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Depression Stigma

Abstract

Throughout history, people with mental illness have been discriminated against and stigmatized. Our experiment provides a new measure of perceived depression stigma and then investigates the causal effect of perceived stigma on help-seeking in a sample of 1,844 Americans suffering from depression. A large majority of our participants overestimate the extent of stigma associated with depression. In contrast to prior correlational evidence, lowering perceived social stigma through an information intervention leads to a reduction in the demand for psychotherapy. A mechanism experiment reveals that this information increases optimism about future mental health, thereby reducing the perceived need for therapy.

Keywords: depression, stigma, information, psychotherapy.

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1 Introduction

Individuals suffering from mental illness regularly encounter prejudice and discrimination (Fink, 1992) and the stigma attached to mental illness exacts significant psychological tolls on those affected (Moses, 2010). Social stigma may also influence whether or not people seek the necessary help to recover from mental illness (Vogel and Wade, 2009). In the case of depression, it may act as a barrier to taking up psychotherapy, which has been shown to be an effective way of treating depression (Bhat et al., 2023; Cuijpers et al., 2010). Stigma may impede therapy take-up by raising fears of social backlash and by leading to a reluctance to self-label as mentally ill (Corrigan and Rüsch, 2002). On the other hand, reducing perceived depression stigma may lower the perceived need for therapy by increasing optimism about future mental health absent therapy (Andrade et al., 2014). Even though governments and NGOs around the world have launched a multitude of information campaigns aimed at combating depression stigma, causal evidence on the effects of such campaigns and their underlying mechanisms remains scarce.[1]

We conduct a large-scale online experiment ($N = 1,844$) with US residents that suffer from depression to measure perceived depression stigma vis-à-vis its objective prevalence and to examine its causal effect on the demand for therapy. In the *Pure control* condition, respondents complete an incentive compatible willingness to pay (WTP) elicitation for 4 weeks of online therapy, without having received information or being prompted to think about depression stigma. Participants in the *Stigma info* condition learn that, in a broadly representative sample of Americans, 16 percent of respondents agreed with the view that

[1]Some examples include the "Bring Change to Mind" initiative from the US or the "Bell Let's Talk" initiative from Canada that are dedicated to encouraging dialogue about mental health.

"People with depression are lazy, hard to be around, and have weak character" before the WTP elicitation.[2]

Prior to receiving information, our participants' average belief was that 38 percent of Americans hold stigmatizing views, with a large majority of participants (83 percent) overestimating the extent of actual stigma. Our participants, therefore, exhibit the kind of pessimism that is symptomatic of depression (Beck et al., 1961), which suggests that accurate information has the potential to reduce the perceived stigma associated with depression.

Next, we turn to our main result, the effect of the information intervention on the demand for therapy. We find that willingness to pay for online therapy is \$9.2 lower in *Stigma info* than in the *Pure control* condition ($p = 0.05$). This result runs counter to correlational evidence from a psychology and public health literature that views depression stigma as a barrier to therapy demand (Clement et al., 2015; Corrigan and Penn, 1999; Corrigan and Rüsch, 2002; Gulliver et al., 2010). Our data also lend no support to two prominent mechanisms hypothesized in this literature. Because the act of seeking therapy makes it salient to others and to oneself that one is suffering from the stigmatized condition, depression stigma is thought to increase the non-pecuniary costs associated with seeking therapy. Yet, we find that *Stigma info* has no significant effect on either a self-reported aversion to self-label as depressed by seeking therapy ($p = 0.24$) or fears of social backlash from others finding out about therapy take-up ($p = 0.24$). At the same time, the good news about social stigma in *Stigma info* makes participants significantly less likely to self-stigmatize and think that they themselves are "lazy," "hard to be around" or "have weak character" ($p < 0.05$). The

[2]We selected these stereotypes based on qualitative pilots about the kind of stigma depressed individuals find most harmful.

causal link from social to self-stigma suggests that lower perceived social stigma may reduce participants' perceived need for therapy.

