Plattform für Umfragen,
Methoden und empirische Analysen (PUMA)

PUMA Survey V.2

Ergebnisberichte der einzelnen PUMA-Befragungsmodule

September 2018

Plattform für Umfragen, Methoden und empirische Analysen (PUMA)
Rathausstraße 19/1/9
1010 Wien
www.puma-plattform.at

VORWORT

PUMA, die **Plattform für Umfragen, Methoden und empirische Analysen** ist ein Kooperationsprojekt, das vom Bundesministerium für Bildung, Wissenschaft und Forschung (BMBWF) im Rahmen der Hochschulraumstrukturmittel 2013 gefördert wird.

PUMA schreibt in regelmäßigen Abständen die Förderung sozialwissenschaftlicher Umfragemodule aus, aus denen nach einem externen anonymen Begutachtungsverfahren die besten Einreichungen ausgewählt werden.

Im folgenden Bericht finden Sie die zentralen Ergebnisse des PUMA Survey V.2. Die Datensätze können bei der Projektkoordination (katharina.goetsch(at)univie.ac.at) für wissenschaftliche Zwecke kostenfrei angefragt werden. In Zukunft werden sie über das Austrian Social Science Data Archive (AUSSDA) verfügbar sein.

Der vorliegende Bericht ist mit folgender Referenzierung zu nutzen:

PUMA (2018). PUMA Survey V.2. Modulberichte. Einblicke in Österreichs gesellschaftlichen Wandel, durchgeführt von Statistik Austria, Wien.

Die PUMA-Projektleiterin

Univ.-Prof. Dr. Sylvia Kritzinger

Informationen zum Projekt PUMA:

Name: Plattform für Umfragen, Methoden und empirische Analysen (PUMA)
Laufzeit: 2014-2018
Leitung: Universität Wien, Univ.-Prof. Dr. Sylvia Kritzinger
Projektkoordination: Mag. Dr. Katharina Götsch

Partnerorganisationen:

universität wien
JKU JOHANNES KEPLER UNIVERSITÄT LINZ
STATISTIK AUSTRIA Die Informationsmanager
universität innsbruck
UNI GRAZ
ALPEN-ADRIA UNIVERSITÄT KLAGENFURT | WIEN GRAZ
UNIVERSITÄT SALZBURG

Assoziierte Organisationen:

MODUL VIENNA UNIVERSITY WKO PRIVATE UNIVERSITY
ÖAW ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN

Fördergeber:

BUNDESMINISTERIUM FÜR BILDUNG, WISSENSCHAFT UND FORSCHUNG

Informationen zur Befragung

Allgemeines

Der PUMA Survey V.2 besteht aus insgesamt drei einzelnen Modulen, die gemeinsam in einer Umfrage eingesetzt wurden. Die Module wurden über eine öffentliche Ausschreibung von PUMA eingereicht und einem externen anonymen Begutachtungsverfahren unterzogen.

Die Befragung wurde von PUMA (unter der Leitung der Universität Wien) beauftragt und von *Statistik Austria* durchgeführt. Die Finanzierung der PUMA Surveys sowie des PUMA-Projekts erfolgt durch das BMBWF im Rahmen der Hochschulraumstrukturmittel 2013.

Die Umfrage wurde als Online-Befragung durchgeführt. Die RespondentInnen wurden mehrfach kontaktiert und erhielten Incentives in verschiedener Höhe und Form (experimentell variiert).

Die Umfrage fand in deutscher Sprache statt. Einige der folgenden Teilberichte sind in englischer Sprache verfasst, da die Teams teilweise multilingual zusammengesetzt sind.

Es handelte sich um eine Querschnittsbefragung.

Stichprobe

Die repräsentative Zufallsstichprobe wurde über das Zentrale Melderegister (ZMR) gezogen. Grundlage ist die Wohnbevölkerung in Österreich zwischen 16 und 74 Jahren.

Die Nettostichprobe besteht aus 695 ausgefüllten Fragebogen. Kontaktiert wurden 1.500 Personen brutto.

Erhebungszeitraum

Start: 25.5.2018 (Versand der Vorankündigung)

Ende: 30.6.2018

Principal Investigators

Die Namen der jeweiligen ModulurheberInnen finden Sie in den entsprechenden Abschnitten dieses Dokuments.

Fragebogen, **Codebook** und **Feldbericht** finden Sie auf der PUMA-Website unter: https://www.puma-plattform.at/puma-umfragen/

Inhaltsverzeichnis: Überblick über die Module

1. Non-Health Influences on Generic Health Ratings:
Comparing the Susceptibility of Self-Rated Health (SRH) and the Minimum European Health Module (MEHM) to Biases Due to Optimism, Hypochondriasis, and Social Desirability

Patrick Lazarevič (Vienna Institute of Demography), Martina Brandt (TU Dortmund), Marc Luy (Vienna Institute of Demography), Caroline Berghammer (University of Vienna)

Principal investigator and contact person: Patrick Lazarevič
(Patrick.Lazarevic@oeaw.ac.at)

Keywords: Generic Health Measurement, Optimism, Hypochondriasis, Social Desirability, Self-Rated-Health, Minimum European Health Module

Short Abstract

In this short report, we describe preliminary results regarding the feasibility and utility of using the Minimum European Health Module (MEHM) as a short scale for measuring generic health using data from our module in an online survey carried out by Statistics Austria on behalf of PUMA (PUMA-Team 2018). We demonstrate the feasibility of extracting a factor score from MEHM utilizing confirmatory factor analyses based on polychoric correlations. Further analyses suggest that this factor score might be useful in reducing bias in generic health measurement due to optimism and social desirability.

