

# Measuring Sense of Indebtedness in Second-Generation Immigrants in Switzerland

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**Abstract.** Sense of indebtedness toward parents (SIP) refers to feelings of debt to give back to parents for their migration-related sacrifices in second-generation immigrants. Based on Kang (2010), we developed a German SIP scale to measure these feelings. The purpose of this study was threefold: (1) to provide evidence of the theoretical factor structure underlying SIP, (2) to test SIP's measurement invariance in four immigrant groups, and (3) to shed light on the validity of SIP. The sample included  $N = 492$  second-generation immigrants (66% female,  $M_{\text{age}} = 32.39$ ,  $SD_{\text{age}} = 10.46$ ) in Switzerland. The results showed good reliability, confirmed the theoretical one-factor model, and supported partial scalar invariance across four immigrant groups. Further analysis provided evidence for the SIP's discriminant and incremental validity. The measure Sense of Indebtedness Toward Parents is a valuable contribution to the ongoing research on intergenerational relations in immigrant families.

**Keywords:** second-generation immigrants, intergenerational relations, measurement invariance, sense of indebtedness, social support



German-speaking countries in Central Europe have had a massive influx of immigrants in the last decades (for Switzerland: Federal Statistical Office [FSO], 2021). These immigrants have experienced many challenges in the process of migration, including language barriers or loss of their social network. Many immigrants face further burdens in the host country, such as physically demanding blue-collar jobs (for Switzerland: see FSO, 2020b). One of the main reasons for immigration and the acceptance of these difficulties is the desire to have a better life for the immigrants' families, especially for their children (for Switzerland: FSO, 2018). For these second-generation children, in turn, experiencing parental sacrifices can cause feelings of indebtedness.

Based on the Confucian concept of filial piety, Kang (2010) developed the Sense of Indebtedness toward Parents (SIP) scale to measure these feelings of indebtedness and confirmed that children of Korean parents in the United States experienced them toward their parents (Kang & Larson, 2014). Migrant-specific difficulties and hardships are pronounced in many immigrant groups. Hence, we argue that the sense of indebtedness is a relevant phenomenon for immigrants' children from various ethnic backgrounds.

We aim to provide evidence that scores derived from a German version of the SIP scale are reliable and validly

represent the complex feelings of indebtedness toward parents among second-generation adult immigrants from various ethnic backgrounds.

## The Original Sense of Indebtedness Toward Parents Scale

Kang and Larson defined sense of indebtedness as “a person's recognition of his or her immigrant parents' child-centered immigration aspiration and their sacrifice for the sake of children” (2014, p. 561). The concept builds on the indebtedness theory by Greenberg (1980). Here, indebtedness was defined as “a state of obligation to repay another” (Greenberg, 1980, p. 4).

Based on this theory and the Confucian concept of filial piety (Ho, 1996), Kang (2010) conducted focus groups with Korean Americans and developed a preliminary 24-item SIP scale. This scale was reduced to 12 items that best represented the description of sense of indebtedness in in-depth interviews with Korean American young adults (Kang, 2010). These items measured on a one-factor scale emotional, motivational, and cognitive aspects of the perception of the sacrifices immigrant parents had made for their children.

Notably, from their interviews, Kang and Larson (2014) concluded that children of immigrants did not evaluate their parents' sacrifice positively until adolescence. Moreover, their sense of indebtedness continued to

develop throughout the transition into young adulthood. However, the authors have not investigated the construct in older age groups such as middle adulthood. Therefore, we did not make assumptions regarding the association of the sense of indebtedness with age in middle adulthood. Kang and Raffaelli (2015) suggested that the sense of indebtedness is stronger among women due to socialization into culturally defined gender roles. Kang et al. (2010) further pointed to a higher sense of indebtedness in adult children, whose parents sacrificed more for them. Therefore, we consider gender and degree of parental sacrifice as predictors of sense of indebtedness. Additionally, we will investigate the relation between age and sense of indebtedness.

### The Relevance of Sense of Indebtedness in Intergenerational Relationships

A seminal theoretical approach in intergenerational relationships is the Solidarity Model by Bengtson and colleagues (e.g., Bengtson & Roberts, 1991). This model has often been criticized, for instance for its one-dimensional orientation (i.e., low to high solidarity) and the lack of psychological factors (Fingerman et al., 2013). With the inclusion of emotional and motivational factors, the SIP scale fulfills a request by Fingerman et al. (2013) that these kinds of factors related to family support will be more fully incorporated into research.

According to Kang and Larson (2014), sense of indebtedness was the result of adult children's active reattribution of their past experiences in the family. Thus, it adds a factor to research on intergenerational relationships that includes the past through the lens of individual construction. This enriches the strongly present-oriented, sociological Solidarity Model.

### The Relevance of Sense of Indebtedness in Second-Generation Immigrants From Various Ethnic Backgrounds

Although sense of indebtedness is rooted in the Confucian concept of filial piety (Kang, 2010), we argue that it is applicable to immigrants from diverse ethnic backgrounds. Moreover, we argue that the specific burdens of migrant families make it necessary to develop a measure that refers to the experiences of these families.

The indebtedness theory assumes that the degree of sense of indebtedness depends on the extent of the costs incurred by the donor (Greenberg, 1980). Children in migrant families experience specific hardships and sacrifices made by their parents (Foner & Dreby, 2011). Boski

(2013) described the situation of migrants in Western societies, especially those who came for economic reasons, as a self-sacrifice undertaken for long-term goals, such as a better life for their family. They left behind their social network and arrived in a country, in which they often did not know the language. Characteristics for this group in the host country often include low-skilled jobs, a high proportion of extra work hours, uncertain legal status, and other hardships (for Switzerland: see FSO, 2020a). These experiences are common among immigrants from diverse ethnic backgrounds but different from indigenous individuals. Recent discussions in this field further pointed to specific challenges for individuals in immigrant families caused by different experiences between the first and the second generation (Foner & Dreby, 2011). A migrant specific measure for feelings of debt toward parents is therefore warranted in intergenerational research. We aim to fill this gap in the study of intergenerational research in immigrant families with the new SIP measure.

