# Investigating the Effect of Information Presentation Alternatives on Email Pervasiveness and on Awareness of, Attitudes Towards, and Willingness to Seek and Recommend Help for Mental Illness in South Africa

**Anton H. Wrisberg**

Student no.: 6896146

Utrecht University

## Abstract

This pilot study evaluates nine hypotheses regarding how to increase email engagement and improve attitudes towards and willingness to seek help for mental illness through 1838 responses to a manipulated digital survey conducted in June and July 2021. The results suggest that personal addressing and to some extent a loss-framed subject line increase both opens of and link clicks in emails used for mass communication. Showing each survey question individually improves survey completion. None of the manipulated variables affect attitudes towards mental illness, but framing "mental" as "health" decrease respondents' willingness to seek and recommend professional help. Awareness of mental illnesses is correlated with willingness to seek and recommend help, but not with attitudes towards mental illnesses. Age is correlated with willingness to seek help and negatively correlated with awareness of attitudes towards mental illness. Women show higher levels of awareness of and more positive attitudes towards mental illness than men and a female vignette receive more positive attitudes than a male version from all genders. Finally, the order of the agreement options is found to positively affect respondents' agreeance when ordered from agree to disagree. The study design is limited in terms of the representability of the respondent sample and the narrow focus on depression as the only mental illness, creating the need for future replications with more inclusive samples and additional mental illnesses.

## 1 Introduction

Mental illnesses rank third as a category following only HIV/AIDS and "other infectious diseases" in terms of disability-adjusted life-years lost in South Africa (Bradshaw et al., 2007). The first (and only) nationally representative study of common[1] mental illnesses (Williams et al., 2004) as identified by the World Health Organisation composite international diagnostic interview (CIDI, see Kessler & Üstün, 2004) finds that during the preceding 12 months, 16.5% of the 4351 respondents have one or more DSM-IV/CIDI disorders and that 30.3% of respondents would have one or more in their lifetime (Herman et al., 2009). Still, only 25.5% of them receives treatment in those 12 months (Seedat et al., 2008) and more than half of them discontinues it prematurely (Bruwer et al., 2011).

The gap between the prevalence of mental illnesses and adequate treatments is global (Alonso et al., 2018) but differs between countries regarding both mental illness prevalence (The WHO World Mental Health Survey Consortium, 2004) and barriers to seeking help (Andrade et al., 2014). In South Africa, the mental illness pervasiveness is augmented by the country's violent history (Edwards, 2006; Stansfeld et al., 2017; Swain et al., 2017; Topper et al., 2015; Watt et al., 2012), soaring poverty rates (Lund, Breen, et al., 2010), and high HIV-prevalence (Jelsma et al., 2005; Kagee et al., 2017; Mfusi & Mahabeer, 2000; Nyirenda et al., 2013; Olley et al., 2004, 2005; Rochat et al., 2006). Not helping is the underfinanced mental health care sector (Lund, Kleintjes, et al., 2010).

Furthermore, traditional South African understandings of mental distress do not align with modern western medicine (Cheetham & Cheetham, 1976; Mbanga et al., 2002; Sorsdahl et al., 2009; Sorsdahl, Flisher, et al., 2010; Sorsdahl, Stein, et al., 2010). Mental challenges are commonly thought to remedy themselves and/or not perceived as severe enough to warrant health care (Bruwer et al., 2011; Hugo & Trump, 2006; Topper et al., 2015). Some people suffering from mental illnesses are unaware of their diagnosability and the help available (Schierenbeck et al., 2013; Strümpher et al., 2014). Unsurprisingly, researchers argue that information on mental challenges is important to overcome the mental illness treatment gap in South Africa (see e.g., Hugo et al., 2003; Seedat et al., 2002; Stein et al., 1996).

To better understand this gap (and ultimately bridge it) and inspired by the emerging field of behavioural science, this pilot study evaluates international findings on the effects of how information is presented in a South African context through a manipulated survey on mental health awareness.

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[1] Common mental illnesses include anxiety disorders (panic disorder, agoraphobia without panic, social phobia, generalized anxiety disorder, and post-traumatic stress disorder), mood disorders (major depressive disorder), and substance use disorders (alcohol abuse, alcohol dependence, drug abuse, and drug dependence). Note that this excludes mental disorders that require more than a lay-administered interview to assess (e.g., bipolar disorder, oppositional-defiant disorder, conduct disorder, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder, specific phobia, and separation anxiety disorder) and that the actual prevalence of mental disorders thus might be higher than the numbers presented here.

## 2 Hypotheses

Of the nine hypotheses evaluated in this pilot study, the first three are generic to the challenge of getting email recipients to open emails, continue to external content, and complete a survey. The ensuing three hypotheses test possible framing effects on people's help-seeking for and attitude towards mental illness as well as correlations between those and their mental health awareness. Hypotheses 7 and 8 evaluate demographic tendencies, and the last hypothesis investigates the effect of response options on respondents' agreeance.

### 2.1 Improving engagement

Analysing 158 billion emails, the Data & Marketing Association (2021) finds a steady average open rate around 17.2% to 21.2% and a steady average click-through rate of 1.9% to 2.5%. With only one in five mass emails sent ever opened, emails need to attract attention. Following Kahneman & Tversky's (1979, 1984) suggestion that losses drive preferences better than gains, Yechiam & Hochman (2013) suggest a model in which losses drive attention rather than preferences. This model is supported by their findings that losses cause stronger autonomic nervous system responses independent of subsequent preferences (Hochman & Yechiam, 2011) and directs attention to tasks when cognitively burdened (Yechiam & Hochman, 2014). As email recipients are usually rather busy, a loss-framed subject line might draw attention to that email.

Yes Lifecycle Marketing (2017) finds that emails including the recipients' name in the subject line increase open rates from 14.1% to 21,2%[2], and in a field experiment Sahni et al. (2018) increase open rates from 9.05% to 10.80% by simply prepending the recipient's name to the email's subject line. They suggest that the increase may be due to names attracting attention even in distraction-rich contexts (see e.g., Tacikowski & Nowicka, 2010; Wolford & Morrison, 1980). Furthermore, Sahni et al. (2018) find that prepending the recipient's name to an email's subject line increases the click-through rate more than proportionally to the open rate. An alternative is to include the recipient's name in the first part of the email's copy as email clients tend to preview the first bits of the message.

Another way to get attention is to arrive timely. Data from GetResponse (2020), HubSpot (2015), and Mailchimp (2014) suggest that a late morning delivery of emails is slightly better for email open rates but emphasise the differences between different audiences, increasing the need to test assumptions in this regard. Signalling that only little effort is needed, such as showing the reading time for the email or completion time for the survey, might also drive engagement. While a blog post by Marchese (2020) reports that they experience reduced bounce rates, increased page views and an increase in time spent on

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[2] Note that this is only an analysis of existing data (7 billion emails) rather than an experiment. It might be possible that marketers caring to personalise subject lines (forming only 2.3% of emails) generally care more for their emails in turn leading to higher open rates.

the site, no experiments appear to exist investigating the effect of disclosing reading times. However, with big websites such as the blogging universe Medium and professional network LinkedIn adopting the approach, it is likely to have a measurable effect. This might be due to the added transparency, which in the domain of governments is found to positively affect citizen participation, satisfaction, and trust (Cucciniello et al., 2017).

Dijkstra & Ballast (2012) find that using the recipient's name increases persuasion of a smoking cessation message only when the perceived personal relevance is high. Although the predicted lifetime prevalence of DSM-IV/CIDI disorders in South Africa exceeds 30% (Herman et al., 2009), it still leaves the majority of South Africans mentally healthy. Furthermore, the low mental health care attendance (Bruwer et al., 2011; Seedat et al., 2002, 2008, 2009) signals a low perceived relevance. The traditional understanding of mental illnesses in South Africa (see Cheetham & Cheetham, 1976; Mbanga et al., 2002; Sorsdahl et al., 2009; Sorsdahl, Flisher, et al., 2010; Sorsdahl, Stein, et al., 2010) might further impede the perceived relevance. While only some have mental illness, everyone has mental health. And while some might not think of it as mental, everyone has a brain. Thus, reframing "mental" to "brain" and "illness" to "health (challenge)" might improve personal relevance.

Mental illness is considered a delicate topic both in South Africa (Egbe et al., 2014; Sorsdahl & Stein, 2010) and globally (Clement et al., 2015; Link & Phelan, 2006; Rüsch et al., 2005). Thus, emphasising the security and anonymity of the survey might affect recipients' willingness to take part in the survey. Indeed, privacy protection is found to lead to trust and online information disclosure (Metzger, 2006). The mere presence of a privacy statement can induce trust (Arcand et al., 2007) and assurance statements may even outperform third-party assurance seals (Mousavizadeh et al., 2016). While the survey platform is natively designed to handle responses anonymously through an encrypted connection, saliently highlighting this fact might improve engagement.

Another aspect that positively affects online user engagement is the ease of use (Green & Pearson, 2011), which Belanger et al. (2002) find to be of even bigger importance than privacy and security. Couper et al. (2001) find that grouped questions lead to reduced response times in an experimental survey setting. Analysing real-world data, Liu & Wronski (2018) find that survey completion generally declines as the number of pages increases. These findings speak for more questions on fewer pages. The alternative, more pages with fewer questions, is supported by the goal-gradient first proposed by Hull (1932, 1934). In natural experiments, the goal-gradient is found to increase project commitment (Garland & Conlon, 1998) and coffee purchases (Kivetz et al., 2006) by increasing commitments as the goal gets closer. An often-adopted way to improve ease of use is by providing a progress bar, but studies of web-based survey completions suggest that showing a progress bar hamper survey completion (Crawford et al., 2001; Liu & Wronski, 2018; Villar et al., 2013). In factor-untangling experiments, a progress bar decreases drop-out rates when the survey is promised to be and indeed is short (Yan et al., 2011) and when the progress appears faster than expected (Conrad et al., 2010). Thus, different groupings of questions and showing a progress bar might affect the ease of use and feeling of progress on the survey platform.