Research Interest, Framework, and Objectives

Self-rated health (SRH) is the most widely used single-indicator of health in many scientific disciplines (Jylhä 2009). Even though more comprehensive approaches to measure generic health exist, they are often too time consuming for survey interviews, especially in multi-thematic surveys, due to time limitations. Even though SRH is consequently routinely used to measure or control for generic health, the question "How would you rate your health?" alone might leave (too) much room for interpretation for respondents and even bias. Research in this regard has shown that, even when controlling for comprehensive health information, SRH is noticeably and independently influenced by non-health factors like satisfaction with life or social participation (e.g., Lazarevič 2018). While these results illustrate that health ratings are influenced by non-health factors, the personality traits that are assumed to bias SRH (e.g., optimism, social desirability, or hypochondriasis) are typically not directly measured.

The Minimum European Health Module (MEHM), as proposed by Robine & Jagger (2003), complements SRH with the questions whether the respondent suffers from a chronic disease and whether and to what extent they are limited in their usual activities due to a health problem. Thus, MEHM can be seen as a compromise between using SRH as a single-indicator and a comprehensive scale while covering the two most relevant factors for health ratings, i.e., chronic diseases and the functional status (Lazarevič 2018). While MEHM is obviously less time- and cost-intensive than more comprehensive approaches to measure health and there was some research done on its components separately (e.g., Berger et al. 2015), hardly anything is known about its usefulness as a short-scale of

generic health, its overall psychometric properties, and its susceptibility to non-health factors potentially biasing the health measurement.

In our project, we examine the utility of using MEHM to measure generic health taking SRH as a benchmark. To this end, in this report we (1) test the feasibility of combining the three items of MEHM to a factor score using confirmatory factor analysis, (2) compare the susceptibility of both SRH alone and the factor score based on MEHM to optimism, social desirability, and hypochondriasis,[1] and (3) examine MEHM's external validity by comparing age effects on health via SRH and MEHM.

Selected Results

Due to item-nonresponse, we were able to use data from 681 of all 703 respondents (97%). Cronbach's alpha for all four used scales was: MEHM: 0.87[2], optimism: 0.80, social desirability: 0.55, and hypochondriasis: 0.88. Cronbach's alpha did not increase for any scale if any one item was removed from it. All alphas except for the social desirability scale indicate a very good internal consistency – especially considering the low number of items in all scales (two to six items per scale). Alpha for the social desirability scale can still be deemed acceptable due the use of latent variable methods in the following analyses (Kline 2011: 70). For all three scales comprised of more than two items, we performed confirmatory factor analyses (CFA) based on polychoric correlations. All factor analyses resulted in a single factor with an eigenvalue > 1 with the expected direction of factor loadings which we then extracted for further analyses. For the two-item scale of optimism the mean of both variables was taken. In order to facilitate a comparison of SRH and the factor score based on MEHM, we standardized both measures to a mean of 0 and a standard deviation of 1.

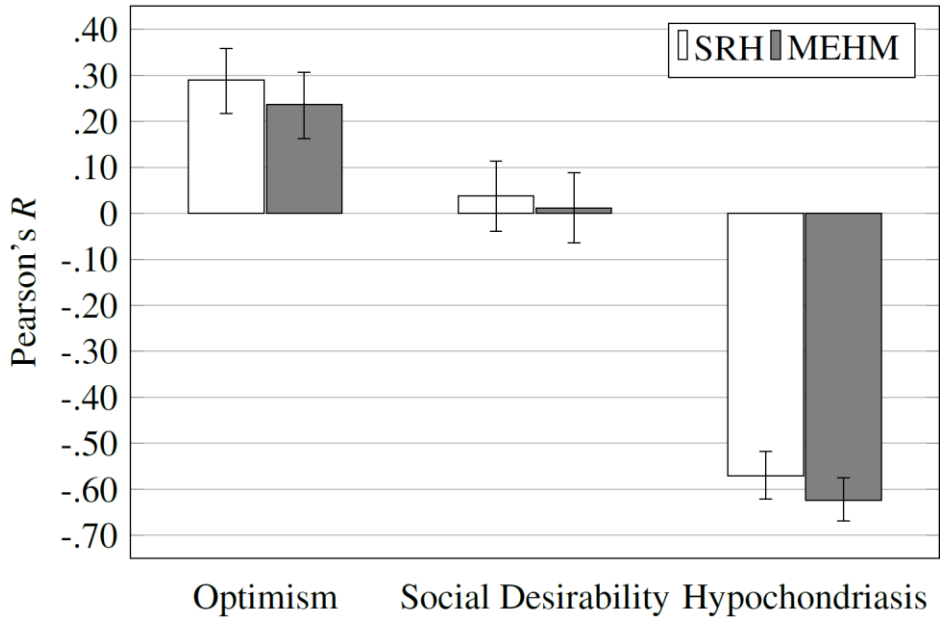

Figure 1: Correlations of Biasing Aspects and Health Measures (95% CI)

[1] The questionnaire underlying the following analyses can be found here: https://www.puma-plattform.at/puma-umfragen/

[2] For MEHM, Cronbach's alpha was calculated based on polychoric and polyserial correlations due to binary and ordinal nature of its items. The regular (naïve) Cronbach's alpha (i.e., based on Pearson's r) for MEHM was 0.74.