Beside Kang (2010), further qualitative studies have illustrated sense of indebtedness. Recent American qualitative studies demonstrated that second-generation immigrants from diverse ethnic backgrounds recognized and appreciated their parents' sacrifices (Foner & Dreby, 2011; Nesteruk, 2021). Regarding European research, Turjanmaa and Jasinskaja-Lahti (2020) indicated in their qualitative study from Finland that most of the interviewed second-generation adolescents expressed feelings of indebtedness toward their parents regardless of their ethnic background (i.e., Africa, Middle East, Europe, former Soviet Union, the United States, Asia). These qualitative studies have underlined that sense of indebtedness toward parents is a relevant global phenomenon of intergenerational relationships in migrant families. Consequently, we expected that sense of indebtedness toward parents is applicable to intergenerational relationships in immigrant families from diverse ethnic backgrounds in different host societies.

### Distinguishing Sense of Indebtedness From Other Constructs

At first glance, sense of indebtedness shows similarity to the established concepts of filial obligations and reciprocity. Both are central constructs in the Solidarity Model (Bengtson & Roberts, 1991), as well as in the Confucian concept of filial piety (Ho, 1996), and represent culturally defined norms. Filial obligations describe how adult children should behave toward and support their parents (Rossi & Rossi, 1990). Reciprocity describes a social norm stating that help and support a person gives to another person will be given back over time (Gouldner, 1960). This means that filial obligations and reciprocity express what *should* be done. As outlined

above, sense of indebtedness covers emotional, motivational, and cognitive interpretations by the children (Kang et al., 2010), and thus, refers to why a person *wants* to give back.

Nevertheless, there is a strong overlap between the concepts. Following Kang and Larson (2014), family obligations and reciprocity as normative aspects of the intergenerational relationships should function as predictors of SIP. When cultural norms of supporting parents and giving back are high, SIP should also be high.

Reciprocity has also been investigated in terms of a real or perceived balance between give and take (Schwarz et al., 2010; Uehara, 1995). Then, reciprocity focuses on social support that is currently being exchanged. Sense of indebtedness covers broader sacrifices and burdens of parents, not specific acts of social support. Additionally, it evaluates memories of behavior in the past. Therefore, we expected reciprocity's association with SIP to be positive but weak when reciprocity is measured as current balance in exchange of support because neither the time frame nor the content of the measures strongly overlap with SIP.

Research has shown that filial obligations were positively associated with aspects of support given to parents (Schwarz et al., 2005; Silverstein et al., 2012). Since sense of indebtedness expressed motivational aspects to support parents, we also expected a positive association with support given to parents. Based on the argumentation that sense of indebtedness is a construct distinct from filial obligations, we further hypothesized that it shows an association with support given to parents that goes beyond the effect of filial obligations.

In the German language, the expressions for *in der Schuld stehen* [indebtedness] and the emotion *Schuld* [guilt] show strong similarity. However, guilt is a self-conscious emotion that arises when a person does something wrong or transgresses rules. Even when guilt is conceptualized as an interpersonal phenomenon (Baumeister et al., 1994), causes of guilt are damages and loss or stress done to another person. SIP refers to the sacrifices of the parent but not to misbehavior of the adult child. With respect to guilt in intergenerational relationships, Kalmijn (2020) summed it up as an unclear theoretical construct, which has rarely been investigated. Moreover, research so far has only used 1-item measures of guilt between parents and children (Boll & Filipp, 2002; Kalmijn, 2020). Therefore, we decided not to validate the SIP measure against guilt measures.

In sum, we expected that SIP is positively related to filial obligations, reciprocity, and support given to parents.

## The Present Study

The present study aims to provide evidence that the German version of the SIP scale produces reliable and

valid scores among second-generation immigrants of various ethnic backgrounds. The SIP scale (Kang, 2010) is designed for research on intergenerational relationships in immigrant families. Based on the theoretical background we defined four hypotheses for the present study:

*Hypothesis 1:* The German version of SIP scale is a one-factor scale represented by 12 items.

*Hypothesis 2:* The SIP scale is strictly invariant across ethnic groups.

*Hypothesis 3:* SIP is (a) positively associated with filial obligations, (b) positively associated with reciprocity, (c) stronger among women than men, and (d) higher among adults whose parents have sacrificed more.

*Hypothesis 4:* SIP is in addition to filial obligations positively associated with support given to parents.

## Method

### Procedure

We conducted an online survey in the German-speaking part of Switzerland. To obtain a diverse sample, we recruited participants by advertising in various places, such as at a Swiss university of applied sciences, a job center, an organization for second-generation immigrants in Switzerland, a center for cultural and language integration, as well as through social media (Facebook and WhatsApp). We included participants who (1) had at least one parent who migrated to Switzerland and (2) either were born in Switzerland or moved there with their parents before the age of 6.

### Participants

Our sample consisted of  $N = 492$  adult children of immigrants in Switzerland (66% self-identified women, 34% self-identified men,  $M_{\text{age}} = 32.39$ ,  $SD = 10.46$ ). Because we had a gender-specific hypothesis, we excluded four participants that identified themselves as not gender binary. Seven participants (1%) had finished obligatory school,  $n = 287$  participants (59%) had finished secondary school (e.g., vocational training), and  $n = 198$  (40%) had a tertiary degree (i.e., higher education). The participants' aforementioned education level is slightly higher than the level described in official Swiss records for educational distribution among second-generation immigrants: finished obligatory school ca. 20%,

finished vocational training ca. 50%, and finished a tertiary degree ca. 30% (FSO, 2019a). These statistics included adolescents younger than 18 years, whose highest degree is obligatory school, whereas we only included adult participants who already finished vocational training or studies. Thus, the current sample represented the educational level of second-generation migrants in Switzerland well.

The household income in Swiss francs per year in our sample was distributed as follows: less than 50,000 ( $n = 88$ , 18%), 50,000–80,000 ( $n = 119$ , 24%), 80,000–120,000 ( $n = 132$ , 27%), and more than 120,000 ( $n = 153$ , 31%). We acknowledge that this household income seems rather high. Nevertheless, it is comparable to the Swiss median annual household income per year for one person (~95,000 CHF, FSO, 2019b). More than half of our participants were not married ( $n = 298$ , 61%),  $n = 135$  (27%) were married or in a registered partnership, and the remaining 12% were separated, divorced, or widowed ( $n = 59$ ). About one-third of our participants have one or more children ( $n = 147$ , 30%).