To evaluate these previous findings in the context of mental illness in South Africa, this study evaluates the following hypotheses:

h1: Using a loss frame in the subject line (instead of a gain frame), including the recipient's name in the email subject line (versus not doing so), addressing the recipient by their name (versus by a generic title), sending the email late morning (versus early evening), and showing reading time for the email (versus showing none) does not affect email opens.

h2: Addressing the recipient by their name (versus by a generic title), framing "mental" as "brain", framing "illness" as "health (challenge)", emphasising the security and anonymity of the survey (versus not mentioning it), and showing completion time for the survey (versus not mentioning it) does not affect link clicks.

h3: Showing a progress bar (versus not doing so), saliently highlighting the security of the survey (versus not doing so), and grouping questions into a moderate number of pages (versus showing all at once or only one at a time) does not affect survey completions.

## 2.2 Improving attitude towards and help-seeking willingness for mental illness

Psychiatric labels are found to limit access to accommodation (Page, 1977) and human rights (Walker et al., 2016). While this might be due to negative experiences with people suffering from mental illness (Horsfall et al., 2010), it might also be caused by negative connotations of psychiatric labels. In a literature review of 23 studies investigating renaming of schizophrenia, Yamaguchi et al. (2017) find mixed results but do identify a series of experiments succeeding in reducing negative attitudes, negative beliefs, and discriminating attitudes (e.g., Kavanagh & Banyard, 2013; Kingdon et al., 2008; Koike et al., 2015, 2017; Takahashi et al., 2009) In a recent vignette study, Masland & Null (2021) find that psychiatric labels reduce negative attitudes, maybe by offering an excuse for the described behaviours. Thus, how you label mental illnesses may affect respondents' attitudes towards them. Like how reframing "mental" as "brain" and "illness" as "health (challenge)" might affect personal relevance, integrating the argument above, they might also affect respondents' attitudes towards and willingness to seek and recommend help for mental illness.

A study of stigma surrounding HIV/AIDS in Cape Town shows that stigma increase with increased attention and information (Maughan-Brown, 2010), and research among South African mental health care professionals reveals that they hold more negative attitudes towards patients suffering from mental illness than the general population (Egbe et al., 2014; Schierenbeck et al., 2013). Globally, stigma is only found to have small to moderate effects on help-seeking behaviour (Clement et al., 2015). Furthermore, anti-stigma campaigns are present in all nine South African provinces, but with unknown effects (Kakuma et al., 2010). However, the underlying assumption of mental health information campaigns is that more information will improve attitudes towards mental illness. If that is the case, respondents with higher awareness of mental illnesses should hold more positive attitudes towards mental illnesses and be more willing to seek and recommend help.

To evaluate these previous findings in the context of mental illness in South Africa, this study evaluates the following hypotheses:

h4: Not using psychiatric diagnosis labels (versus doing so), framing "mental" as "brain", and framing "illness" as "health (challenge)" does not affect attitudes towards mental illness.

h5: Not using psychiatric diagnosis terms (versus doing so), framing "mental" as "brain", and framing "illness" as "health (challenge)" does not affect respondents' willingness to seek and recommend help.

h6: Knowledge of mental illness is not correlated with willingness to seek and recommend help or with attitudes towards mental illness.

## 2.3 Demographic tendencies

Age, gender, occupation, and income affect both who suffers from mental illness (Herman et al., 2009; Tomlinson et al., 2009) and who seeks help (Seedat et al., 2008) in South Africa. Furthermore, findings by Schierenbeck et al. (2013) and Egbe et al. (2014) suggest that occupations play a role in South Africans' views of people suffering from mental illness. Furthermore, Phelan & Basow (2007) suggest that males suffering from mental illness are generally less tolerated than their female counterparts. Wirth & Bodenhausen (2009) expand on this by finding that gender-typical mental illnesses are regarded less like genuine challenges and receive less sympathy than gender-atypical illnesses. Masland & Null (2021) find that borderline personality disorder, which is equally frequent in men and women but more often diagnosed for women, causes male sufferers to be considered more dangerous. As depression is more frequent among South African women than South African men (Tomlinson et al., 2009; van der Walt et al., 2020), how South Africans perceive depression might differ if experienced by a woman or by a man and whether judged by a woman or a man.

To evaluate these previous findings in the context of mental illness in South Africa, this study evaluates the following hypotheses:

h7: The age, gender, income, and occupation of the respondent are uncorrelated with awareness of mental illness, willingness to seek and recommend, and attitude towards mental illness.

h8: The gender of the respondent and the gender of the depicted depression vignette personage does not affect attitude towards mental illness.

## 2.4 Agreement option order and "don't know" option

Experiments suggest that decision-makers evaluate alternatives in a stepwise confirmatory fashion (Klayman & Ha, 1987), stopping when they are no longer certain to be wrong (Jain et al., 2021; LeBoeuf & Shafir, 2006). In surveys, experimental findings suggest that earlier items receive more selections (Israel & Taylor, 1990). Thus, the order of the agreement options presented in the survey questions probing if respondents agree may affect their agreeance level. A similar discussion surrounds whether scales should allow for a "neutral" answer or force participants towards a standpoint. Early experiments find that

explicitly offering a middle option increases its selection frequency (Bishop, 1987), but a recent study suggests that omitting the middle option decreases data quality (Wang & Krosnick, 2020). As the questionnaire employed to gauge attitude towards mental illness in this study requires a neutral option, the presence of a "don't know" option will be investigated instead as the two are scored equally anyway.

To evaluate these previous findings, this study evaluates the following hypothesis:

> h9: The order of agreement options (from "agree" to "disagree" versus from "disagree" to "agree") and offering a "don't know" option (versus only a "neutral" option) does not affect respondents' level of agreeing.

## 3 Method

This study manipulates a survey measuring mental health awareness in a big South African organisation ("Company") to form an experimental arena for evaluating the nine hypotheses presented above.

### 3.1 Respondents

The survey is sent to 5021 Company employees with three fourths (3763 = 74.9%) of the emails sent on June 10, and the remaining quarter (1258 = 25.1%) on June 14 due to an email server glitch. The survey is open till July 15 allowing ample time (5 weeks) for recipients to take part. In this period a single reminder email is sent on June 22 with wordings like that of the invitation email. Participation is not otherwise incentivised. 2291 recipients (45.6%) open the survey, and 1838 recipients (36.6% of the total recipients, 80.2% of the recipients opening the survey, 1331 women, 456 men, 51 others, mean age: 41.6 years, SD: 9.9) complete it. For evaluation of hypothesis 1, all 5021 recipients form the sample. For evaluation of hypotheses 2 and 3, the 2291 recipients accessing the survey form the sample[3]. For evaluation of hypotheses 4 through 9, the 1838 recipients completing the survey form the sample.

### 3.2 Design

This pilot study contains seven simultaneous experimental treatment setups (hypotheses 1 through 5, 8, and 9) and two investigations of correlation (hypotheses 6 and 7):

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[3] Technicalities inhibited Company's system from adding the recipient's name to the email subject line and tracking email opens. These limitations have important implications for hypotheses 1 and 2. For hypothesis 1, the variable "including the recipient's name in the email subject line (versus not doing so)" is retracted and excluded from the analysis. Furthermore, and of much greater importance, the inability to track email opens removes the dependent variable (opens of the email) of hypothesis 1. However, assuming no effects of the variables presented in hypothesis 2 (i.e., assuming the null assumption to hold true), the dependent variable of hypothesis 2 (link clicks) is used as a proxy dependent variable in the evaluation of hypothesis 1. For hypothesis 2 this means that the sample is all recipients and not only those who opened the email (as they cannot be identified). Again, this assumes the null assumption of hypothesis 1 to hold true.

Hypothesis 1   is evaluated through a 2 (loss- versus gain-framed subject line) X 2 (including recipient's name in subject line versus not doing so) X 2 (generic addressing versus using the recipient's name) X 2 (morning versus afternoon delivery) X 2 (showing reading time versus not doing so) full factorial between-subjects design.

Hypothesis 2   is evaluated through a 2 (generic addressing versus using the recipient's name) X 2 ("mental" versus "brain") X 2 ("illness" versus "health") X 2 (emphasising security and anonymity versus not doing so) X 2 (showing completion time versus not doing so) full factorial between-subjects design.

Hypothesis 3   is evaluated through a 2 (showing progress bar versus not doing so) X 2 (saliently highlighting security versus not doing so) X 3 (no grouping of questions versus moderate grouping of questions versus showing each question individually) full factorial between-subjects design.

Hypothesis 4   is evaluated through a 2 (using psychiatric labels versus vernacular descriptions) X 2 ("mental" versus "brain) X 2 ("illness" versus "health") full factorial between-subjects design.

Hypothesis 5   is evaluated like hypothesis 4.

Hypothesis 6   is evaluated through an investigation of score means correlations.

Hypothesis 7   is evaluated through an investigation of score means correlations for age and comparisons of score means for sex, occupation, and income.

Hypothesis 8   is evaluated through a 2 (gender of vignette personage: male versus female) X 3 (gender of respondent: male versus female versus other) full factorial between-subjects analysis.

Hypothesis 9   is evaluated through a 2 ("agree" to "disagree" versus "disagree" to "agree" ordering) X 2 (showing a "don't know" option versus not doing so) full factorial between-subjects analysis.

### 3.3 Procedure

Before inviting respondents, anonymous IDs are assigned to randomly constructed combinations of the conditions presented above. Table 3 in Appendix 1 presents the conditions and the total number of IDs assigned to each. Every employee is randomly assigned an ID by Company and receives an invite by email to take part in a study on mental illness in South Africa to help Company improve their offerings. The email subject line and contents are manipulated according to the conditions of hypotheses 1 and 2. See Figure 2 in Appendix 2 for an example email. When opening the email, a pixel (a small photo with a unique identifier) loads to detect email opens. When clicking through to the survey, only the ID is passed along to ensure that the respondent sees the right version of the survey (with variables corresponding to their email) without the system knowing any personal details of the respondent. When opening the survey, each respondent is welcomed, consents to take part, and completes the survey finishing at a thank you screen. The survey is manipulated according to the conditions of hypotheses 3 through 6, 8, and 9. Figure 3 and Figure 4 in Appendix 4 show variants of the survey platform based on alternative conditions.