Figure 1 shows the correlations of the three potentially biasing factors, i.e., optimism, social desirability, and hypochondriasis, and the two health measures, MEHM and SRH alone. We found the expected correlations for optimism and hypochondriasis with both health measures which were very high for the latter. The correlation between health-reporting and social desirability was rather low. There were no significant differences between SRH and MEHM in the correlations but tendencies towards a lower correlation of MEHM with optimism and social desirability while it was higher with hypochondriasis. The latter might be explained by real correlation of the hypochondriasis with health. This is corroborated by higher hypochondriasis means of all 'unhealthy' groups in all three MEHM-items (i.e., those with fair or poor SRH, chronic diseases, or activity limitations (not shown). Control of more comprehensive health information would be desirable to investigate the isolated influence of hypochondriasis.

Figure 2 shows the mean health score by age group. Taking SRH as a benchmark, the MEHM-score indicates a slightly better health for younger respondents (< 45 years) while the opposite is true for older respondents. Even though these differences are not statistically significant, they point to a slightly less biased measurement of the MEHM-based score since older respondents tend to be more optimistic in their health reports than their younger counterparts (Layes et al. 2012).

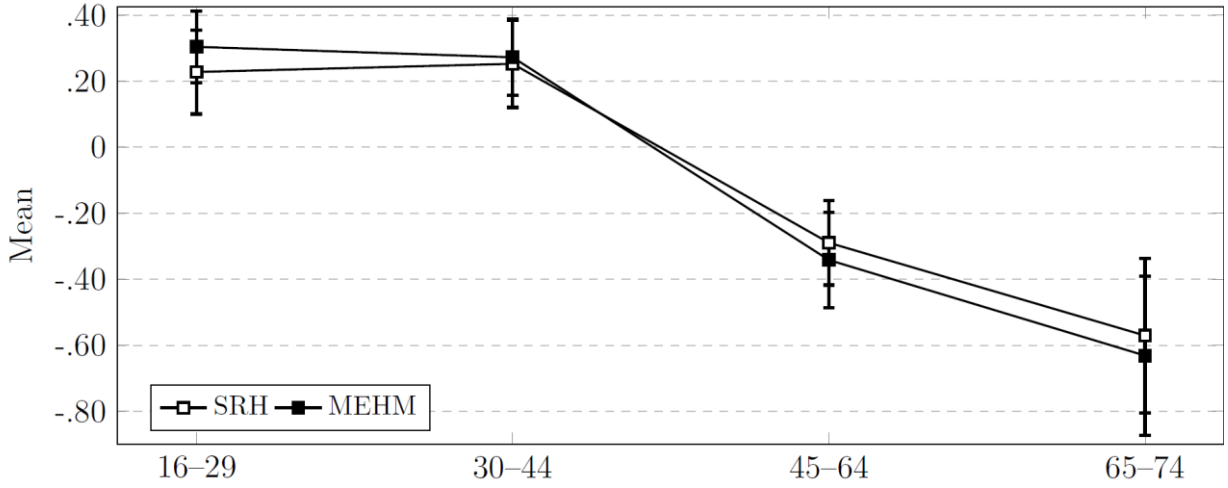

Figure 2: Comparison of Mean Health by Age Group (95% CI)

Discussion

Taken together, our results show that generic health measurement via MEHM generally works. MEHM exhibits good psychometric properties and a CFA based on polychoric correlations resulted in a usable single-indicator of generic health. This indicator somewhat reduces the influence of optimism and social desirable responding on health measurement, suggesting it is less susceptible to these biases. However, these differences were, in part due to the relatively low number of cases, not significant. The influence of hypochondriasis was, while also not being significant, greater in MEHM than SRH alone. This might reflect a correlation of this scale with health demonstrating the necessity of controlling for health when examining the relation of health-reports and hypochondriasis. Further research on the comparison of a MEHM-based health measurement for different subgroups and with other approaches promises to shed more light on its utility for a short generic health measurement.

References

Berger, Nicholas, Herman Van Oyen, Emmanuelle Cambois, Tony Fouweather, Carol Jagger, Wilma Nusselder & Jean-Marie Robine, 2015: Assessing the Validity of the Global Activity Limitation Indicator in Fourteen European Countries. BMC Medical Research Methodology 15: 1–8.

Jylhä, Marja, 2009: What Is Self-Rated Health and Why Does It Predict Mortality? Towards a Unified Conceptual Model. Social Science & Medicine 69 (3): 307–316.

Layes, Audrey, Yukiko Asada & George Kephart, 2012: Whiners and deniers. What does Self-Rated Health Measure? Social Science & Medicine 75 (1): 1–9.

Lazarevič, Patrick, 2018: Ausgezeichnet, sehr gut, gut, mittelmäßig, schlecht: Theoretische Konzepte und empirische Befunde zur Erhebung des allgemeinen Gesundheitszustandes bei älteren und alten Menschen. In: Martina Brandt, Jennifer Fietz, Sarah Hampel, Judith Kaschowitz, Patrick Lazarevič, Monika Reichert & Veronique Wolter (Eds.): Methoden der empirischen Alter(n)sforschung. Weinheim: Beltz.

Kline, Rex B., 2011: Principles and Practice of Structural Equation Modeling. New York: The Guilford Press.

Robine, Jean-Marie, & Carol Jagger, 2003: Report to Eurostat on European Health Status Module.

