur selten nötig, dass andere mich dazu antreiben, etwas zu erledigen	.18	.24	2	6**	6	4.9 (1.65)	.69	.25

Financial Strain						.44		
31. My income usually allows me to socialize as often as I like/ Üblicherweise erlaubt es mir mein Einkommen, so oft auszugehen, wie ich möchte	-.26	-.28	2	6	4	4.0 (2.00)	.91	.26
32. I often have enough money to buy treats for myself/ Ich habe häufig genügend Geld um mir besondere Vergnügungen leisten zu können	**-.24**	**-.29**	**3**	**5***	**4**	**4.1 (1.92)**	**.94**	**.24**
33. My income usually allows me to do the things I want/ Mein Einkommen erlaubt es mir normalerweise die Dinge zu tun, die ich tun möchte	**-.28**	**-.30**	**1**	**1**	**1**	**3.8 (1.88)**	**.92**	**.27**
34. My income doesn't restrict me from living as well as my friends/ Mein Einkommen hindert mich nicht daran, genauso gut zu leben wie meine Freunde	-.25	-.32	2	6*	6	3.5 (1.84)	.84	.25
35. From the income I receive I often have money left for savings/ Von meinem Einkommen bleibt oft genug Geld zu sparen übrig	-.19	-.26	2	6	3	4.4 (2.09)	.83	.22
36. My level of income usually allows me to make plans for the future/ Die Höhe meines Einkommens erlaubt es mir für gewöhnlich, Pläne für die Zukunft zu machen	**-.23**	**-.32**	**2**	**5**	**4**	**4.1 (1.93)**	**.86**	**.25**

Note. r_s indicates the average Spearman correlation between raters' item rankings, as calculated using the Fisher z-transformation. Factor loadings were calculated using exploratory factor analysis (PAF) with Promax rotation and based on the Study 1 T1 sample ($n = 1054$).
Items selected for retention are shown in bold font. Item texts are given in English (Muller et al., 2005) and German (Batinic et al., 2010; Paul & Batinic, 2010).

Table 3

Criterion-related validities of the full LAMB (L) and LAMB-18 (L-18) scales (Study 1 follow-up), as well as for the LAMB-S (L-S) scale (Study 2).

	Employment status			Life satisfaction			Well-being	Loneli-ness
Subscale (Cronbach's α)	L	L-18	L-S	L	L-18	L-S	L-S	L-S
	n=291	*n*=291	n=627	*n*=348	*n*=348	*n*=675	*n*=671	*n*=674
Collective Purpose (.94)	.21	.25	.29	.35	.36	.51	.49	-.43
Social Contact (.84)	.25	.24	.28	.38	.37	.41	.40	-.47
Status (.94)	.17	.18	.24	.15	.22	.41	.37	-.44
Activity (.90)	.40	.43	.32	.24	.25	.38	.28	-.41
Time Structure (.77)	.20	.20	.19	.33	.33	.46	.48	-.45
Financial Strain (.95)	-.33	-.33	-.30	-.52	-.53	-.61	-.42	.41

Note. Cronbach's α's refer to the LAMB-S scale. Coefficients are Pearson correlations, with the exception of coefficients for employment status, which are point-biserial correlations (1 = employed, 0 = not employed). The Study 2 sample contained a markedly larger proportion of participants out of the labor force (see Table 1) than the follow-up sample from Study 1; however, means and standard deviations of life satisfaction scores were roughly equivalent in the Study 1 follow-up ($M = 4.2$, $SD = 1.39$) and Study 2 ($M = 4.4$, $SD = 1.48$) samples, $t(1041) = 1.09$, $p = .28$.

Table 4

Tests for measurement invariance of the LAMB-18 as administered in Study 1 (follow-up data set, n = 348) and the LAMB-S in Study 2 (n = 677).

Model	χ^2	*df*	CFI	TLI	RMSEA	$\Delta\chi^2$	Δdf	*p*	ΔCFI
Configural invariance	674	240	.968	.959	.042				
Factor loading invariance	690	252	.968	.961	.041	16	12	.206	< .001
Intercept invariance	829	270	.959	.954	.045	155	30	< .001	.009

Note. CFI=comparative fit index; TLI=Tucker–Lewis Index; RMSEA=root mean square error of approximation; $\Delta\chi^2$=chi-square difference to the configural invariance model; ΔCFI=CFI difference to the configural invariance model; *p* = probability result for the model comparison χ^2 test. Confirmatory factor analysis with maximum likelihood estimator and loadings of the first indicator for each latent factor fixed to one.