## 3.4 Measuring attitudes towards mental illness

To evaluate stigma towards mental illness, this study employs the Attitudes to Mental Illness Questionnaire (AMIQ, see Luty et al., 2006), which among a review of 101 stigma measurement tools is the shortest of only 12 tools meeting minimum acceptable evidence criteria for all their measurement properties (Wei et al., 2018). The AMIQ consists of five statements relating to a short vignette for which the respondents must indicate to which extent they agree. In line with van der Ham et al. (2011), the vignette used here is adapted to the local context based on a depression vignette previously used in South Africa by den Hertog et al. (2020) with changes inspired from depression vignettes used in another South African study (Sorsdahl, Flisher, et al., 2010) and two Ugandan studies (Johnson et al., 2009; Okello & Ekblad, 2006). The choice of depression is based on its stable ~10% lifetime prevalence across age groups, genders, and provinces in South Africa (Herman et al., 2009). The name Lethabo is chosen for the vignette as it is a trending unisex name in South Africa (Statistics South Africa, 2020). The resulting depression vignette reads as follows:

> Lethabo is a 30-year-old South African woman. She has been looking very sad and miserable over the past few months. She is struggling to look after her home and children. Her speech and movements have slowed down. Lethabo does not eat or sleep well. She stays in bed for days without doing anything. She often says that life is not worth living. Nothing seems to her up. Once she even tried to take her own life.

After reading the vignette, the respondent indicates to which extent she agrees with five statements surrounding the vignette character's career, professional and personal social interactions, intimate relations, and law abidingness. In this study, a sixth statement is added to identify the origin of mental illness, which have traditionally been ascribed to *amafufunyana*, "nerves", in some South African societies (Cheetham & Cheetham, 1976; Lund & Swartz, 1998; Sorsdahl, Stein, et al., 2010). Furthermore, the five original statements have been altered slightly for consistency and to allow for unified response options[4]. Table 4 in Appendix 3 presents both the altered statements used here, the original AMIQ statements, and their answer options and scoring.

## 3.5 Survey and scoring

To gauge respondents' awareness of mental illness, the survey contains six statements and two questions on facts about the origins, treatability, and prevalence of mental illness. To evaluate help-seeking willingness, the survey contains two statements on this. To quantify respondents' attitudes towards mental illness, the AMIQ (by Luty et al., 2006) is adapted as described above. Finally, the survey asks the

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[4] The alteration consists of starting all statements with "I" (instead of e.g. "Do you think" for question 1, for which "strongly agree" is neither a logical nor a proper response, as it asks for a binary response, and instead of "how likely do you think" for questions 4 and 5) and negating the main terms in questions 2 and 3 to align agreement with attitude in a uniform way (so that agreeing is negatively scored for all questions).

respondent's age, gender, occupation, and income[5]. Appendix 4 presents all survey questions and their response options. To evaluate the six hypotheses relating to respondents' answers (hypotheses 4 through 9), responses are scored as described below.

*Awareness score.* Awareness of mental illness is calculated as a cumulative score from survey questions 1 through 8. For questions 1 through 5, "Strongly disagree" to "Strongly agree" is scored from -2 to 2 in 1-point incremental steps with "neutral" and "don't know" scored 0. For question 6, these scores are reversed. For question 7, the base score is -2 with each of the 10 options adding .4 for a total maximum score of 2 with the "None of these" option adding 0. For question 8, "less than 1 in 10" is scored -2, "more than 1 in 3" is scored 2, with each of the eight options in between being scored with $4/9$-point incremental steps. Hence the highest possible awareness score is 16 and the lowest possible awareness score is -16.

*Help-seeking score.* Willingness to seek and recommend help is calculated as a cumulative score from survey questions 9 and 10 following the scoring of questions 1 through 5. Hence, the highest possible help-seeking score is 4 and the lowest possible help-seeking score is -4.

*Attitude score.* Attitude towards mental illness is calculated as a cumulative score from survey questions 11 through 16 and following the scoring of questions 1 through 5. Hence, the highest possible attitude score is 12 and the lowest possible attitude score is -12.

*Agreeance score.* To evaluate Hypothesis 9 relating to respondents' agreeance, an average score is calculated from the fourteen survey questions offering agreement scales (questions 1 through 6 and 9 through 16) following the scoring of questions 1 through 5. Hence, the highest possible agreeance score is 2 and the lowest possible agreeance score is -2.

### 3.6 Analysis

Responses are analysed using the R Statistical language (version 4.1.0) on macOS Big Sur 11.3.1. Hypotheses 1, 2, and 3 are evaluated using logistic regression as both independent and dependent variables are categorical. Each hypothesis' independent variables are evaluated independently, as part of an additive model analysing only main effects, as part of an interactive model analysing both main effects and interactions, and as part of a best-fit model identified by a stepwise approach minimising chi-square values. The results of the regressions are presented as odds ratios (OR, which is found by taking the exponent of the beta-coefficient, see Meurer & Tolles, 2017) and corresponding confidence intervals (CI). As multiple hypotheses are evaluated simultaneously, alpha levels and the corresponding confidence intervals are corrected by the Bonferroni method by considering each hypothesis as a family of tests. For

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[5] As all respondents are employees at Company, the demographic background information is intentionally limited to not allow for individual identification among responses.

example, in hypothesis 1, five explanatory variables are investigated, thus, to obtain a family-wise error rate of 0.05, each variable is evaluated against an alpha level of 0.01 (and a 99% confidence interval)[6]. When evaluated as an interactive model, the alpha level is further decreased to account for the additional 26 possible interactions, resulting in an alpha level of .002 for hypothesis 1.

Hypotheses 4, 5, 8, and 9 are evaluated using multiple factorial analysis of variance (ANOVA) as independent variables are categorical and dependent variables are continuous. The ANOVAs consider both main effects and interactions between independent variables. In case of statistically significantly ($p \leq .05$) different means, post-hoc Tukey's Honestly Significant Difference (Tukey HSD) analyses are performed to quantify the difference in means. The Tukey HSD adjusts $p$-values for a familywise 95% confidence interval. As the total number of possible interactions grows exponentially, only statistically significant differences (adjusted $p \leq .05$) in means are presented. As both concerns non-controlled independent variables, hypothesis 6 and the first part of hypothesis 7 are evaluated using Pearson's product-moment correlation analysis to compare the means of two groups. The last part of hypothesis 7 is evaluated using an ANOVA investigating only main effects to preserve anonymity for only rarely occurring combinations of gender, occupation, and income among Company employees.

## 4 Results

Table 1 below presents the demographics of the 1838 respondents (mean age = 41.6, SD = 9.9, range: [16, 71]; 72.4% females) completing the survey. Of these, the majority works as office workers (864 = 47.0%), in unspecified functions (480 = 26.1%), or as call centre agents (294 = 16.0%). 64.5% of the respondents earn between R10 000 and R50 000 per month, with 6.4% earning less, 8.7% earning more, and 20.4% choosing not to disclose. Note that demographic data is only available for respondents completing the survey.

### 4.1 Evaluation of hypothesis 1
Evaluated individually, personal addressing (OR = 1.382, 98.8% CI: [1.199, 1.593]) promotes email opens. The effects of a loss-framed subject line, late morning delivery and disclosure of reading time are statistically insignificant. When evaluated as part of an additive model, personal addressing (OR = 1.390, 98.8% CI: [1.206, 1.603]) promotes email opens, while the remaining variables do not affect it. When evaluated as part of an interactive model, none of the variables nor their interactions appear to affect email opens. The best fit model contains all independent variables as well as the interaction between a loss-framed subject line and a late morning delivery. When evaluated as part of this best fit model, both a loss-framed subject line (OR = 1.259, 99% CI: [1.023, 1.551]) and personal addressing (OR = 1,388,

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[6] To get this number, divide the family-wise alpha level with the number of simultaneous tests. In this case, 0.05 / 5 = 0.01. The confidence interval is simply one minus the alpha level. In this case, 1 − 0.01 = 0.99 = 99%.

|  | n | % |
|---|---|---|
| *Sex* | | |
| Female | 1331 | 72.4 |
| Male | 456 | 24.8 |
| Other / do not wish to answer | 51 | 2.8 |
| *Age* | | |
| Mean | 41.6 years | |
| SD | 9.9 years | |
| *Occupation* | | |
| Office worker | 864 | 47.0 |
| Call centre agent | 294 | 16.0 |
| Service sector | 73 | 4.0 |
| Engineer | 25 | 1.4 |
| Business owner | 13 | 0.7 |
| Teacher | 13 | 0.7 |
| Unemployed | 5 | 0.3 |
| Student | 4 | 0.2 |
| Other | 480 | 26.1 |
| Do not wish to answer | 67 | 3.6 |
| *Income* | | |
| R0 - R5 000 | 11 | 0.6 |
| R5 000 – 10 000 | 106 | 5.8 |
| R10 000 – R15 000 | 323 | 17.6 |
| R15 000 – R25 000 | 467 | 25.4 |
| R25 000 – R50 000 | 397 | 21.6 |
| R50 000 – R100 000 | 114 | 6.2 |
| R100 000 + | 45 | 2.4 |
| Other / do not wish to answer | 375 | 20.4 |
| *Total* | *1838* | *100.0* |

Table 1: Overview of respondent demographics. Only data on respondents completing the survey is known and shown.

99% CI: [1.199, 1.608]) promotes email opens, while the effects of the remaining variables are statistically insignificant. Table 5 in Appendix 5 presents the full regression model results. Note that link clicks are used as a proxy for email opens[3] assuming hypothesis 2's null assumption to hold.