2. Online completion versus face-to-face completion. Testing mixing modes of data collection for Austrian social surveys

Hadler Markus, Franz Höllinger, Anja Eder

Karl-Franzens-Universität Graz, Institut für Soziologie

Kontaktadresse: markus.hadler@uni-graz.at

Key words: Online-completion, face-to-face interview, mixed modes, Austrian social survey, validity

Abstract

Collecting data online is a promising tool, given the problems survey research faces in terms of lowering response rates and increasing costs. Yet, the results on the comparability of online and face-to-face surveys are ambiguous (see Roberts et al. 2016). Therefore, the aim of our research is to test differences in responses when completing surveys online compared to collecting the same data face-to-face.

Our PUMA-module collects some of the core ISSP questions online, which were asked face-to-face (CAPI) in the same time-period. The topics of the ISSP questionnaires 2017 and 2018 are "Social Networks" and "Religion." At face value, we expect that these two areas may attract different respondents when conducted online as compared to face-to-face. Online networking should be more prevalent and traditional religious activities less common among the online respondents. If there are no significant differences between these two samples, our study will be a strong indicator that online tools are valid instruments.

Therefore, the mixed modes design aims to break new ground in understanding the advantages and limitations, the costs and benefits of combining online and face-to-face interviews in Austria on the basis of two prominent survey modules from the International Social Survey Programme.

Research interest and aims

This "field-experiment" is of relevance because funding for surveys is becoming scarce. Funding agencies as the Austrian government are looking for ways to maintain high quality data with smaller means. In case our study shows that responses do not differ significantly between these two modes, it could point to a future way of data collection.

Over the last years, traditional modes of data collection for population surveys, like telephone or face-to-face interviews, have faced new challenges: The possibility to reach and contact respondents declined because the number of households with fixed-line telephones and registered phone numbers has decreased. In addition, participants are over-burdened by calls from survey agencies. These developments reinforce coverage errors (unequal probability of respondents to participate) and non-response errors (non-participation of subgroups) making the results of surveys increasingly vulnerable (Roberts et al. 2016: 3). Face-to-face interviews for a long time have been considered as a "gold standard" of surveying; however, they are costly and also affected by recruiting and accessibility problems.

So far, scholars found that mixing modes in fact improves response rates and that different modes attract varying groups of respondents (Roberts et al. 2016: 33). However, recent findings do not provide a deeper understanding of potentially varying response patterns caused by different modes. Overall, "efforts to develop methods of correcting for mode effects at the analysis stage are still in their infancy" (Roberts et al. 2016: 6).

Theoretical and methodological framework

Web surveys offer new opportunities to field complex questionnaires including filters and promise saving costs. The major purpose of mixing traditional and more recent online modes in population surveys is to better reach different parts of the population and reduce a non-response bias (Roberts et al. 2016: 5).

In order to test whether mixed modes surveys are able to fulfill these requirements, methodological research has been conducted and led to mixed results: First, doubts have been raised whether mixed mode designs in fact help to control the total survey error or even accumulate the varying errors stemming from different modes of data collection (de Leeuw 2005). Therefore, it is highly important to better understand mode effects that may be caused due to combining different modes of data collection. Second, the question arises whether subgroups responding to different modes are sufficiently comparable, which is a particular challenge for conducting cross-country and longitudinal surveys.

Hypotheses on the topic of religion and spirituality

Hypotheses 1: Selection effect

Previous research has shown that alternative forms of spirituality are associated with individualist self-actualization, non-conformism and post-materialism, whereas traditional (church-oriented) religiosity tends to go together with conformity and stricter morality (Houtman/Aupers 2007; Höllinger 2017). Thus, we expect that – compared to traditionally religious and non-religious respondents – individuals who are attached to alternative forms of spirituality are more likely to answer an online questionnaire than to participate in a conventional CAPI-interview.

Hypothesis 2: Social desirability effect

According to previous research, social desirability plays an important role in answering questions about religious beliefs and practices (Presser/Stinson 1998; Hill 2005; Jones/Elliott 2017). In highly secularized countries such as Austria, we expect that respondents are more willing to report (to admit) traditional religious and esoteric beliefs when filling out an online-questionnaire than when asked by an interviewer (in the CAPI-interview).

Hypotheses on the topic of social networks

Hypothesis 3: internet affinity bias in sample of older aged persons

Previous research has shown that younger individuals report stronger social networks than older ones (Adams 2005; Gray 2009). It is also known that the older population is less likely to use the internet and email (Cody et al. 1999; Shapira, Barak, and Gal 2007). Therefore, we assume that an online completion is likely to lead to a bias in the older age group of the sample. We assume that older individuals with a stronger internet and email affinity will be reached more frequently by the online-

questionnaire than by CAPI. In addition, we assume a higher percentage of older persons to answer, that they were in contact with others via digital communication tools than in the face-to-face sample.

Selected results

The central goal of our study is to test whether the PUMA online-survey produces similar results as the CAPI-survey that was fielded at the same time. This analysis requires that both data sets include a weighting factor, which considers both non-response bias (by means of a post-stratification weight) and under-sampling of specific demographic groups (by means of a design weight). Since a design-weight is not yet available for the PUMA dataset, this analysis has to be postponed to a later date. Therefore, as a first step, we focus on presenting basic data from the PUMA module and provide only a few tentative comparisons with the results of the face-to-face survey in the text. Table 1 gives an overview of the distribution of sociodemographic aspects in comparison to the official statistics from Statistik Austria. It shows that the older population above 65 years is underrepresented, whereas the higher educated, employed and singles are overrepresented. The proportion of male and female respondents matches the overall population characteristic.