Most of our participants grew up with two parents who were born outside of Switzerland ( $n = 356$ , 72%; this variable used as a proxy for parental sacrifice) and 61% ( $n = 301$ ) with parents who migrated from the same region. Furthermore, 3% ( $n = 13$ ) of our participants had been born in another country and had moved to Switzerland with their parents before the age of 6. Finally, our participants' parents age was  $M = 61.74$ ,  $SD = 10.39$  and  $M = 64.15$ ,  $SD = 9.47$  for the mothers and fathers, respectively.

We defined the participants' ethnic background by the maternal culture of origin. For participants whose mother was Swiss (14%), we chose the fathers' culture of origin. Participants were grouped into four regions based on their ethnic background: (1) North-Western European countries (e.g., Germany, France;  $n = 101$ , 21%), (2) Southern European countries (e.g., Italy, Spain;  $n = 127$ , 25%), (3) Eastern European countries (e.g., Poland), and former Yugoslavian countries (e.g., Serbia;  $n = 152$ , 31%), and due to small sample sizes, the merged category is as follows: (4) Non-European/Non-Western countries (e.g., Sri Lanka;  $n = 112$ , 23%). We excluded 12 participants from Anglo-Saxon countries (e.g., United States, Australia) due to the small sample size.

## Measures

All used measures were originally in English. In line with the TRAPD guidelines (Mohler et al., 2016), both authors translated and adapted the questionnaires to German and to the Swiss context independently from each other. Differences between the two versions of each measure were resolved in discussion.

### Sense of Indebtedness

SIP was a 12-item scale, which was originally rated on a 9-point Likert scale (Kang, 2010). In a sample of  $N = 124$  Korean American young adults (aged 18–25 years), the scale mean was  $M = 6.95$  ( $SD = 0.95$ , range 5.0–8.92; Kang, 2010). The 12 items formed a one-dimensional scale with high internal consistency (Cronbach's  $\alpha = .82$ ; Kang & Raffaelli, 2015). We reduced the 9-point Likert scale to a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) because shorter, fully labeled rating scales were shown to have higher reliability and are easier to comprehend for participants according to the German Survey Guidelines by GESIS (Menold & Bogner, 2016). We included both the original and the translated version of SIP with instructions in the online supplemental material on the Open Science Framework (OSF; see Table E1 in ESM 1 for the original English version of SIP and Table E2 for the final German translation of SIP; Pfammatter & Schwarz, 2021). The psychometric properties and development of the final scale of SIP will be presented in the Results section.

### Filial Obligations

We measured filial obligations with a composite 5-item scale from existing sources (Daatland & Herlofson, 2003; Dykstra & Fokkema, 2012; Finley et al., 1988) rated on a 5-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*). A sample item was "Children should look after their sick parents." McDonald's  $\omega$  was .83, Cronbach's  $\alpha$  was .79, and the sample mean was  $M = 3.49$  ( $SD = 0.80$ ).

### Support Given to Parents

For support given to parents, we used the 5-item Intergenerational Support Scale (Fingerman et al. 2011) by adapting it to the child's perspective. It consists of 5 items rated on an 8-point Likert scale (1 = *less than once a year* to 8 = *every day*). A sample item was: "In the past 12 months, how often did you give emotional support to your parents?" The reliability was  $\omega = .91$ , and  $\alpha$  was .86. The sample mean was  $M = 5.30$  and  $SD = 1.50$ . Recent studies have shown that despite some differences, parental and child reports on support show high levels of agreement (Cheng et al., 2015; Kim et al., 2011). Therefore, we used adult children's reports as a measure of support given to parents.

### Reciprocity

As a measure for reciprocity, we used a difference score based on the adult child's report on support they received from their parents and the amount of support the child gave to its parents. To measure support received from their parents, we used the same 5 items from the Intergenerational Support Scale by Fingerman et al. (2011), this time

with the introduction: “In the past 12 months, how often did your parents give you emotional support?” The sample mean was 5.18 and  $SD = 1.65$ . The reliability was  $\omega = .91$ , and  $\alpha$  was  $.87$ .

To build the difference score for reciprocity, we took the mean of parental support to the child scale and subtracted the mean of the child’s support given to the parents’ scale. This difference score had a mean of  $M = -.11$  with an  $SD$  of  $.89$ , which means, that on average, the adult children perceived that they have given slightly more support to their parents than they have received.

## Statistical Analysis

We used R for data analysis with the LAVAAN package (Rosseel, 2012). All analyses in the article can be reproduced with the R code and the data, which are available via the OSF (Pfammatter & Schwarz, 2021). We chose the robust maximum likelihood estimator (MLR) for the confirmatory factor analysis (CFA), which has been shown to perform well for non-normally distributed data (Brown, 2015). For structural equation models (SEM), we chose the robust weighted least squares estimator (WLSMV) because WLSMV was shown to be more accurate for models with categorical variables such as gender compared to MLR (Brown, 2015).

First, we estimated a CFA with a one-factor solution for the 12-item SIP scale. Second, for the measurement invariance hypothesis, we first ran a CFA on each ethnic group separately. After that, we ran a multigroup CFA testing for configural (i.e., same model in all groups), metric (i.e., equal item loadings on the latent factor in all groups), scalar (i.e., equal item intercepts in all groups), and strict invariance (i.e., equal error variances in all groups) across the four ethnic groups.

For Hypotheses 3a to d (the association of SIP with filial obligations, reciprocity, association of gender, and having two immigrant parents), we estimated a SEM. To evaluate the model fit in CFA and SEM, we used the following cut-off values for fit indices:  $\chi^2/df$  ( $< 3$ ; Hair et al., 2018), comparative fit index (CFI,  $> .95$ ), incremental fit index (IFI,  $> .95$ ), root mean square error of approximation (RMSEA,  $< .06$ ), and standardized root mean square residual (SRMR,  $< .08$ ; Hu & Bentler, 1999). For Hypotheses 3c and 3d, in addition to the SEM, we ran independent  $t$  tests and evaluated effect sizes according to Cohen (1992).