### 4.2 Evaluation of hypothesis 2

Evaluated individually, personal addressing (OR = 1.382, 99% CI: [1.194, 1.600]) promotes link clicks. The effects of framing "mental" as "brain", framing "illness" as "health", emphasising the security and anonymity of the survey, and showing completion time for the survey are statistically insignificant. When evaluated as part of an additive model, personal addressing (OR = 1.381, 99% CI: [1.193, 1.599]) promotes link clicks, while the effect of the remaining variables does not affect it. When evaluated as part of an interactive model, none of the variables or their interactions show an effect. The best fit model contains only the personal addressing, which shows an effect (OR = 1.382, 95% CI: [1.236, 1.545]). Table

6 in Appendix 5 presents the full regression model results. Note that all recipients are used as a proxy sample[3] assuming hypothesis 1's null assumption to hold.

## 4.3 Evaluation of hypothesis 3

Evaluated individually and as an additive model, neither showing a progress bar, showing a salient security statement nor the grouping of survey questions affect survey completion. When evaluated as part of an interactive model, showing each survey question individually (OR = 2.464, 98.4% CI: [1.132, 5.679]) improves survey completion while the other variables and interactions do not affect it. The best fit model contains showing a progress bar, moderate grouping of survey questions, and showing each survey question individually. When evaluated as part of this best fit model, none of the variables show a statistically significant effect. Table 7 in Appendix 5 presents the full regression model results.

## 4.4 Evaluation of hypothesis 4

Table 8 in Appendix 5 presents ANOVA results for hypothesis 4. As none of the group means differ significantly, the null hypothesis cannot be rejected, and no further analysis is conducted.

## 4.5 Evaluation of hypothesis 5

Table 9 in Appendix 5 presents ANOVA results for hypothesis 5. There is a significant effect of "illness" vs "health" on respondents' help-seeking score ($F[1, 1830] = 17.89$, $p < .001$). Post hoc comparisons using the Tukey HSD test indicate that the mean help-seeking score is lower in the "health" condition than the "illness" condition (diff = -0.267, 95% CI: [-0.391, -0.143], adj. $p < .001$). The effect is so strong that both when it interacts with the psychiatric label use conditions and the "mental" vs "brain" conditions, it persists (see Table 2 below for details).

## 4.6 Evaluation of hypothesis 6

Pearson's product-moment correlation analysis suggests that respondents' awareness score is positively correlated with their help-seeking score ($r = 0.19$, 95% CI: [0.15, 0.23], $t(1881) = 8.39$, $p < .001$). Respondents' awareness score is not correlated with their attitude score ($r = 0.03$, 95% CI: [-0.01, 0.08], $t(1861) = 1.47$, $p = .141$), neither is their attitude score correlated with their help-seeking score ($r = 0.03$, 95% CI: [-0.02, 0.07], $t(1863) = 1.25$, $p = .211$). Thus, awareness and help-seeking scores seem to be related to each other but are both independent of attitude scores.

|  | Difference | [ 95% CI | ] | Adj. $p$ |
|---|---|---|---|---|
| No labels + "health" – no labels + "illness" | -0.292 | -0.523 | -0.062 | .006 |
| Labels + "health" – no labels + "illness" | -0.271 | -0.501 | -0.041 | .013 |
| No labels + "health" – labels + "illness" | -0.263 | -0.492 | -0.034 | .017 |
| Labels + "health" – labels + "illness" | -0.242 | -0.471 | -0.013 | .034 |
| "Mental" + "health" – "mental" + "illness" | -0.226 | -0.452 | -0.001 | .049 |
| "Brain" + "health" – "mental" + "illness" | -0.236 | -0.465 | -0.006 | .042 |
| "Mental" + "health" – "brain" + "illness" | -0.301 | -0.531 | -0.071 | .004 |
| "Brain" + "health" – "brain" + "illness" | -0.310 | -0.544 | -0.077 | .004 |

Table 2: Tukey HSD evaluating uneven means of hypothesis 5 (sample: respondents completing the survey; dependent variable: help-seeking score [-4, 4]). Only differences with adjusted $p \leq .05$ (for a family-wise alpha level of .05) are shown.

## 4.7 Evaluation of hypothesis 7

Pearson's product-moment correlation analysis suggests that respondents' age is positively correlated with their help-seeking score (r = 0.06, 95% CI: [0.01, 0.11], t(1853) = 2.59, $p$ = .010). Respondents' age is negatively correlated with their awareness score (r = -0.08, 95% CI: [-0.12, -0.03], t(1852) = -3.27, $p$ = .001) and negatively correlated with their attitude score (r = -0.09, 95% CI: [-0.13, -0.04], t(1856) = -3.87, $p$ < .001). Thus, age appears to affect all scores measured in this survey.

Table 10, Table 11, and Table 12 in Appendix 5 presents the results of the ANOVA evaluating the remainder of hypothesis 7. There is a significant effect of gender (F[2, 1724] = 7.18, $p$ < .001) and income (F[7, 1724] = 2.81, $p$ = .007) on awareness score. There also appears to be a significant effect of occupation (F[9, 1724] = 2.40, $p$ = .011) as well as of the interaction between occupation and income on (F[43, 1724] = 1.75, $p$ = .002) help-seeking score. There is also a significant effect of gender (F[2, 1724] = 5.67, $p$ = .004) on attitude score. Post hoc comparisons using the Tukey HSD test indicate that the awareness score is lower among respondents identifying as male than respondents identifying as female (diff = -0.594, 95% CI: [-1.041, -0.148], adj. $p$ = .005) and respondents identifying as "other" or not wanting to disclose their gender than participants identifying as female (diff = -1.224, 95% CI: [-2.399, -0.048], $p$ = .039), and higher among respondents earning between R25 000 and R50 000 than respondents earning "other" or not wanting to disclose their income (diff = 0.910, 95% CI: [0.143, 1.677], adj. $p$ = .008). When evaluated in a Tukey HSD post hoc analysis, the difference caused by occupation disappears. For reasons of anonymity, the interactions are not further analysed. Finally, the attitude score is lower among respondents identifying as male than respondents identifying as female (diff = -0.653, 95% CI: [-1.110, -0.196], adj. $p$ = .002).

## 4.8 Evaluation of hypothesis 8

Table 13 in Appendix 5 presents ANOVA results for hypothesis 8. There is a significant effect of the vignette personage gender on respondents' attitude score (F[1, 1832] = 4.85, $p$ = .028) and of respondent's gender on respondents' attitude score (F[2, 1832] = 5.46, $p$ = .004). No interactions between the two is found. Post hoc comparisons using the Tukey HSD test indicate that the attitude score is higher when the vignette personage is female (diff = 0.368, 95% CI: [0.040, 0.696], adj. $p$ = .028) and when the respondent identifies as female (diff = 0.640, 95% CI: [0.138, 1.096], adj. $p$ = .003).

## 4.9 Evaluation of hypothesis 9

Table 14 in Appendix 5 presents ANOVA results for hypothesis 9. There is a significant effect of agreement option order on respondents' agreeance score (F[1, 1834] = 13.05, $p$ < .001) and of the interaction of agreement option order with the presence of a "don't know" option on respondents' agreeance score (F[1, 1834] = 4.99, p = .026). Post hoc comparisons using the Tukey HSD test indicate that the agreeance score is higher in the agree to disagree condition than the disagree to agree condition (diff = 0.062, 95% CI: [0.029, 0.096], adj. $p$ < .001). When interacting with the "don't know" option, agreeance scores are higher in the agree to disagree condition with no "don't know" option present than
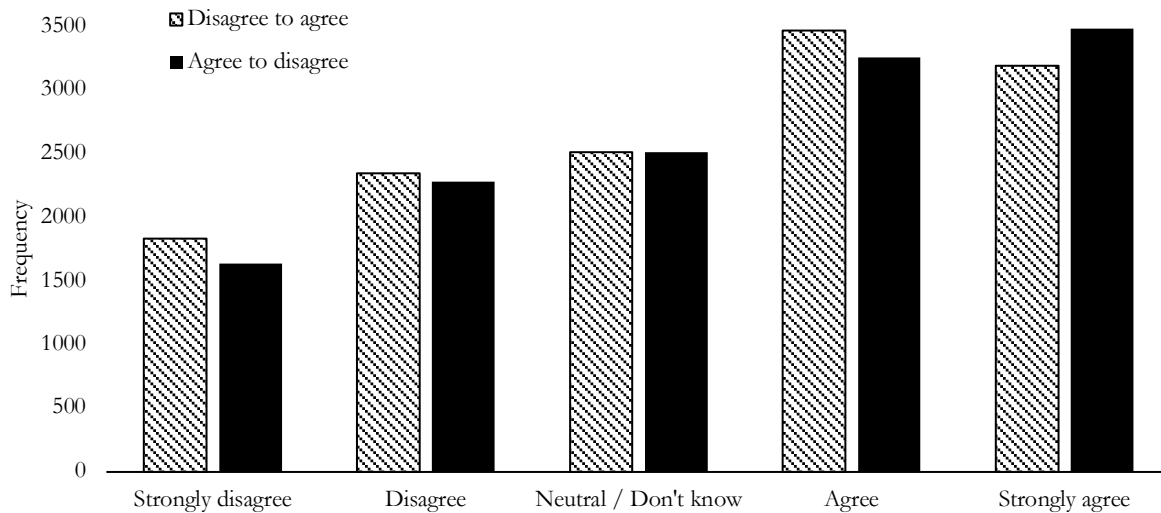
Figure 1: Distribution of agreeance choices in the two agreement-order conditions: from "disagree" to "agree" and from "agree" to "disagree".

in the disagree to agree condition with a "don't know" option present (diff = 0.071, 95% CI: [0.009, 0.133], adj. $p$ = .018) and in the agree to disagree condition with a "don't know" option present than in the disagree to agree condition with a "don't know" option present (diff = 0.102, 95% CI: [0.038, 0.165], adj. $p$ < .001). Figure 1 above depicts the distribution of agreeance choices for the two agreement order conditions.