Table 1. Sociodemographic aspects compared to official statistics (%)

	PUMA (N=703)		Statistik Austria 2015/2017*
	Not weighted	weighted	
sex (male/female)	49.8/ 50.2	49.1/ 50.9	49.1/ 50.9
age 20 to 64 years	77.2	79.8	61.9
65 years and older	12.3	13.9	18.6
Educational degree Matura	24.6	23.0	17.4
university	30.6	28.3	14.1
Employment (incl. apprentice)	60.1	61.0	56.9 (employment rate 76.4)
Family status single	39.1	34.2	16.6% single-person households
married/ registered partnership	51.0	55.0	

*Source: Abgestimmte Erwerbsstatistik 2015; Bevölkerungsstatistik 2017

Table 2 provides some information on religious affiliation and related activities. The number of Catholics in the online-sample corresponds to the proportion in the Austrian population. In accordance with the secularization thesis, the results from the online-survey prove that almost one third of the Austrians never go to church. About half of the respondents belief in heaven, 38% have already read spiritual or esoteric books or magazines and 31% have already practiced Yoga, Tai Chi or Qui Gong. Believing in fortune tellers is less common, only 21% report to do so. In the face-to-face interviews the frequency of church attendance is similar compared to the online completion, though the belief in heaven and spiritual practices for instance are less pronounced and the belief in fortune tellers is stronger in the face-to-face mode. However, as mentioned before, the results between the two surveys so far cannot be compared due to the incomparable weighting factors. Further analyses need to be done in order to test our hypotheses.

Table 2. Religious and spiritual (esoteric) attitudes as well as self-reported behavior

	not weighted	weighted	n
being Catholic	59.3	57.8	702
worship weekly	6.8	7.2	703
never	31.3	31.7	703
belief in heaven (yes and yes, probably)	52.5	53.2	701
belief in fortune teller	20.7	21.2	702
belief in horoscope	33.9	34.4	702
practise Yoga, Tai Chi or Qui Gong	32.2	31.3	702
Spiritual readings	38.5	38.0	703

Table 3 shows that less than one third of the online-respondents report that they do not see more than 9 people on daily basis – which includes friends, family members, relatives, working colleagues etc.. 16% report that most of these contacts are personal, whereas almost one third state that most of these contacts are online, e.g. text messages, e-mails. In addition, around 28% use the internet at least for three hours a day. A first look at the results from the face-to-face interviews suggests that the respondents less frequently use the internet and have more personal contacts. However, again, these results have to be analyzed in more detail when the weighting factors are comparable.

Table 3. Self-reported social contacts (personal and online)

	not weighted	weighted	n
Daily contact with maximal 9 people	28.3	30.4	703
thereof % personal contact	17.1	16.4	703
thereof % contact via internet	27.7	29.0	702
Use of internet at least 3 hours a day	30.2	27.8	703

Table 4 reports the correlation between different beliefs and activities and the sociodemographics education and age. The results suggest that higher educated and younger respondents rarely go to church. Especially the higher educated believe less often in heaven and the horoscope and report to have practiced Yoga, Tai Chi or Qui Gong in the past. In addition, younger and higher educated respondents more frequently use the internet. So far, these patterns seem to be similar to the analysis of the data from the face-to-face interviews.

Table 4. Bivariate correlations (higher values mean stronger belief, more practice or more contact)

	Education	Age
worship	-.08	.11
…belief in heaven	-.13	-.03
…belief in fortune teller	-.06	-.06
…belief in horoscope	-.16	-.02
practise Yoga, Tai Chi or Qui Gong	.21	.00
spiritual readings	.05	.04
Daily contact with people	-.02	-.12
Frequency of internet use	.16	-.49

Conclusions

This report provides a first descriptive overview of the results derived from our PUMA module on religion and social networks. The main goal of our research, however, was to compare these results with the results derived from a parallel face-to-face survey. The current comparisons, however, must remain tentative, as Statistik Austria has not yet provided the design-weight for our PUMA data. Once all weights are available we will continue analyzing our data in more detail.

References

Adams, Nichola. n.d. (2005). Psychological Barriers to Internet Usage among Older Adults in the UK. Medical Informatics and the Internet in Medicine 30(1), 3–17.

Cody, Michael J., Deborah Dunn, Shari Hoppin, and Pamela Wendt (1999). Silver Surfers: Training and Evaluating Internet Use among Older Adult Learners. Journal of Communcation and Education 48(4), 269–286.

De Leeuw, Edith D. (2005). To mix or not to mix data collection modes in surveys. Journal of official Statistics 21(2), 233–255.

Gray, Anne (2009). The Social Capital of Older People. Ageing & Society 29(1), 5–31.

Hill, Peter C. (2005). Measurement in the psychology of religion and spirituality. In R.F. Paloutzian & C. L. Park (Eds.), Handbook of the psychology of religion and spirituality. New York: The Guilford Press, 43–61.

Höllinger, Franz (2017). Value orientations and social attitudes in the holistic milieu. British Journal of Sociology 68(2), 293-313.

Houtman, Dick and Stef Aupers (2007). The Spiritual Turn and the Decline of Tradition: The Spread of Post-Christian Spirituality in 14 Western Countries, 1981–2000. Journal for the Scientific Study of Religion 46(2), 305–320.