To provide more direct evidence for this "perceived need" mechanism, we conduct an experiment with a different sample of 1,008 Americans suffering from depression. Consistent with our preregistered hypothesis, *Stigma info* makes participants more optimistic about improving their future mental health absent therapy. Participants in *Stigma info* are also significantly more likely to state that they can rely on friends and family to improve their mental health and significantly less likely to say that they are feeling down right now, plausibly leading to further reductions in the perceived need for therapy.

To examine the role of belief movements or learning in driving the observed causal effect of stigma information on therapy demand, we rely on a third condition, *Stigma flag*. In this condition, we elicit pre-treatment beliefs about stigma but do not provide information. Using respondents from *Stigma info* and *Stigma flag*, we investigate heterogeneous treatment effects by pre-treatment stigma perceptions. Consistent with an important role of beliefs, we find that information increases the demand of treated respondents who underestimated the extent of stigma by \$43.57 ($p < 0.01$) on average, but decreases the demand of treated respondents who overestimated the extent of stigma by \$10.38 ($p = 0.042$) on average.

Next, we investigate whether merely asking participants to think about stigma has an effect on their therapy demand. To do so, we compare the *Stigma flag* treatment with the *Pure control* condition. The *Stigma flag* treatment has some parallels with information campaigns that purposefully or inadvertently raise stigma awareness without debiasing beliefs about the level of stigma. We find that *Stigma flag* reduces the demand for therapy, at marginal statistical significance ($p = 0.093$). Our data allow us to rule out that *Stigma flag* reduces therapy demand

by drawing attention to an important barrier to demand. First, the heterogeneous effect of *Stigma info* by pre-treatment perceptions as well as the mechanism evidence show that stigma does not act as a barrier to demand. Second, we find no effect of *Stigma flag* on attention to stigma, as measured in an open-ended question during the willingness to pay elicitation. Instead, we provide evidence that *Stigma flag* increases participants' optimism about their future mental health, similar to the *Stigma info* treatment. These effects are consistent with evidence that explicitly engaging with frightening thoughts can improve mental health (González-Sanguino et al., 2023).

Finally, to discuss the external validity of our findings, it is useful to look at the correlation between perceived stigma and willingness to pay for online therapy in *Stigma flag*. While the previous literature has established a negative correlation, we find this correlation to be positive. The positive correlation lines up with our treatment effect and makes it less plausible that the negative correlation uncovered in previous work is simply spurious. Instead, there are likely some substantive differences between our study and previous work in terms of sample and setting.

Three differences appear to be of particular relevance. First, while previous work frequently focuses on respondents at risk of depression (Clement et al., 2015), our sample only includes individuals that are classified as depressed according to the PHQ8. We show that this matters. Heterogeneity analysis reveals that the negative treatment effect is significantly more pronounced among more depressed individuals ($p < 0.01$). Second, previous work has primarily focused on in-person therapy. To mitigate concerns that our results arise from the rather anonymous setting of one-on-one online therapy, we conducted a field experiment with a provider of online group therapy that features a more social setting, which is closer

to the settings studied in prior work (Corrigan and Penn, 1999; Corrigan and Rüsch, 2002; Gulliver et al., 2010). While the field experiment delivers noisier results than our main experiment, it provides evidence against meaningful positive effects of *Stigma info* on the demand for group therapy. Third, it is plausible that concerns about social backlash have subsided in recent years, now making the effect of perceived social stigma on the perceived need for therapy the dominant mechanism. In line with this, *Stigma info* does not affect our participants' self-reported level of comfort with sharing their identity, interacting with the therapist, and being exposed to the risk of others' finding out about them seeking therapy.[3]

A growing body of evidence suggests that psychotherapy significantly increases the likelihood of recovery from mental illness (Cuijpers et al., 2010; Haushofer et al., 2020; McKelway et al., 2023; Singla et al., 2017), even over long time horizons (Bhat et al., 2023). Therapy has also been shown to increase human capital investments (Barker et al., 2021), to increase parental investments (Baranov et al., 2020), and to reduce criminal activities (Blattman et al., 2017, 2022). At the same time, online mental health therapy is fast becoming the dominant delivery mode and puts therapy within the financial reach of ever more people, while achieving similar mental health outcomes as in-person therapy (Lin et al., 2022). These parallel developments make it important to understand why a sizable portion of the depressed population refrains from seeking therapy even if they could afford to (Cronin et al., 2023).