## 5 Discussion

Personal addressing positively affects both email opens and link clicks in the individual models, the additive models, and the best fit models, thus partly rejecting hypotheses 1 and 2. This aligns with previous findings by Sahni et al. (2018) and is here, too, a costless way to increase engagement. Following Dijkstra & Ballast's (2012) line of enquiry, this might indicate that the perceived personal relevance is high rather than low. However, reframing "mental" as "brain" and "illness" as "health (challenge)" did not show any effect, suggesting that this reframing is not the source of relevance. While the traditional understanding of mental illness in South Africa differs from that of Western medicine (Cheetham & Cheetham, 1976; Mbanga et al., 2002; Sorsdahl, Flisher, et al., 2010; Sorsdahl, Stein, et al., 2010) the wording does not appear to inflict on this. In the best fit model, a loss-framed subject line also positively affects email opens. This aligns with the ideas of Kahneman & Tversky's (1979) prospect theory, and while this experiment is not designed to falsify Yachiam & Hochman's (2014) hypothesis, it does lend itself to support their idea that loss frames direct attention in cognitively burdened contexts. Timing of the email did not show an effect in any of the models, which might be due to the limited effects previously found (see GetResponse, 2020; HubSpot, 2015; Mailchimp, 2014) requiring a bigger sample size. Showing reading and completion time did not have an effect in any of the models. No evidence is found in previous literature either, suggesting this does not warrant future attention. Note that the results for hypothesis 1 are based on the proxy dependent variable of link clicks (and not email opens) and that the

results for hypothesis 2 are based on a sample comprising all recipients (and not only those opening the email) and are thus potentially flawed.

Showing each question individually positively affects survey completion in the interactive model, thus rejecting hypothesis 3. Note that this finding is too significant at the non-corrected alpha levels in the other models. That a single question on each page outperformed both a moderate grouping and all questions on one page suggests that the goal gradient's induced sunk cost ignorance (see Garland & Conlon, 1998; Kivetz et al., 2006) is stronger than the effect of "longer" surveys on drop off rates (see Liu & Wronski, 2018). That the presence of a progress bar did not significantly halt completions, challenges previous findings by Crawford et al. (2001), Liu & Wronski (2018), and Villar et al. (2013). This might be due to too small a sample size, as it does appear to halt completions at the non-corrected alpha level. Following the line of thought of Yan et al. (2011), and Conrad et al. (2010), this might indicate that the survey appeared longer than promised or progress slower than expected. Thus, it appears that the internal feeling of progress (and sunk cost ignorance) is a stronger driver for continuation than the external information provided by a progress bar. Following this, it might be fruitful to disregard Green & Pearson's (2011) focus on ease of use to increase the perceived effort spent on the task to, in turn, promote survey completions. The presence of a salient security statement did not appear to affect neither link clicks nor survey completion. This might either be due to a generally high level of trust from Company's employees towards their employer or to too small a sample to allow detection. As it contradicts earlier findings by Metzger (2006), Arcand et al. (2007), and Mousavizadeh et al. (2016), the latter seems more probable.

Hypothesis 4 is the only hypothesis that cannot be rejected. Framing (e.g., "mental" as "brain") is not enough to affect attitude scores in this sample. While this result contradicts earlier findings suggesting that renaming and labelling mental illnesses might improve people's attitudes towards them, it might be a result of an inadequate choice of words or that the different nationality and demographic makeup of this study differ in relevant ways, as Yamaguchi et al. (2017) find renaming efforts to be culturally dependent. Framing "illness" as "health" does, however, negatively affects respondents' help-seeking score, both when evaluated individually and when interacting with the use of psychiatric labels and with framing "mental" as "brain", thus rejecting hypothesis 5. As the help-seeking score goes from -4 to 4, a difference of -0.267 implies that were the respondents to answer eight questions on willingness to seek and recommend help (instead of just two), on average they would be one scale option less willing when "illness" is framed as "health (challenge)". Borrowing from Kahneman & Tversky's (1979) and Yechiam & Hochman (2013), an illness may simply attract more attention than the corresponding health. Furthermore, respondents' awareness score is positively correlated with their help-seeking score, thus rejecting hypothesis 6. As no other correlates are found, it appears as if better mental health awareness is enough to drive willingness to seek and recommend professional help, although possibly still suffering from negative attitudes towards mental illness. This aligns with Clement et al.'s (2015) finding suggesting that negative attitudes are not the main inhibitor for help-seeking. These results also do not reject

Schierenbeck et al.'s (2013) and Egbe et al.'s (2014) findings that increased exposure to (and thus knowledge of) may worsen attitudes towards mental illnesses.

Age is positively correlated with help-seeking score and negatively correlated with awareness score and attitude score, respondents identifying as female show higher awareness and attitude scores than men, and not disclosing one's income is correlated with a lower awareness score, thus rejecting hypothesis 7. That age is positively correlated with willingness to recommend and seek help might be an effect of life experience (i.e., realising that it might not remedy itself), but is not reflected in the general tendency for mental help-seeking which is age-independent (Seedat et al., 2008). As awareness scores are correlated with help-seeking scores, the correlation between being female and higher awareness and attitudes scores partly reflects the tendency found by Seedat et al. (2008) for South African women to be more likely to seek help than men. That age is negatively correlated with mental health awareness might be due to the negative correlation between age and major depression prevalence in South Africa found by Tomlinson et al. (2009). However, the general prevalence of mental illnesses in South Africa does not appear to be age-dependent (Herman et al., 2009). That occupation does not appear to affect attitudes in this sample contradicts Schierenbeck et al. (2013) and Egbe et al.'s (2014) findings but might be due to the very similar nature of the occupations present in this sample. As both the gender of the vignette (being female) and the gender of the respondent (being female) positively affects respondents' attitude score, hypothesis 8 is rejected. While one might get the idea that the more positive attitude towards the female vignette character might be based on the high number (72.4%) of respondents identifying as female, it should be noted how the interaction between the two is not statistically significant. This implies that men in this sample show worse attitudes towards mentally ill people (both men and women) than women and that mentally ill men might experience worse attitudes towards them (from both men and women in this sample). This aligns with Phelan & Basow's (2007) finding that males suffering from mental illness are generally less tolerated than their female counterparts but contradicts Wirth & Bodenhausen's (2009) suggestion that gender-atypical mental illnesses should receive more sympathy than gender-typical illnesses.

Respondents are more agreeable if presented with the agreeing options before the disagreeing options, rendering hypothesis 9 rejected. This aligns with previous findings by Israel & Taylor (1990) and supports the confirmatory logic presented by Klayman & Ha (1987) tested in other domains by LeBoeuf & Shafir (2006) and Jain et al. (2021). While this finding is not surprising, it creates a need to standardise response option orderings in future Company studies to ensure comparability. That the presence of a "don't know" option does not affect responses renders it analytically different from a neutral middle option, which Bishop (1987) finds to promote selections when presented.

## 5.1 Limitations
This pilot study has three noteworthy limitations: 1) the respondent sample's characteristics, 2) the technical difficulties arising as part of the data collection, and 3) the sole focus on depression. Each is elaborated in turn below.

*Respondent sample.* In the general South African population, 51.1% identify as female (Statistics South Africa, 2021a) as opposed to 72.4% in this sample. As respondents identifying as female show more awareness and positive attitude towards mental illness, the data in this study might be positively biased. However, as these scores are not correlated and as the correlation between awareness and help-seeking scores is actually stronger for men ($r = 0.25$, 95% CI: [0.16, 0.33], $t(455) = 5.42$, $p < .001$) than for women ($r = 0.15$, 95% CI [0.09, 0.20], $t(1342) = 5.39$, $p < .001$), the overrepresentation of women does not appear to heavily affect the results of this study. While 99.7% of this sample are employed, the number is 65.6% in the general South African population (Statistics South Africa, 2021b). As unemployment and mental illness are correlates (Farina & Felner, 1973; Llosa et al., 2018; Modini et al., 2016) and experience with people suffering from mental illness is correlated with worse attitudes towards them (Egbe et al., 2014; Schierenbeck et al., 2013) this might positively affect the obtained attitude scores. From this study, it is impossible to deduce if the alternative presentations tested affect employed and unemployed people evenly, and the results should only be extrapolated to unemployed populations with caution.

*Technical difficulties.* The proxy dependent variable and sample used to evaluate hypotheses 1 and 2 are challenged by the null assumption of neither hypothesis to hold as required for the proxies to offer unbiased substitutions. However, a combined stepwise best fit model approach (as done for hypotheses 1, 2, and 3) including all independent variables of hypotheses 1 and 2 to explain the dependent variable of hypothesis 2 yields a model containing the same variables and interactions as the best fit model for hypothesis 1. In other words, it appears as if getting people to open an email is a better predictor for link clicks than the email's contents. This is supported by the fact that only personal addressing (which is also present before opening the email) appears to affect link clicks. Thus, although these conclusions are drawn on imperfect data, the technical difficulties only appear to slightly cloud the precision of the results.

*Focus on depression.* While this study examines depression, a female-typical mental illness, it does not support Wirth & Bodenhausen's (2009) findings of gender-typical attitudes. Thus, the effects of e.g., the vignette character gender and respondent gender on attitudes towards mental illness are not necessarily dependent on the mental illness in question. It should be noted, however, that attitudes vary for different mental illnesses. In a similar vignette study of attitudes towards mental illness by Luty et al. (2006) a heroin user vignette scores -5.38 (SE: 0.53), a schizophrenia vignette scores -1.86 (SE: 0.27), and a depression vignette scores 2.35 (SE: 0.10). The narrow focus on depression (receiving relatively positive attitudes) inhibits this study from evaluating how the investigated presentation alternatives affect a less positively regarded mental illness. But as this study finds no correlation between attitude and help-seeking scores or between attitude and awareness scores, the limitation appears negligible in this context.