Jones, Ann E. and Marta Elliott (2017). Examining Social Desirability in Measures of Religion and Spirituality Using the Bogus Pipeline. Review of Religious Research 59(1), 47–64.

Presser, Stanley and Linda Stinson (1998). Data collection mode and social desirability bias in self-reported religious attendance. American Sociological Review 63(1), 137–145.

Roberts, Caroline, Joye, Dominique and Michèle E. Stähli (2016). Mixing modes of data collection in Swiss social surveys: Methodological Report of the LIVES-FORS Mixed Mode Experiment. LIVES Working Paper 48, University of Lausanne.

Shapira, Naama, Azy Barak, and Iddo Gal. (2007). Promoting Older Adults Well-Being through Internet Training and Use. Aging & Mental Health 11(5), 477–484.

Wagner, James, Arrieta, Jennifer, Guyer, Heidi and Mary Beth Ofstedal (2014). Does Sequence Matter in Multi-Mode Surveys: Results from an Experiment. Field Methods 26 (2), 141

3. Concerns of Smartphone Owners When Using their Device for Research

Martin Weichbold, University of Salzburg, Dep. of Political Science and Sociology

Florian Keusch, University of Mannheim, School of Social Sciences

Kontakt: martin.weichbold@sbg.ac.at, f.keusch@uni-mannheim.de

Keywords: smartphones, mobile web surveys, passive mobile data collection, privacy concern

Short abstract

This module wants to find out whether new forms of smartphone data collection (using sensors, apps, and camera) could be a supplement to survey research as they provide rich data and could enlarge our knowledge about people's behavior while reducing respondent burden. Collecting these data has ethical and practical implications: agreeing to collect data from smartphones is an additional step in the consent process, and participants might feel uncomfortable sharing these data with researchers due to security, privacy, and confidentiality concerns. In addition, different subgroups might differ in their skills of smartphone use and thus feel more or less comfortable using smartphones for research, leading to bias due to differential nonparticipation of specific groups. We find that concern for using smartphones for research differs by research task, and that the diversity of smartphone activities correlates with concern.

Research interest and aims

Smartphone use is on the rise worldwide (Pew Research Center 2017). Survey researchers are aware that smartphone users increasingly complete online surveys on their mobile devices and have investigated the quality of survey data provided via smartphones (e.g., Couper et al. 2017; Keusch & Yan 2017). At the same time, the rising penetration of smartphones also gives researchers the chance to collect data from smartphone users that goes beyond self-reporting through surveys. Smartphones can be used to collect a variety of data about respondents such as geolocation, measures of physical activity, online behavior and browser history, app usage, call logs, or photos (Link et al. 2014). These data would allow researchers to make inferences about, among others, users' mobility patterns, consumer behavior, health, and social interactions. Compared to surveys, which rely on self-reports, passive mobile data collection has the potential to provide richer data (because it can be collected in much higher frequencies), to decrease respondent burden (because fewer survey questions need to be asked), and to reduce measurement error (because of reduction in recall errors and social desirability). However, agreeing to allow for passive collection of data from smartphones is an additional step in the consent process, and participants might feel uncomfortable sharing these data with researchers due to security, privacy, and confidentiality concerns. In addition, different subgroups might differ in their skills of smartphone use and thus feel more or less comfortable using smartphones for research, leading to bias due to differential nonresponse of specific groups.

Based on data collected in this module, we answer the following research questions:

- How concerned are Austrian smartphone users about different types of data collection on their smartphone?
- Do general concerns about privacy and data security correlate with concerns about smartphone data collection?
- Does concern about smartphone data collection vary across subgroups of smartphone users with different levels of smartphone skills and smartphone use habits?

Theoretical and methodological framework

Findings from previous research on online surveys show that privacy concerns influence the willingness to participate in surveys (Couper et al. 2008, 2010; Couper & Singer 2013). Recent research shows that willingness to participate in new forms of data collection over smartphones is generally low and differs by type of task. Passive mobile data collection (e.g., GPS tracking, smartphone usage tracking) produce lower willingness than participation in mobile web surveys and tacking pictures for research (Couper et al. 2017; Jäckle et al. 2017; Revilla et al. 2018; Wenz et al. 2017). Keusch et al. (2017) find that giving participants more control over when data is shared with researchers increases willingness. We thus hypothesize that users attach different levels of concern to different research-related tasks on smartphones. High concern is assumed for tasks involving passive mobile data collection (e.g., using GPS or downloading an app for smartphone usage tracking) where the user has less control over what data is actually shared with the researcher. Lower concern is assumed for task that allow users to curate what data is actually shared, such as completing online questionnaires or sharing pictures.

From research on how people engage with the Internet and other IT technology, we know that access to a technology does not necessarily mean that everybody is able and willing to use the technology to its full potential. Hargittai (2002) uses the term “second digital divide” for this phenomenon. Recent research finds that smartphone skills and the use of smartphones for different activities correlate with reported willingness to participate in smartphone data collection tasks that go beyond responding to mobile web surveys (Couper et al. 2017; Keusch et al. 2017; Wenz et al. 2017). Similarly, we assume that smartphone skills, the frequency of smartphone use, and the diversity of activities that users engage in with their smartphone are correlated with concerns about the use of smartphones for research. Users who are more skilled in their use of a smartphone, who are using the smartphone more frequently, and who use the smartphone for more different activities are assumed to have fewer concerns with researcher-related-tasks on the smartphone.