A recent Monte Carlo simulation study by Wolf et al. (2013) simulated CFA and SEM, which are comparable to the models we tested. This study showed that the total sample size and the subsample sizes in our study had test powers of  $> .80$  and should produce accurate, stable results. Therefore, we considered our total sample and subsamples to be large enough for the planned analyses.

## Results

### One-Group Confirmatory Factor Analysis

The CFA results on all 12 items (see Table E3 in the online supplemental material ESM 2 for item statistics, item selectivity, and CFA results) suggested that the model did not fit the data well ( $\chi^2 = 278.59$ ,  $df = 54$ ,  $\chi^2/df = 5.16$ ,  $p < .001$ , CFI =  $.906$ , IFI =  $.907$ , RMSEA =  $.092$ , 90% CI  $[.082, .102]$ ,  $p < .001$ , and SRMR =  $.049$ ).

Due to the partial model fit, we considered the possibility of a two-factor solution. Neither the analyses (i.e., the scree plot and the exploratory factor analysis) nor the theoretical background suggested a two-factor model. Hence, we reduced the scale to improve the model fit by excluding 2 items, following the approach by Heene et al. (2011). Namely, they suggested considering the theoretical foundation, the residual covariance matrix, the expected parameter changes, and not only model fit indices (e.g., CFI, IFI, RMSEA) for reducing a scale. We dropped Item 3 because of its low loading on the latent factor SIP ( $\beta = -.23$ ,  $p < .001$ , see Table E3 in the online supplemental material ESM 2). This might be due to the reversed coding of this item. We further dropped Item 10 because of its high residual covariances with other items. This item is the only one making a comparison between immigrant and native parents.

Furthermore, we allowed two error correlations due to similar item wording. The reduced scale consisting of 10 items fit the data well ( $\chi^2 = 137.44$ ,  $df = 33$ ,  $\chi^2/df = 4.16$ ,  $p < .001$ , CFI =  $.949$ , IFI =  $.949$ , RMSEA =  $.080$ , 90% CI  $[.068, .093]$ ,  $p < .001$ , SRMR =  $.040$ ). The in-detail results of the CFA for the reduced final 10-item SIP scale are presented in Table 1. The item means ranged from Item 4 with  $M = 2.58$ ,  $SD = 1.35$ , to  $M = 3.96$ ,  $SD = 1.23$ , for Item 11. Item-total correlation was lowest ( $r_{it} = .54$ ) for Item 4. Item 1 had the highest item-total correlation ( $r_{it} = .78$ ). Item loadings on the latent factor ranged from  $\beta = .55$  for Item 2 to  $\beta = .82$  for Item 9. The latent factor explained between 30% and 67% of each item’s variance. Item difficulties were between  $.52$  and  $.79$  for Item 9 and Item 11, respectively.

The reduced scale had a reliability of  $\omega = .93$  and  $\alpha = .91$  with a mean of  $M = 3.25$ ,  $SD = 1.00$ . The analyses confirmed our hypothesis that SIP is a reliable one-factor scale, at least in the 10-item version.

### Measurement Invariance Analysis

The second step was to analyze the measurement invariance of SIP across the four ethnic groups. We chose the suggested cut-off values for measurement invariance by Chen (2007, i.e.,  $\geq .01$  for  $\Delta CFI$ ,  $\geq .015$  for  $\Delta RMSEA$ , and  $\geq .03$  for  $\Delta SRMR$ ) as indicators for configural and metric

**Table 1.** Item statistics and confirmatory factor analysis of the Sense of Indebtedness Scale (final version)<sup>a</sup>

Item	Item statistics					Confirmatory factor analysis		
	<i>M</i>	<i>SD</i>	<i>r<sub>it</sub></i>	Kurtosis	Skewness	Factor loading $\beta$ (SE)	Item variance	Explained variance
1	3.22	1.45	.78	-1.28	-0.26	.81*** (.04)	.34	.66
2	3.79	1.22	.54	-0.29	-0.79	.55*** (.06)	.70	.30
4	2.58	1.35	.54	-1.12	0.33	.57*** (.05)	.68	.32
5	3.63	1.37	.74	-0.86	-0.63	.77*** (.05)	.41	.59
6	3.28	1.42	.75	-1.21	-0.32	.78*** (.05)	.39	.61
7	2.99	1.48	.71	-1.42	-0.04	.73*** (.05)	.47	.53
8	3.37	1.32	.59	-1.07	-0.33	.65*** (.05)	.58	.42
9	3.61	1.36	.77	-0.88	-0.62	.82*** (.04)	.33	.67
11	3.96	1.23	.59	-0.05	-1.01	.63*** (.05)	.60	.40
12	2.98	1.38	.65	-1.20	-0.03	.70*** (.05)	.52	.48
Scale	3.25	1.03		-0.91	-0.28			

Note. *N* = 492. Estimator = robust maximum likelihood (MLR). Yuan–Bentler corrected values for  $\chi^2$ , CFI, IFI, and RMSEA.  $\chi^2 = 137.44$ , *df* = 33,  $\chi^2/df = 4.16$ ,  $p < .001$ , CFI = .949, IFI = .949, RMSEA = .080, 90% CI [.068, .093],  $p < .001$ , and SRMR = .040. Two error correlations allowed between Items 6 and 7 and between Items 1 and 2 due to similar item wording. <sup>a</sup>Consists of Items 1, 2, 4, 5, 6, 7, 8, 9, 11, and 12. \*\*\* $p < .001$

**Table 2.** Measurement invariance of the Sense of Indebtedness Scale<sup>a</sup> across regions of origin

Model	$\chi^2$	<i>df</i>	CFI	IFI	RMSEA	SRMR	$\Delta\chi^2$	$\Delta df$	$\Delta\chi^2/df^b$	$\Delta CFI$	$\Delta IFI$	$\Delta RMSEA$	$\Delta SRMR$
All groups	137.44	33	.949	.949	.080	.040			4.16***				
Configural	232.66	132	.950	.951	.079	.049			1.76***				
Metric	269.40	159	.945	.946	.075	.075	29.58	27	1.10	.005	.005	.004	.026
Scalar	361.17	186	.913	.913	.088	.092	100.66	27	3.73***	.042	.043	.013	.017
Partial scalar <sup>c</sup>	301.26	177	.938	.938	.076	.080	32.42	18	1.80*	.007	.008	.001	.005
Strict <sup>d</sup>	355.75	207	.936	.935	.071	.082	35.24	30.	1.17	.002	.003	.005	.002