## 5.2 Areas for future research

For a more complete understanding of the effects of the presentation alternatives, future samples should include unemployed respondents and more types of mental illness, and as this study finds limited effects of many conditions, future studies should consider choosing different stimuli. Second, it would be interesting to carry out a longitudinal study to evaluate if the correlations between age and mental illness

awareness, between age and willingness to seek and recommend professional help, and between age and attitudes towards mental illness are due to people changing their minds as they grow older or due to differences across generations. Third, future studies should investigate the connection between the ease of use of a survey and its completion to deem if the positive impact of single question pages in this study is due to strenuous surveys enjoying more completions or if single question pages are considered easier to use. Fourth, recent studies suggest that it is possible to induce lasting change in opinions by manipulating survey responses (Strandberg et al., 2018), it would be interesting to investigate the lasting effects of agreement option ordering on respondent opinions.

## 6 Conclusion

This study finds that personal addressing and to some extent loss-framing affect email engagement. Once a survey is opened, showing each question individually improves survey completion. Next, framing does not seem to change attitudes towards mental illness queried in this survey but framing "illness" as "health (challenge)" decrease help-seeking willingness. This study also finds that awareness of mental illnesses is correlated with willingness to seek and recommend help, but that both are uncorrelated with attitudes towards mental illnesses. Age is correlated with willingness to seek help and negatively correlated with awareness of and attitudes towards mental illness. Women show higher levels of awareness of and more positive attitudes towards mental illness than men and a female vignette receives more positive attitudes than a male version from all genders. Finally, the order of agreement options is found to positively affect respondents' agreeance when ordered from agree to disagree. Thus, this pilot study adds new insight and suggest directions for future research on the effect of information presentation alternatives on email pervasiveness and on awareness of, attitudes towards, and willingness to seek and recommend help for mental illness in South Africa.

## 7 Acknowledgements

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## Appendix 1: Overview of Variable Assignment and Respondent Counts

| | All recipients | | Opened survey | | Completed survey | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| *Total* | *5021* | *100.0* | *2291* | *100.0* | *1838* | *100.0* |
| *Delivery time* | | | | | | |
| Late morning: around 10am | 2509 | 50.0 | 1170 | 51.1 | 948 | 51.6 |
| Early evening: around 5pm | 2512 | 50.0 | 1121 | 48.9 | 890 | 48.4 |
| *Subject line framing* | | | | | | |
| Gain frame: "Take this survey, and you might save a loved one" | 2508 | 50.0 | 1103 | 48.1 | 892 | 48.5 |
| Loss frame: "Ignore this survey, and a loved one might suffer" | 2513 | 50.0 | 1188 | 51.9 | 946 | 51.5 |
| *Addressing* | | | | | | |
| Generic: "Dear employee" | 2495 | 49.7 | 1038 | 45.3 | 834 | 45.4 |
| Personal: "Dear [name]" | 2526 | 50.3 | 1253 | 54.7 | 1004 | 54.6 |
| *Show email reading time* | | | | | | |
| Yes: "Read time: 2 min" | 2521 | 50.2 | 1176 | 51.3 | 925 | 50.3 |
| No | 2500 | 49.8 | 1115 | 48.7 | 913 | 49.7 |
| *"Mental" vs "brain"* | | | | | | |
| Mental | 2525 | 50.3 | 1162 | 50.7 | 953 | 51.8 |
| Brain | 2496 | 49.7 | 1129 | 49.3 | 885 | 48.2 |
| *"Illness" vs "health"* | | | | | | |
| Illness | 2506 | 49.9 | 1162 | 50.7 | 935 | 50.9 |
| Health | 2515 | 50.1 | 1129 | 49.3 | 903 | 49.1 |
| *Emphasise security* | | | | | | |
| Yes: In email: "The survey is secured through an encrypted connection"; in survey: "🛡 Secure connection 🔒 Encrypted data" | 2531 | 50.4 | 1145 | 50.0 | 918 | 49.9 |
| No | 2490 | 49.6 | 1146 | 50.0 | 920 | 50.1 |
| *Show survey completion time* | | | | | | |
| Yes: "The survey takes just 3 minutes to complete" | 2517 | 50.1 | 1169 | 51.0 | 953 | 51.8 |
| No | 2504 | 49.9 | 1122 | 49.0 | 885 | 48.2 |
| *Show progress bar* | | | | | | |
| Yes | 2495 | 49.7 | 1148 | 50.1 | 902 | 49.1 |
| No | 2526 | 50.3 | 1143 | 49.9 | 936 | 50.9 |
| *Group survey questions* | | | | | | |
| None (all individually) | 1701 | 33.9 | 778 | 34.0 | 649 | 35.3 |
| Moderate | 1621 | 32.3 | 729 | 31.8 | 567 | 30.8 |
| Extreme (all on one page) | 1699 | 33.8 | 784 | 34.2 | 622 | 33.8 |
| *Use psychiatric labels* | | | | | | |
| Yes: "depression, anxiety disorder, and schizophrenia" | 2518 | 50.1 | 1144 | 49.9 | 925 | 50.3 |

| | All recipients | | Opened survey | | Completed survey | |
|---|---|---|---|---|---|---|
| | n | % | n | % | n | % |
| No: "prolonged sadness, extreme worry, and hallucinations" | 2503 | 49.9 | 1147 | 50.1 | 913 | 49.7 |
| *Agreement order* | | | | | | |
| Agree to disagree | 2499 | 49.8 | 1147 | 50.1 | 914 | 49.7 |
| Disagree to agree | 2522 | 50.2 | 1144 | 49.9 | 924 | 50.3 |
| *Show "don't know" option* | | | | | | |
| Yes | 2517 | 50.1 | 1121 | 48.9 | 898 | 48.9 |
| No | 2504 | 49.9 | 1170 | 51.1 | 940 | 51.1 |
| *Vignette personage gender* | | | | | | |
| Female | 2561 | 51.0 | 1153 | 50.3 | 917 | 49.9 |
| Male | 2460 | 49.0 | 1138 | 49.7 | 921 | 50.1 |

Table 3: Number of unique IDs randomly assigned to each experimental condition. The ID followed the recipient to the survey to ensure that they are given the same variables throughout.

## Appendix 2: Email and Survey Screenshots

Ignore this survey, and a loved one might suffer
Thursday, 9:32 am

Read time: 2 min

### Anton, help us improve

## What do you think of brain health?

Take the survey

**Dear Anton,**

We always aim to improve. Because when we improve, so do you.

Brain health is an important topic that affects many South Africans. To enhance our services to you, please tell us what you think of brain health.

Take the survey

The survey takes just 3 minutes to complete and is secured through an encrypted connection.

Figure 2: Example of invitation email with the following experimental conditions: late morning delivery, loss framed subject line, personal addressing, show email reading time, frame "mental" as "brain", frame "illness" as "health", show survey completion time, and emphasise security.

🛡 SECURE CONNECTION    🔒 ENCRYPTED DATA

# Part 1: Mental Illness

Here are five statements about mental illness.
Please indicate to what extent you agree with them.

### 1) *A mental illness has a physical cause*
(please choose one)

○ Strongly Agree   ○ Agree   ○ Neutral   ○ Disagree   ○ Strongly disagree

### 2) *Anyone can experience mental illness*
(please choose one)

○ Strongly Agree   ○ Agree   ○ Neutral   ○ Disagree   ○ Strongly disagree

### 3) *Mental illnesses can be effectively managed (e.g. through medication and/or therapy)*
(please choose one)

Figure 3: Example of survey platform look and feel for the experimental conditions: frame "brain" as "mental", frame "health" as "illness", emphasise security, no progress bar (the navigation panel is outside the browser frame towards the bottom), moderate grouping of questions (a total of five questions are displayed on this page, some of which are outside the browser frame towards the bottom), agreement order from "agree" to "disagree", and no "don't know" option.

# Part 1: Brain Health

Here are five statements about brain health.
Please indicate to what extent you agree with them.

### 1) *A brain health challenge has a physical cause*
(please choose one)

○ Strongly Disagree   ○ Disagree   ○ Neutral   ○ Agree   ○ Strongly Agree   ○ Don't know

Back    Next ▶

Figure 4: Example of survey platform look and feel for the experimental conditions: frame "mental" as "brain", frame "illness" as "health", no emphasis on security, show progress bar, individual display of survey questions, agreement order from "disagree" to "agree", and a "don't know" option present.

## Appendix 3: Comparison of Original AMIQ Questions and Adapted Statements

| | Original AMIQ questions and answer options | | Adapted statements and answer options |
|---|---|---|---|
| Q1 | Do you think that this would damage John's career? Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ | S1 | I think that this behaviour would damage Lethabo's career. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |
| Q2 | I would be comfortable if John was my colleague at work? Strongly agree$^{+2}$, Agree$^{+1}$, Neutral$^{0}$, Disagree$^{-1}$, Strongly disagree$^{-2}$, Don't know$^{0}$ | S2 | I would be uncomfortable if Lethabo were my colleague at work. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |
| Q3 | I would be comfortable about inviting John to a dinner party? Strongly agree$^{+2}$, Agree$^{+1}$, Neutral$^{0}$, Disagree$^{-1}$, Strongly disagree$^{-2}$, Don't know$^{0}$ | S3 | I would be uncomfortable inviting Lethabo to dinner. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |
| Q4 | How likely do you think it would be for John's wife to leave him? Very likely$^{-2}$, Quite likely$^{-1}$, Neutral$^{0}$, Unlikely$^{+1}$, Very unlikely$^{+2}$, Don't know$^{0}$ | S4 | I think it is likely that Lethabo's partner will leave her. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |
| Q5 | How likely do you think it would be for John to get in trouble with the law? Very likely$^{-2}$, Quite likely$^{-1}$, Neutral$^{0}$, Unlikely$^{+1}$, Very unlikely$^{+2}$, Don't know$^{0}$ | S5 | I think it is likely that Lethabo will get into trouble with the law. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |
| | | S6 | I think Lethabo is to blame for her situation. Strongly agree$^{-2}$, Agree$^{-1}$, Neutral$^{0}$, Disagree$^{+1}$, Strongly disagree$^{+2}$, Don't know$^{0}$ |

Table 4: The original Attitude towards Mental Illness Questionaire questions (Q1-Q5, left) and the adapted statements used in this research aligning the answer options and correcting the semantics (S1-S6, right). The rating of each answer is shown in superscript next to each answer option. Each respondent's score is calculated as the sum of the answers and range from –10 to 10 in the AMIQ and from –12 to 12 in the adapted questions due to the additional question. The lower the score, the worse the attitude towards mental illness and the higher the score, the better the attitude towards mental illness.