Selected results

Figure 1 plots the concern for five research-related smartphone tasks. Downloading an app that collects data about how users engage with their smartphone yields the highest concern. Eighty-five percent of respondents reported that they would be a lot or somewhat concerned if their smartphone usage data would be tracked by an app. GPS tracking for research seems to also yield high concern; 72 percent of respondents reporting a lot or somewhat concern about GPS tracking. Less concern is reported when asked to use the smartphone camera to take photos or scan barcodes (58%), completing an online questionnaire on the smartphone (54%), and allowing built-in sensors of the smartphone to measure activity, such as the frequency and speed of walking, running, or cycling (43%). This finding confirms that smartphone users attach different levels of concern to different types of research-related tasks on smartphones. Tasks that involve continuous tracking of location or

behavior need the user to give up part of the control over what data is actually collected. This leads to higher concerns than tasks where the user can decide what information is shared with the researcher (e.g., responding to a survey question or submitting a photo).

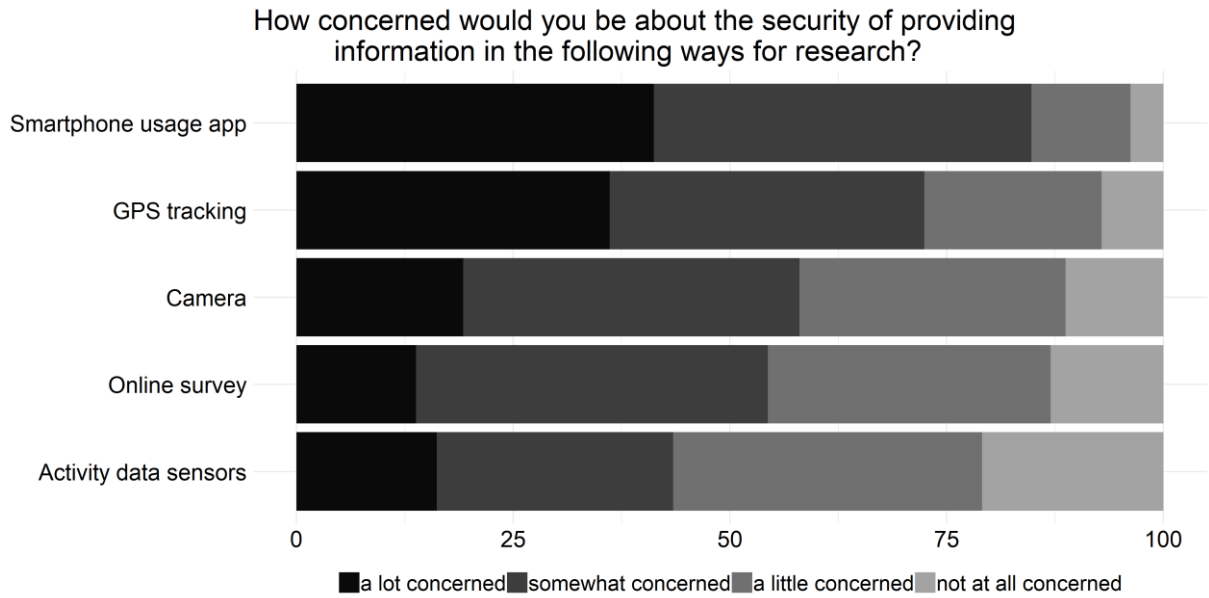

Figure 1. Percent of respondents reporting different levels of concern with research related tasks on smartphones

We next turn to the results from logistic regression models predicting concern (combining 'a lot concerned' and 'somewhat concerned' vs. combining 'a little concerned' and 'not at all concerned') when engaging in the five research-related tasks on a smartphone based on general privacy concern, frequency of smartphone use, self-rated smartphone skills, and number of smartphone activities, controlling for gender, age, and education. Figure 2 presents the average marginal effects from these models.

For five tasks, general privacy concern is significantly positively correlated with concern when participating in research using a smartphone. Respondents who report high general privacy concerns have on average between a 20- (smartphone usage tracking) and a 34-percentage points (online questionnaire) higher likelihood to report high concern with research-related smartphone tasks compared to respondents with low general privacy concerns. This finding confirms that general privacy concern is directly linked to concern with research-related tasks on the smartphone.

In addition, the more activities a respondent reports to do on the smartphone[3], the lower the likelihood for high concern for all five tasks. With each additional activity reported, the likelihood of having high concerns decreases by about two percentage points. The effect for one additional smartphone activity ranges from a one- (GPS tracking) to a three-percentage points (activity data collection) decrease. Using the smartphone at least once a day for tasks other than calling and texting is negatively correlated with concerns for online survey on the smartphone only (-16 p.p.) but not with concern for the other four tasks. Self-reported smartphone skills are not correlated with concern. On

3 We asked whether respondents use their smartphone for the following 12 activities: (1) browsing websites, (2) reading and/or writing email, (3) taking photos, (4) looking at content on social media websites/apps, (5) posting content to social media websites/apps, (6) making purchases, (7) online banking, (8) installing new apps, (9) using GPS/location-aware apps, (10) connecting to other electronic devices via Bluetooth, (11) playing games, (12) streaming videos or music

the one side, this finding confirms our hypothesis that high diversity of smartphone use, measured as numbers of smartphone activities, correlates with lower concern. Users who are exposed to a wider range of activities on their smartphone have lower concerns when using their smartphone for research-related tasks. On the other hand, we do not find a correlation between self-reported smartphone skills and concern.