Note. *N* = 492. Estimator = robust maximum likelihood (MLR). <sup>a</sup> Consists of Items 1, 2, 4, 5, 6, 7, 8, 9, 11, and 12. <sup>b</sup> Yuan–Bentler corrected values for  $\chi^2$ , CFI, IFI, and RMSEA. <sup>c</sup> Three free intercepts. <sup>d</sup> Based on partial scalar invariance model. \* $p < .05$ . \*\*\* $p < .001$ .

noninvariance and  $\geq .01$  for  $\Delta CFI$ ,  $\geq .015$  for  $\Delta RMSEA$ , and  $\geq .01$  for  $\Delta SRMR$  as indicators of scalar and strict noninvariance. We included IFI with the cut-off value  $\Delta IFI \geq .01$  as a further indicator of noninvariance for all steps of invariance testing (Cheung & Rensvold, 2002).

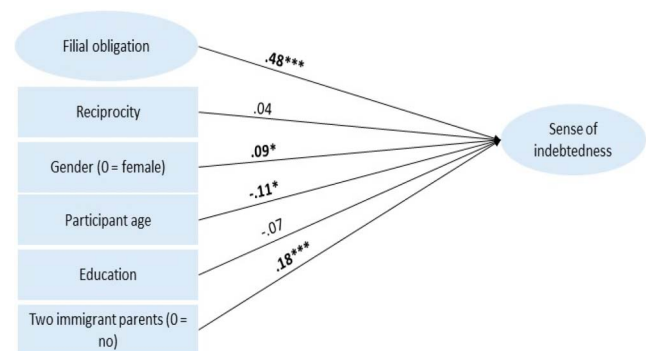
As shown in Table 2, we were able to establish partial scalar invariance by setting 3 item intercepts (partial scalar invariance) free to be estimated (for the corresponding in detail single group CFA results, see Table E4 in the online supplemental material ESM 2). These results suggested that SIP was partially scalar invariant across the four ethnic groups. Since the criteria for full scalar invariance were not met, we deemed our scale partially scalar invariant. Thus, the results only partially confirmed our Hypothesis 2.

## Validity of Sense of Indebtedness Toward Parents Scale

### Discriminant Validity of SIP

To establish discriminant validity, we ran a SEM with filial obligations and the reciprocity index as predictors of SIP. The

results of this analysis are shown in Figure 1. The overall model fit was good ( $\chi^2 = 507.65$ , *df* = 152,  $\chi^2/df = 3.34$ ,  $p < .001$ , CFI = .894, IFI = .895, RMSEA = .069, 90% CI [.062, .076],  $p < .001$ , and SRMR = .054). Filial obligations were, in line



**Figure 1.** The association of filial obligations, reciprocity, and socio-demographic variables with sense of indebtedness. Standardized parameter estimates. *N* = 492,  $\chi^2 = 507.65$ , *df* = 152,  $\chi^2/df = 3.34$ ,  $p < .001$ . robust CFI = .894, robust IFI = .895, robust RMSEA = .069, 90% CI [.062, .076],  $p < .001$ , SRMR = .054, estimator = robust weighted least squares (WLSMV). \* $p < .05$ . \*\*\* $p < .001$ .

with our Hypothesis (3a), positively associated with SIP ( $\beta = .48, p < .001$ ), meaning the higher filial obligations were, the higher SIP was. Reciprocity was, contrary to our Hypothesis (3b), not associated with SIP ( $\beta = .04, p > .419$ ). However, there was a weak positive bivariate correlation ( $r = .16, p < .001$ ) between reciprocity and SIP, indicating that children who receive more support than they give, feel more indebted toward their parents (see Table E5 in online supplemental material ESM 2), which was in line with our Hypothesis (3b). Men experienced higher SIP than women ( $\beta = .09, p = .038$ ), which contrasted with our Hypothesis (3c). In addition to the SEM presented in Figure 1, we conducted a *t* test for gender differences on SIP (Hypothesis 3c). The *t* test showed higher SIP in men than women,  $t(334.65) = 2.39, p = .017, d = 0.23, 95\% \text{ CI } [0.04, 0.42]$ , which constituted a small effect. This gender difference was consistent across all regions of origin, except for Eastern European and former Yugoslavian countries, where no gender difference on SIP was found,  $t(92.91) = 0.61, p = .54$  (see Table E6 in online supplemental material ESM 2); however, test power was low ( $< .60$ ).

Finally, participants with two immigrant parents experienced stronger feelings of SIP ( $\beta = .18, p < .001$ ) than participants with one immigrant parent, which confirmed our Hypothesis (3d). Again, we ran a *t* test for the differences on SIP between adults with one or two immigrant parents to test Hypothesis 3d. This analysis showed that adults with two immigrant parents experienced higher SIP than adults with one immigrant parent,  $t(256.9) = 4.36, p < .001, d = .43, 95\% \text{ CI } [0.23, 0.63]$ , which was a small effect. The analysis further showed that the older participants were, the lower their SIP was ( $\beta = -.11, p = .024$ ). Education was not associated with SIP ( $\beta = -.07, p > .098$ ).

### Incremental Validity of SIP

To show the incremental validity of SIP, we ran a SEM with filial obligations and SIP as predictors of support given to parents. The results are presented in Figure 2 (for the corresponding correlation table, see Table E5 in online supplemental