## Appendix 4: Survey Questions and Answer Options

To statements 1 through 6 and 9 through 16, the respondent should indicate to what extent they agree (with answer options from "Strongly agree" over "Neutral" to "Strongly disagree" with a "Don't know" option present). For the remaining questions (7, 8, 17, 18, 19, 20), the answer options are given in parentheses.

### Mental Illness Awareness Statements

1. A mental illness has a physical cause.
2. Anyone can experience mental illness.
3. Mental illnesses can be effectively managed (e.g., through medication and/or therapy).
4. Mental illnesses come from within the person.
5. Mental illnesses come from the surroundings.
6. People who are struggling with their mental illness only have themselves to blame.

### Mental Illness Awareness Questions

7. Which of these factors do you think play a role in mental illness? (Answer options, multiple choices available: "Socialising", "Exercising", "Healthy eating", "Sleeping well", "Knowing yourself", "Managing stress", "Traumatic experiences", "Chemical imbalances", "Genetics", "Toxins", "None of these").
8. How many do you think are challenged by mental illness? (Answer options: "Less than 1 in 10", "1 in 10", "1 in 9", "1 in 8", "1 in 7", "1 in 6", "1 in 5", "1 in 4", "1 in 3", "More than 1 in 3").

### Willingness to Seek Help Statements

9. If I were affected by my mental illness, I would seek professional help.
10. If someone I knew were affected by their mental illness, I would recommend them to seek professional help.

### Attitudes Towards Mental Illness Statements

11. I think that this behaviour would damage Lethabo's career.
12. I would be uncomfortable if Lethabo were my colleague at work.
13. I would be uncomfortable inviting Lethabo to dinner.
14. I think it is likely that Lethabo's partner will leave her.
15. I think it is likely that Lethabo will get into trouble with the law.
16. I think Lethabo is to blame for her situation.

### Demographic Questions

17. What is your age? (Number input field)
18. What is your gender? (Answer options: "Female", "Male", "Other / Do not wish to answer")

19. What is your occupation? (Answer options: "Student", "Service sector", "Office worker", "Business owner", "Call centre agent", "Teacher", "Engineer", "Unemployed", "Other", "Do not wish to answer")

20. What is your monthly income range? (Answer options: "R0 - R5000", "R5000 - R10 000", "R10 000 - R15 000", "R15 000 - R25 000", "R25 000 - R50 000", "R50 000 - R100 000", "R100 000 +", "Other / do not wish to answer")

## Appendix 5: Full Result Tables

### Evaluation of hypothesis 1

Table 5 below presents the full results of the logistic regression evaluating hypothesis 1.

| | OR | Confidence Interval | |
|---|---|---|---|
| *Each factor as individual models* | | *0.6%* | *99.4%* |
| (A) Loss framed subject line [a] | 1.142 | 0.991 | 1.316 |
| (B) Name in subject line [b] | - | - | - |
| (C) Personal addressing [c] | * 1.382 | 1.199 | 1.593 |
| (D) Late morning delivery [d] | 1.084 | 0.941 | 1.249 |
| (E) Showing reading time [e] | 1.086 | 0.943 | 1.251 |
| *Additive model* | | *0.6%* | *99.4%* |
| A | 1.146 | 0.994 | 1.321 |
| C | * 1.390 | 1.206 | 1.603 |
| D | 1.084 | 0.940 | 1.250 |
| E | 1.103 | 0.957 | 1.272 |
| *Interactive model* | | *0.2%* | *99.8%* |
| A | 1.324 | 0.815 | 2.158 |
| C | 1.386 | 0.854 | 2.258 |
| D | 1.267 | 0.772 | 2.083 |
| E | 1.119 | 0.690 | 1.820 |
| A x C | 0.965 | 0.493 | 1.891 |
| A x D | 0.865 | 0.431 | 1.733 |
| C x D | 0.926 | 0.470 | 1.824 |
| A x E | 0.966 | 0.490 | 1.906 |
| C x E | 1.120 | 0.569 | 2.204 |
| D x E | 0.943 | 0.476 | 1.870 |
| A x C x D | 1.004 | 0.388 | 2.603 |
| A x C x E | 0.950 | 0.367 | 2.455 |
| A x D x E | 0.912 | 0.350 | 2.377 |
| C x D x E | 1.046 | 0.403 | 2.710 |
| A x C x D x E | 1.001 | 0.262 | 3.823 |
| *Best fit model* | | *0.5%* | *99.5%* |
| A | * 1.259 | 1.023 | 1.551 |
| C | * 1.388 | 1.199 | 1.608 |
| D | 1.191 | 0.968 | 1.467 |
| E | 1.105 | 0.954 | 1.280 |
| A x D | 0.829 | 0.618 | 1.111 |

Table 5: Results of logistic regression evaluating hypothesis 1 (sample: all recipients; dependent variable: email opens) as individual models, as an additive model, as an interactive model, and as a best fit model. Due to technical difficulties, these models use link clicks as proxy for email opens (assuming the null hypothesis of hypothesis 2 to be true). OR = odds ratio. CI = confidence interval. Asterisk indicates odds ratios with a corresponding corrected confidence interval not including 1 (i.e., $p < .05$). [a] "Ignore this survey, and a loved one might suffer"; alternative: gain frame: "Take this survey, and you might save a loved one". [b] This split test is impossible due to a technical detail and the variable is left out. [c] Using the recipient's name; alternative: "employee". [d] Around 10 am; alternative: around 5 pm. [e] "Read time: 2 min"; alternative: not displaying it.

## Evaluation of Hypothesis 2

Table 6 below presents the full results of the logistic regression evaluating hypothesis 2.

| | OR | Confidence Interval | |
|---|---|---|---|
| *Each factor as individual models* | | *0.5%* | *99.5%* |
| (A) Personal addressing [a] | * 1.382 | 1.194 | 1.600 |
| (B) "Mental" as "Brain" [b] | 0.969 | 0.837 | 1.121 |
| (C) "Illness" as "Health" [c] | 0.942 | 0.814 | 1.090 |
| (D) Emphasising security [d] | 0.969 | 0.837 | 1.121 |
| (E) Showing completion time [e] | 1.068 | 0.923 | 1.236 |
| *Additive model* | | *0.5%* | *99.5%* |
| A | * 1.381 | 1.193 | 1.599 |
| B | 0.968 | 0.836 | 1.121 |
| C | 0.942 | 0.813 | 1.090 |
| D | 0.968 | 0.836 | 1.121 |
| E | 1.062 | 0.917 | 1.229 |
| *Interactive model* | | *0.1%* | *99.9%* |
| A | 1.422 | 0.697 | 2.922 |
| B | 0.827 | 0.395 | 1.725 |
| C | 0.817 | 0.391 | 1.696 |
| D | 0.911 | 0.432 | 1.914 |
| E | 1.337 | 0.656 | 2.744 |
| A x B | 1.328 | 0.476 | 3.720 |
| A x C | 1.365 | 0.490 | 3.815 |
| B x C | 1.419 | 0.504 | 4.008 |
| A x D | 0.992 | 0.361 | 2.731 |
| B x D | 1.599 | 0.576 | 4.474 |
| C x D | 1.082 | 0.383 | 3.069 |
| A x E | 0.935 | 0.343 | 2.547 |
| B x E | 1.165 | 0.422 | 3.224 |
| C x E | 1.114 | 0.397 | 3.129 |
| D x E | 0.863 | 0.307 | 2.419 |
| A x B x C | 0.498 | 0.116 | 2.131 |
| A x B x D | 0.670 | 0.157 | 2.847 |
| A x C x D | 0.906 | 0.213 | 3.843 |
| B x C x D | 0.720 | 0.168 | 3.075 |
| A x B x E | 0.565 | 0.135 | 2.360 |
| A x C x E | 0.547 | 0.129 | 2.312 |
| B x C x E | 0.561 | 0.130 | 2.408 |
| A x D x E | 1.155 | 0.276 | 4.828 |
| B x D x E | 0.701 | 0.164 | 2.991 |
| C x D x E | 0.952 | 0.223 | 4.071 |
| A x B x C x D | 1.633 | 0.211 | 12.678 |
| A x B x C x E | 4.012 | 0.520 | 31.052 |
| A x B x D x E | 1.043 | 0.136 | 8.039 |
| A x C x D x E | 1.515 | 0.198 | 11.579 |
| B x C x D x E | 1.356 | 0.172 | 10.682 |
| A x B x C x D x E | 0.737 | 0.041 | 13.223 |
| *Best fit model* | | *2.5%* | *97.5%* |

|  | OR | Confidence Interval | |
| --- | --- | --- | --- |
| A | * 1.382 | 1.236 | 1.545 |

Table 6: Results of logistic regression evaluating hypothesis 2 (sample: recipients opening the email; dependent variable: link clicks) as individual models, as an additive model, as an interactive model, and as a best fit model. Due to technical difficulties, these models use all recipients as sample (assuming the null hypothesis of hypothesis 1 to be true). OR = odds ratio. CI = confidence interval. Asterisk indicates odds ratios with a corresponding corrected confidence interval not including 1 (i.e., $p < .05$). [a] Using the recipient's name; alternative: "employee". [b] "Brain"; alternative "mental". [c] "Health"; alternative: "illness". [d] "The survey is secured through an encrypted connection"; alternative: not displaying it. [e] "The survey takes just 3 minutes to complete"; alternative: not displaying it.