For our control variables, we find that women are eight percentage points more likely to report high concern with GPS tracking than men, but there is no effect of gender on concern with other tasks and no effect of educational attainment. Concern with smartphone data collection (only GPS tracking n.s.) increases with age.

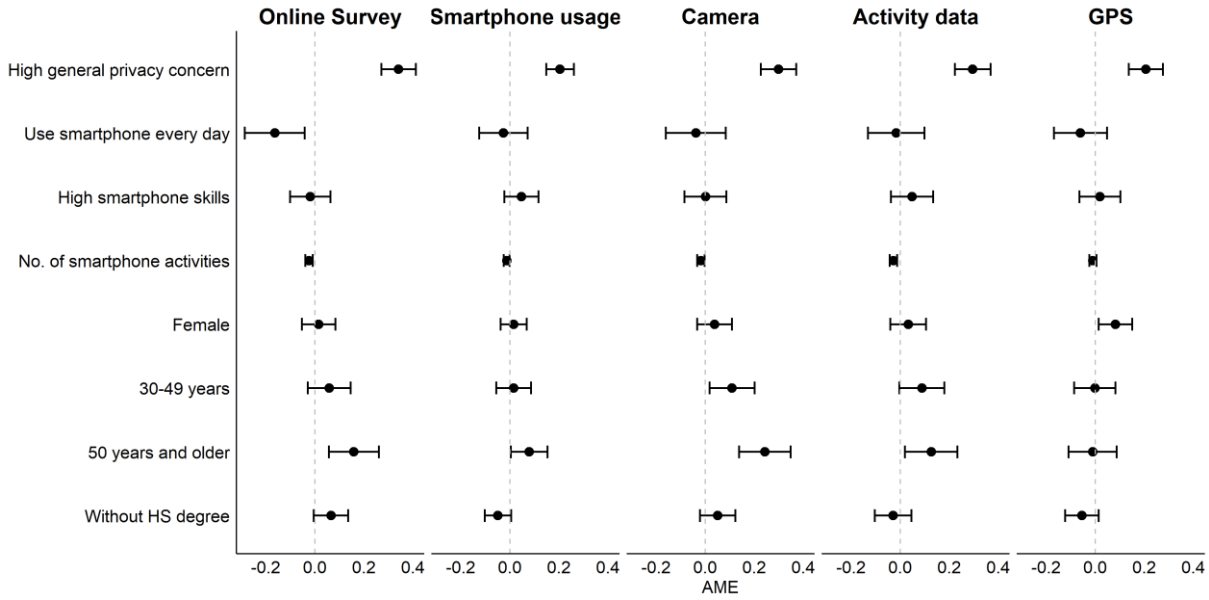

Figure 2. Average marginal effects (AME) and 95-percent confidence intervals from logistic regression predicting concern with five research-related tasks using a smartphone

References

Couper, Mick P., Christoper Antoun, and Aigul Mavletova. 2017. "Mobile Web Surveys: A Total Survey Error Perspective." Pp. 133-154 in Total Survey Error in Practice, edited by P.P Biemer et al. Hoboken, NJ: Wiley.

Couper, Mick P., and Eleanor Singer. 2013. "Informed Consent for Web Paradata Use." Survey Research Methods, 7:57-67.

Couper, Mick P., Eleanor Singer, Frederick G. Conrad, and Robert M. Groves. 2008. "Risk of Disclosure, Perceptions of Risk, and Concerns about Privacy and Confidentiality as Factors in Survey Participation." Journal of Official Statistics 24:255-275.

Couper, Mick P., Eleanor Singer, Frederick G. Conrad, and Robert M. Groves. 2010. "Experimental Studies of Disclosure Risk, Disclosure Harm, Topic Sensitivity, and Survey Participation." Journal of Official Statistics 26:287-300.

Jäckle, Annette, Jonathan Burton, Mick P. Couper, and Carli Lessof. 2017. Participation is a Mobile App Survey to Collect Expenditure Data as Part of a Large-Scale Probability Household Panel: Response Rates and Response Biases. Understanding Society Working Paper 2017 – 09.

Keusch, Florian, Christopher Antoun, Mick P. Couper, Frauke Kreuter, & Bella Struminskaya. 2017. “Willingness to participate in passive mobile data collection.” Paper presented at the AAPOR 72th Annual Conference, May 18-21, 2017, New Orleans, Louisiana.

Keusch, Florian, and Ting Yan. 2017. “Web vs. Mobile Web – An Experimental Study of Device Effects and Self-selection Effects.” Social Science Computer Review 35:147-166.

Link, Michael W., Joe Murphy, Michael F. Schober, Trent D. Buskirk, Jennifer Hunter Childs, and Casey Langer Tesfaye. 2014. “Mobile Technologies for Conducting, Augmenting and Potentially Replacing Surveys: Executive Summary of the AAPOR Task Force on Emerging Technologies in Public Opinion Research.” Public Opinion Quarterly 78:779-787.

Pew Research Center. 2017. “Mobile Fact Sheet.” Washington, D.C.” Pew Research Center.

Revilla, Melanie, Mick P. Couper, and Carlos Ochoa. 2018. “Willingness of Online Panelists to Perform Additional Tasks.” methods, data, analyses. Advance Access publication June 2018, doi: 10.12758/mda.2018.01

Wenz, Alexander, Annette Jäckle, and Mick P. Couper. 2017. Willingness to use mobile technologies for data collection in a probability household panel. ISER Working Paper 2017-10.