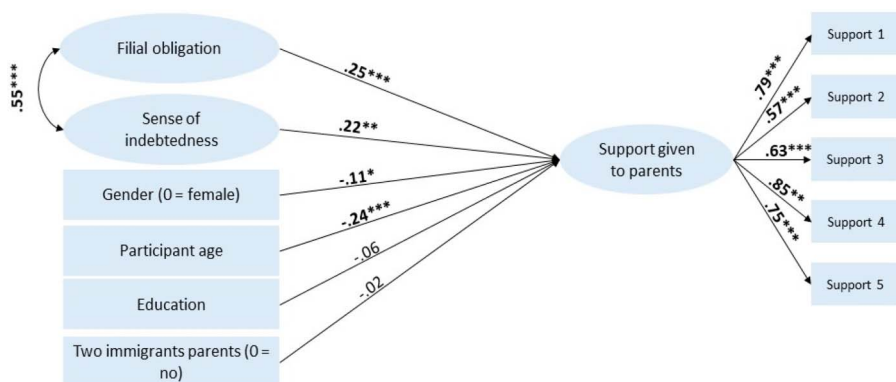
material ESM 2). The model fit the data acceptably ( $\chi^2 = 684.64, df = 232, \chi^2/df = 2.95, p < .001, \text{ CFI} = .884, \text{ IFI} = .885, \text{ RMSEA} = .063, 90\% \text{ CI } [0.058, 0.069], p < .001$ , and  $\text{SRMR} = .057$ ). As the analysis above already suggested, SIP was positively associated with filial obligations ( $r = .25, p = .001$ ). Furthermore, SIP was positively associated with support given to parents ( $\beta = .22, p = .001$ ). The more SIP participants experienced, the more support they provided to their parents. This effect went beyond the effect of filial obligations and supported Hypothesis 4.

## Discussion

The goal of this study was to show that test scores derived from German version of the Sense of Indebtedness Toward Parents scale are reliable and valid. It is the first study to test the psychometric properties of SIP in an ethnically diverse and large sample of second-generation immigrants.

In accordance with our first hypothesis, we were able to establish the proposed one-factor model for the SIP scale with good reliability, high item loadings on the latent factor, and good item-total correlations providing further merit to the use of the scale. To achieve a good model fit for SIP, we reduced the scale from 12 to 10 items.

Moreover, we found evidence for partial scalar invariance of SIP across an ethnically diverse sample, partly supporting our second hypothesis. Even though, we only established partial scalar invariance, recent simulation studies suggested that partially scalar invariant models can be used to compare groups (Putnick & Bornstein, 2016). Thus, the German version of SIP can be used to compare different ethnic groups. Sense of indebtedness, originally a concept developed for Korean American second-generation immigrants (Kang, 2010), seems to be relevant in second-generation immigrants from diverse ethnical backgrounds living in Switzerland. This is in line with a Finnish study, where immigrants from diverse ethnic backgrounds expressed sense



**Figure 2.** The association of filial obligations and sense of indebtedness to parents with support given to parents. Standardized parameter estimates.  $N = 492, \chi^2 = 684.64, df = 232, \chi^2/df = 2.95, p < .001, \text{ robust CFI} = .884, \text{ robust IFI} = .885, \text{ robust RMSEA} = .063 [0.058, .069], p < .001, \text{ SRMR} = .057, \text{ estimator} = \text{robust weighted least squares (WLSMV)}$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .



of indebtedness toward parents (Turjanmaa & Jasinskaja-Lahti, 2020). The empirical evidence corroborated our assumption that sense of indebtedness may be a universal concept in second-generation immigrants.

Evidence for validity was found. As hypothesized (Hypothesis 3a), filial obligation and sense of indebtedness were related but distinct concepts in intergenerational relations (Kang, 2010). Moreover, SIP was, as predicted, weakly associated with the actual reciprocity index, confirming our Hypothesis 3b. The results suggest that the (re)attribution of parental sacrifices in the past, which is covered in the SIP scale, differs from actual reciprocity in the present study.

Contrary to our expectation (Hypothesis 3c) and the assumptions of Kang et al. (2016), men experienced a stronger sense of indebtedness compared to women. Women gave more support than they received from their parents (i.e., their reciprocity value was negative), and the association between reciprocity and SIP was weakly positive. Therefore, we would argue that by giving back to parents, women have already reduced their perceived debt and consequently feel less indebted than men, who received more support than they gave to their parents.

A similar effect could be probably true for the relation between age and SIP. We found that older participants feel less indebted toward their parents. Older participants give back more support to their parents than they received (i.e., the association between age and reciprocity was negative). Thus, older participants have reduced their perceived debt toward their parents and therefore probably feel less indebted toward their parents.

Furthermore, consistent with our Hypothesis 3d, children with two immigrant parents reported a higher sense of indebtedness than participants with one immigrant parent. Children with two immigrant parents probably experience more parental sacrifice than children with one immigrant parent (Boski, 2013) and therefore feel more indebted toward their parents.

Finally, SIP showed incremental value in predicting support given to parents over filial obligations (Hypothesis 4). This result highlights that sense of indebtedness is relevant for the understanding of intergenerational relations in immigrant families beyond established constructs.

## Limitations

The results of this study should be interpreted in light of their limitations. We were unable to compare the German version of SIP to the original SIP version in English, since the original data were unavailable and because the English version of SIP has never been tested in a large ethnically diverse sample. Nonetheless, we adhered to the TRAPD translation guidelines (Mohler et al., 2016). Moreover, we were able to confirm

the good reliability of SIP, its one-factor structure and the theoretically based relations to filial obligations and support given to parents. Hence, we assume the German version of SIP to measure the same construct as the English original. We reduced the initial 12-item scale to 10 items. Since this is no longer a confirmatory approach, future studies confirming the unidimensionality of SIP will be necessary.

The sample size(s) might be critical: (1) The sample size requirements for our specific CFA and SEM models were met, according to a recent simulation study (Wolf et al., 2013). However, simulation studies cannot reflect every aspect of a specific model and data. (2) Detecting measurement noninvariance can be difficult, especially in small samples (i.e.,  $n = \text{ca. } 125$  participants per group). Hence, we used both fit measures that are sensitive to sample size (i.e.,  $\chi^2$ , CFI, and SRMR), as well as two fit measures that are independent of sample size (i.e., IFI and RMSEA; Meade et al., 2008). Nonetheless, our results might have been biased by the sample size(s).

The proportion of female participants in our study was rather high. However, a recent large-scale study on participant characteristics in online surveys (Van Mol, 2017) has shown very similar participation rates of women. Nevertheless, it is still possible that the high proportion of female participants influenced the presented results. Furthermore, the cross-sectional design of our data does not allow for causal conclusions.

We only have partial insight into the amount of sacrifice parents made for their children. We used the proxy variable having two immigrant parents as an indicator for parental sacrifice. An objective measure of parental sacrifice could have offered a more conclusive picture of the actual contribution of parental sacrifices in explaining sense of indebtedness.