## Evaluation of Hypothesis 3

Table 7 below presents the full results of the logistic regression evaluating hypothesis 3.

|  | OR | Confidence Interval | |
| --- | --- | --- | --- |
| *Each factor as individual models* |  | *0.6%* | *99.4%* |
| (A) Show progress bar [a] | 0.811 | 0.623 | 1.054 |
| (B) Salient security statement [b] | 0.993 | 0.764 | 1.291 |
| (C1) Moderate grouping [c] | 0.912 | 0.666 | 1.247 |
| (C2) Each question individually [c] | 1.310 | 0.946 | 1.819 |
| *Additive model* |  | *0.6%* | *99.4%* |
| A | 0.807 | 0.619 | 1.050 |
| B | 0.974 | 0.748 | 1.268 |
| C1 | 0.911 | 0.666 | 1.247 |
| C2 | 1.315 | 0.949 | 1.826 |
| *Interactive model* |  | *0.2%* | *99.8%* |
| A | 1.250 | 0.643 | 2.436 |
| B | 1.857 | 0.910 | 3.883 |
| C1 | 1.657 | 0.799 | 3.533 |
| C2 | * 2.464 | 1.132 | 5.679 |
| A x B | 0.621 | 0.224 | 1.718 |
| A x C1 | 0.646 | 0.234 | 1.769 |
| A x C2 | 0.466 | 0.159 | 1.332 |
| B x C1 | 0.435 | 0.150 | 1.232 |
| B x C2 | 0.382 | 0.124 | 1.141 |
| A x B x C1 | 1.155 | 0.272 | 4.922 |
| A x B x C2 | 2.590 | 0.575 | 11.832 |
| *Best fit model* |  | *0.8%* | *99.2%* |
| A | 0.808 | 0.627 | 1.039 |
| C1 | 0.911 | 0.674 | 1.231 |
| C2 | 1.313 | 0.961 | 1.799 |

Table 7: Results of logistic regression evaluating hypothesis 3 (sample: recipients accessing the survey; dependent variable: survey completion) as individual models, as an additive model, as an interactive model, and as a best fit model. OR = odds ratio. CI = confidence interval. Asterisk indicates odds ratios with a corresponding corrected confidence interval not including 1 (i.e., $p < .05$). [a] Showing a progress bar at the bottom by navigation buttons; alternative: no progress bar. [b] "🛡 Secure connection 🔒 Encrypted data" as information bar at the top of the screen; alternative: not displaying it. [c] Moderate grouping: 20 questions on four pages; each question individually: 20 questions on 20 pages; alternative: all 20 questions on one page.

## Evaluation of Hypothesis 4

Table 8 below presents the ANOVA results for hypothesis 4 referenced in the results section of the main text.

| | *df* | Sum of squares | Mean square | F | *p* |
|---|---|---|---|---|---|
| (A) Psychiatric labels [a] | 1 | 1 | 1.1 | 0.09 | .769 |
| (B) "mental" vs "brain" [b] | 1 | 2 | 2.5 | 0.19 | .663 |
| (C) "illness" vs "health" [c] | 1 | 43 | 43.0 | 3.33 | .068 |
| A x B | 1 | 27 | 26.9 | 2.08 | .149 |
| A x C | 1 | 11 | 11.1 | 0.86 | .354 |
| B x C | 1 | 7 | 7.1 | 0.55 | .459 |
| A x B x C | 1 | 13 | 13.1 | 1.01 | .314 |
| Residuals | 1830 | 23656 | 12.9 | | |

Table 8: Results of ANOVA evaluating hypothesis 4 (sample: respondents completing the survey; dependent variable: attitude towards mental illness score [-12, 12]). *df* = degrees of freedom. [a] Using psychiatric labels: "depression, anxiety disorder, and schizophrenia"; alternative: "prolonged sadness, extreme worry, and hallucinations". [b] "Brain"; alternative: "illness"; [c] "Health"; alternative: "illness".

## Evaluation of Hypothesis 5

Table 10 below presents the ANOVA results for hypothesis 5 further investigated in Table 2 in the results section of the main text showing significant ($p \leq .05$) post-hoc Tukey HSD analysis results.

| | *df* | Sum of squares | Mean square | F | *p* |
|---|---|---|---|---|---|
| (A) Psychiatric labels [a] | 1 | 0 | 0.0 | 0.00 | .97 |
| (B) "mental" vs "brain" [b] | 1 | 1 | 0.5 | 0.28 | .60 |
| (C) "illness" vs "health" [c] | 1 | 33 | 32.7 | 17.89 | < .001 |
| A x B | 1 | 0 | 0.0 | 0.00 | .98 |
| A x C | 1 | 0 | 0.3 | 0.16 | .69 |
| B x C | 1 | 1 | 0.8 | 0.45 | .50 |
| A x B x C | 1 | 1 | 0.7 | 0.41 | .52 |
| Residuals | 1830 | 3348 | 1.8 | | |

Table 9: Results of ANOVA evaluating hypothesis 5 (sample: respondents completing the survey; dependent variable: help-seeking willingness score [-4, 4]). *df* = degrees of freedom. [a] Using psychiatric labels: "depression, anxiety disorder, and schizophrenia"; alternative: "prolonged sadness, extreme worry, and hallucinations". [b] "Brain"; alternative: "illness"; [c] "Health"; alternative: "illness".

## Evaluation of Hypothesis 7

Table 10, Table 11, and Table 12 below present the ANOVA results of the analyses of variance conducted on the effects on respondent gender, occupation, and income on awareness score, help-seeking score and attitude score, respectively. Significant ($p \leq .05$) post-hoc Tukey HSD analysis results are presented in the results section of the main text.

| | df | Sum of squares | Mean square | F | p |
|---|---|---|---|---|---|
| (A) Gender | 2 | 177 | 88.5 | 7.18 | < .001 |
| (B) Occupation | 9 | 150 | 16.6 | 1.35 | .207 |
| (C) Income | 7 | 242 | 34.6 | 2.81 | .007 |
| A x B | 13 | 109 | 8.4 | 0.68 | .786 |
| A x C | 13 | 160 | 12.3 | 1.00 | .450 |
| B x C | 43 | 540 | 12.6 | 1.02 | .438 |
| A x B x C | 26 | 382 | 14.7 | 1.19 | .229 |
| Residuals | 1724 | 21239 | 12.3 | | |

Table 10: Results of ANOVA evaluating hypothesis 7 (sample: respondents completing the survey; dependent variable: awareness score [-16, 16]). *df* = degrees of freedom.

| | df | Sum of squares | Mean square | F | p |
|---|---|---|---|---|---|
| (A) Gender | 2 | 4 | 2.14 | 1.19 | .303 |
| (B) Occupation | 9 | 39 | 4.30 | 2.40 | .011 |
| (C) Income | 7 | 16 | 2.23 | 1.24 | .275 |
| A x B | 13 | 21 | 1.63 | 0.91 | .539 |
| A x C | 13 | 33 | 2.51 | 1.40 | .150 |
| B x C | 43 | 135 | 3.14 | 1.75 | .002 |
| A x B x C | 26 | 47 | 1.79 | 1.00 | .462 |
| Residuals | 1724 | 3089 | 1.79 | | |

Table 11: Results of ANOVA evaluating hypothesis 7 (sample: respondents completing the survey; dependent variable: help-seeking willingness score [-4, 4]). *df* = degrees of freedom.

| | df | Sum of squares | Mean square | F | p |
|---|---|---|---|---|---|
| (A) Gender | 2 | 147 | 73.4 | 5.67 | .004 |
| (B) Occupation | 9 | 112 | 12.5 | 0.96 | .469 |
| (C) Income | 7 | 77 | 10.9 | 0.85 | .549 |
| A x B | 13 | 78 | 6.0 | 0.46 | .946 |
| A x C | 13 | 79 | 6.1 | 0.47 | .942 |
| B x C | 43 | 558 | 13.0 | 1.00 | .468 |
| A x B x C | 26 | 402 | 15.5 | 1.19 | .228 |
| Residuals | 1724 | 22310 | 12.9 | | |

Table 12: Results of ANOVA evaluating hypothesis 7 (sample: respondents completing the survey; dependent variable: attitude score [-12, 12]). *df* = degrees of freedom.

## Evaluation of Hypothesis 8

Table 13 below presents the ANOVA results for hypothesis 5 further investigated in the results section of the main text showing significant ($p \le .05$) post-hoc Tukey HSD analysis results.

| | *df* | Sum of squares | Mean square | F | *p* |
|---|---|---|---|---|---|
| (A) Gender of vignette [a] | 1 | 62 | 62.3 | 4.85 | 0.028 |
| (B) Gender of respondent [b] | 2 | 140 | 70.2 | 5.46 | 0.004 |
| A x B | 2 | 5 | 2.5 | 0.19 | 0.824 |
| Residuals | 1832 | 23554 | 12.9 | | |

Table 13: Results of ANOVA evaluating hypothesis 8 (sample: respondents completing the survey; dependent variable: attitude towards mental illness score [-12, 12]). df = degrees of freedom. [a] Female; alternative: male. [b] Female; alternative: male.

## Evaluation of Hypothesis 9

Table 14 below presents the ANOVA results for hypothesis 5 further investigated in the results section of the main text showing significant ($p \le .05$) post-hoc Tukey HSD analysis results.

| | *df* | Sum of squares | Mean square | F | *p* |
|---|---|---|---|---|---|
| (A) Agreement option order [a] | 1 | 1.8 | 1.787 | 13.05 | < .001 |
| (B) "don't know" option [b] | 1 | 0.0 | 0.029 | 0.21 | .648 |
| A x B | 1 | 0.7 | 0.684 | 4.99 | .026 |
| Residuals | 1834 | 251.0 | 0.137 | | |

Table 14: Results of ANOVA evaluating hypothesis 9 (sample: respondents completing the survey; dependent variable: agreeance score [-2, 2]). df = degrees of freedom. [a] From "agree" to "disagree"; alternative: from "disagree" to "agree". [b] Show "don't know" option; alternative: not displaying it.