Finally, the current version of SIP was designed for immigrant groups. Therefore, a comparison between immigrant and nonimmigrant groups with the current version of SIP was not possible. However, parental sacrifice is not a migrant-specific phenomenon. In other words, it is likely that nonimmigrant children also experience SIP.

## Conclusion

The present study was the first to show that sense of indebtedness is a relevant construct in intergenerational relationships of second-generation immigrants from varied ethnic background and that test scores from the German version of the SIP scale reliably and validly represent the feelings of perceived debt toward the parents among second-generation immigrants. This is a valuable addition to the research on intergenerational family dynamics in immigrant families.



Future studies should provide additional information on psychometric properties and further the understanding of the concept of indebtedness among immigrant families. Since parental sacrifices are not a unique phenomenon among immigrants, sense of indebtedness should also be investigated in nonimmigrant families.

## References

- Baumeister, R. F., Stillwell, A. M., & Heatherton, T. F. (1994). Guilt: An interpersonal approach. *Psychological Bulletin*, *115*(2), 243–267. <https://doi.org/10.1037/0033-2909.115.2.243>
- Bengtson, V. L., & Roberts, R. E. L. (1991). Intergenerational solidarity in aging families: An example of formal theory construction. *Journal of Marriage and Family*, *53*(4), 856–870. <https://doi.org/10.2307/352993>
- Boll, T., & Filipp, S.-H. (2002). Vorhersage elternbezogener Schuldgefühle bei Kindern im mittleren Erwachsenenalter [Prediction of feelings of indebtedness towards parents of children in middle adulthood]. *Zeitschrift für Entwicklungspsychologie und Pädagogische Psychologie*, *34*(2), 95–105. <https://doi.org/10.1026//0049-8637.34.2.95>
- Boski, P. (2013). A psychology of economic migration. *Journal of Cross-Cultural Psychology*, *44*(7), 1067–1093. <https://doi.org/10.1177/0022022112471895>
- Brown, T. A. (2015). *Confirmatory factor analysis for applied research* (2nd ed.). Guilford Press. <https://doi.org/10.5860/choice.44-2769>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *14*(3), 464–504. <https://doi.org/10.1080/10705510701301834>
- Cheng, Y.-P., Birditt, K. S., Zarit, S. H., & Fingerman, K. L. (2015). Young adults' provision of support to middle-aged parents. *The Journals of Gerontology: Series B*, *70*(3), 407–416. <https://doi.org/10.1093/geronb/gbt108>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, *9*(2), 233–255. [https://doi.org/10.1207/S15328007SEM0902\\_5](https://doi.org/10.1207/S15328007SEM0902_5)
- Cohen, J. (1992). Statistical power analysis. *Current Directions in Psychological Science*, *1*(3), 98–101. <https://doi.org/10.1111/1467-8721.ep10768783>
- Daatland, S. O., & Herlofson, K. (2003). “Lost solidarity” or “changed solidarity”: A comparative European view of normative family solidarity. *Ageing and Society*, *23*(5), 537–560. <https://doi.org/10.1017/S0144686X03001272>
- Dykstra, P. A., & Fokkema, T. (2012). Norms of filial obligation in The Netherlands. *Population*, *67*(1), 97–122. <https://doi.org/10.3917/popu.1201.0103>
- Federal Statistical Office. (2018). *Reasons for migration (to Switzerland)*. <https://www.bfs.admin.ch/bfs/en/home/statistics/population/migration-integration/international-migration/reasons-migration.html>
- Federal Statistical Office. (2019a). *Höchste abgeschlossene Ausbildung der ständigen Wohnbevölkerung nach Migrationsstatus* [Highest completed level of education of permanent residents by migration status]. <https://www.bfs.admin.ch/bfs/en/home/statistics/population/migration-integration/integration-indicators/indicators/highest-educational-level.assetdetail.10767188.html>
- Federal Statistical Office. (2019b). *Household income expenditure*. <https://www.bfs.admin.ch/bfs/en/home/statistics/economic-social-situation-population/income-consumption-wealth/household-budget.html>
- Federal Statistical Office. (2020a). *Integrationsindikatoren* [Indicators for integration]. <https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/migration-integration/integrationindikatoren.html>
- Federal Statistical Office. (2020b). *Verteilung der Erwerbstätigen nach Berufsgruppen* [Distribution of workforce by occupational group]. <https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/migration-integration/integrationindikatoren/alleindikatoren/arbeitsmarkt/verteilung-beruf.html>
- Federal Statistical Office (2021). *Wanderung der ständigen ausländischen Wohnbevölkerung, 1950–2020* [Migration of the permanent foreign resident population, 1950–2020]. <https://www.bfs.admin.ch/bfs/de/home/statistiken/bevoelkerung/migration-integration/internationale-wanderung.assetdetail.18344423.html>
- Fingerman, K. L., Sechrist, J., & Birditt, K. (2013). Changing views on intergenerational ties. *Gerontology*, *59*(1), 64–70. <https://doi.org/10.1159/000342211>
- Fingerman, K. L., VanderDrift, L. E., Dotterer, A. M., Birditt, K. S., & Zarit, S. H. (2011). Support to aging parents and grown children in black and white families. *The Gerontologist*, *51*(4), 441–452. <https://doi.org/10.1093/geront/gnq114>
- Finley, N. J., Roberts, M. D., & Banahan, B. F. (1988). Motivators and inhibitors of attitudes of filial obligation toward aging parents. *The Gerontologist*, *28*(1), 73–78. <https://doi.org/10.1093/geront/28.1.73>
- Foner, N., & Dreby, J. (2011). Relations between the generations in immigrant families. *Annual Review of Sociology*, *37*(1), 545–564. <https://doi.org/10.1146/annurev-soc-081309-150030>
- Gouldner, A. W. (1960). The norm of reciprocity: A preliminary statement. *American Sociological Review*, *25*(2), 161–178. <https://doi.org/10.2307/2092623>
- Greenberg, M. S. (1980). A theory of indebtedness. In K. J. Gergen, M. S. Greenberg, & R. H. Willis (Eds.), *Social exchange: Advances in theory and research* (pp. 3–26). Springer. [https://doi.org/10.1007/978-1-4613-3087-5\\_1](https://doi.org/10.1007/978-1-4613-3087-5_1)
- Hair, J. R., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th ed.). Cengage Learning.
- Heene, M., Hilbert, S., Draxler, C., Ziegler, M., & Bühner, M. (2011). Masking misfit in confirmatory factor analysis by increasing unique variances: A cautionary note on the usefulness of cutoff values of fit indices. *Psychological Methods*, *16*(3), 319–336. <https://doi.org/10.1037/a0024917>
- Ho, D. Y. F. (1996). Filial piety and its psychological consequences. In M. H. Bond (Ed.), *The handbook of Chinese psychology* (pp. 155–165). Oxford University Press.
- Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. <https://doi.org/10.1080/10705519909540118>
- Kalmijn, M. (2020). Guilt in adult mother–child relationships: Connections to intergenerational ambivalence and support. *The Journals of Gerontology: Series B*, *75*(4), 879–888. <https://doi.org/10.1093/geronb/gby077>
- Kang, H., & Larson, R. W. (2014). Sense of indebtedness toward parents: Korean American emerging adults' narratives of parental sacrifice. *Journal of Adolescent Research*, *29*(4), 561–581. <https://doi.org/10.1177/0743558414528979>
- Kang, H., Okazaki, S., Abelmann, N., Kim-Prieto, C., & Lan, S. (2010). Redeeming immigrant parents: How Korean American emerging adults reinterpret their childhood. *Journal of Adolescent Research*, *25*(3), 441–464. <https://doi.org/10.1177/0743558410361371>
- Kang, H. (2010). *Exploring sense of indebtedness towards the parents among Korean American youth* [Unpublished Doctoral

- Dissertation]. University of Illinois. <https://www.ideals.illinois.edu/handle/2142/16077>
- Kang, H., & Raffaelli, M. (2015). Personalizing immigrant sacrifices: Internalization of sense of indebtedness toward parents among Korean American young adults. *Journal of Family Issues*, 37(10), 1331–1354. <https://doi.org/10.1177/0192513X14567955>
- Kim, K., Zarit, S. H., Eggebeen, D. J., Birditt, K. S., & Fingerma, K. L. (2011). Discrepancies in reports of support exchanges between aging parents and their middle-aged children. *The Journals of Gerontology: Series B*, 66(5), 527–537. <https://doi.org/10.1093/geronb/gbr029>
- Meade, A. W., Johnson, E. C., & Braddy, P. W. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *Journal of Applied Psychology*, 93(3), 568–592. <https://doi.org/10.1037/0021-9010.93.3.568>
- Menold, N., & Bogner, K. (2016). *GESIS Survey Guidelines*. GESIS – Leibniz Institute for the Social Sciences. Design of rating scales in questionnaires. [https://doi.org/10.15465/gesis-sg\\_en\\_015](https://doi.org/10.15465/gesis-sg_en_015)
- Mohler, P., Dorer, B., de Jong, J., & Hu, M. (2016). *Guidelines for best practice in cross-cultural surveys*. [https://ccsg.isr.umich.edu/wpcontent/uploads/2019/06/CCSG\\_Full\\_Guidelines\\_2016\\_Version.pdf](https://ccsg.isr.umich.edu/wpcontent/uploads/2019/06/CCSG_Full_Guidelines_2016_Version.pdf)
- Nesteruk, O. (2021). Family dynamics at the intersection of languages, cultures, and aspirations: Reflections of young adults from immigrant families. *Journal of Family Issues*, 43(4), 1015–1038. <https://doi.org/10.1177/0192513X211007527>
- Pfammatter, P., & Schwarz, B. (2021). Intergenerational relations in second generation immigrants [Data set and supplemental material]. <https://osf.io/z8kb3/>
- Putnick, D. L., & Bornstein, M. H. (2016). Measurement invariance conventions and reporting: The state of the art and future directions for psychological research. *Developmental Review*, 41, 71–90. <https://doi.org/10.1016/j.dr.2016.06.004>
- Rosell, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Rossi, A. S., & Rossi, P. H. (1990). *Of human bonding. Parent–child relations across the life course*. Aldine de Gruyter.
- Schwarz, B., Trommsdorff, G., Albert I., & Mayer, B. (2005). Adult parent–child relationships: Relationship quality, support, and reciprocity. *Applied Psychology*, 54(3), 396–417. <https://doi.org/10.1111/j.1464-0597.2005.00217.x>
- Schwarz, B., Trommsdorff, G., Zheng, G., & Shi, S. (2010). Reciprocity in intergenerational support: A comparison of Chinese and German adult daughters. *Journal of Family Issues*, 31(2), 234–256. <https://doi.org/10.1177/0192513X09347991>
- Silverstein, M., Conroy, S. J., & Gans, D. (2012). Beyond solidarity, reciprocity, and altruism: Moral capital as a unifying concept in intergenerational support for older people. *Ageing and Society*, 32(7), 1246–1262. <https://doi.org/10.1017/S0144686X1200058X>
- Turjanmaa, E., & Jasinskaja-Lahti, I. (2020). Thanks, but no thanks? Gratitude and indebtedness within intergenerational relations after immigration. *Family Relations*, 69(1), 63–75. <https://doi.org/10.1111/fare.12401>
- Uehara, E. S. (1995). Reciprocity reconsidered: Gouldner's moral norm of reciprocity and social support. *Journal of Social and Personal Relationships*, 12(4), 483–502. <https://doi.org/10.1177/0265407595124001>
- Van Mol, C. (2017). Improving web survey efficiency: The impact of an extra reminder and reminder content on web survey response. *International Journal of Social Research Methodology*, 20(4), 317–327. <https://doi.org/10.1080/13645579.2016.1185255>
- Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, 73(6), 913–934. <https://doi.org/10.1177/0013164413495237>

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### Open Science

Open Data: The authors confirm that the information (i.e., data, codebook and R-script) needed to reproduce all of the reported results is available at: <https://osf.io/z8kb3/> (Pfammatter & Schwarz, 2021).

Open Materials: The authors confirm that the information needed to reproduce all of the reported methodology is available at <https://osf.io/z8kb3/> (Pfammatter & Schwarz, 2021).

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