Our paper provides causal evidence that reducing perceived stigma decreases therapy demand, plausibly by reducing the perceived need for therapy. These results caution against the unintended effects of policy initiatives that seek to reduce real and perceived stigma.

[3]Of course, these arguments do not imply that social stigma may not discourage help-seeking in other settings. For example, Smith (2023) finds that willingness to share information about mental health services in refugee networks in Jordan increases when individuals have an excuse for sharing information.

While such policies may improve the well-being of stigmatized individuals by increasing their optimism about future mental health, they may reduce therapy demand.

Our work contributes to a literature on depression and mental health in economics (Angelucci and Bennett, 2024; Banerjee et al., 2023; Cobb-Clark et al., 2021; McKelway et al., 2023; De Quidt and Haushofer, 2016; Ridley et al., 2020; Singla et al., 2017) and complements other work on the determinants of therapy demand, including studies on low mental health literacy (Acampora et al., 2022) and low perceived effectiveness of therapy (Roth et al., 2024).

Our study also speaks to a literature on the broader adverse effects of stigma that has looked at stigma in the context of sex workers (Ghosal et al., 2022), HIV testing (Yang et al., 2023; Yu, 2023), welfare recipients (Besley and Coate, 1992; Bhargava and Manoli, 2015; Lasky-Fink and Linos, 2023; Moffitt, 1983), and discrimination against the mentally ill (Ridley, 2023). We add to this literature by highlighting the key role occupied by perceived stigma. We show that depressed individuals' perception of social stigma is overly pessimistic compared to an objective benchmark, and internalized to the detriment of their self-views and well-being.

2 Data and design

2.1 Sample

We recruited 1,844 US participants using the online platform Prolific, a survey provider commonly used in social science research (Eyal et al., 2021). This data collection took place in the fall of 2022. We only include respondents that suffer from depression, identified by a score of 10 or above on the personal health questionnaire PHQ8, a widely used scale to

identify depression (Kroenke et al., 2009).[4] Moreover, we only include respondents that have never tried therapy before.

Table A.1 compares our sample with a representative sample of people suffering from depression. We rely on a representative sample of the US population that contains data on the PHQ8, the National Health and Nutrition Examination Survey (NHANES). To make the samples as comparable as possible, we restrict the sample to people suffering from depression according to the PHQ8. Respondents in our sample slightly under-represent women (57 percent vs 62 percent, $p = 0.060$) and are significantly younger (30 vs. 50, $p < 0.01$). However, our survey matches the restricted NHANES sample quite closely in terms of the PHQ8 score.

Pre-specification. Our main data collection was pre-registered in the AsPredicted registry (#107190).[5] We pre-specified the sampling procedure, the main outcomes of interest, the main right-hand-side variables of interest, and the main empirical specifications. The pre-analysis plan can be found in Section I of the Online Appendix.

2.2 Design

2.2.1 Structure of the design

At the start of the survey, we elicit a series of background characteristics as well as participants' willingness to pay for an example good. Participants are randomized into three equally-sized

[4]The personal health questionnaire includes nine questions, each asking about the frequency of different depressive symptoms on a scale from 0, "Not at all" to 3 "Nearly every day". The first 8 questions of the questionnaire constitute the PHQ8, a score that ranges between 0 and 24. A score of 10 in the PHQ8 is a commonly used threshold to consider an individual currently depressed (Kroenke et al., 2009).

[5]Our pre-registration features two separate treatment conditions with different samples conducted at the same time. The second experiment aimed to measure and debias beliefs about the effectiveness of psychotherapy Roth et al. (2024). This second experiment uses the same control group as this paper.

treatment groups. Two-thirds of our respondents answer a series of questions about other people's beliefs about people who suffer from depression. Out of those respondents, half receive information about the stigma associated with depression (*Stigma info*), while the other half do not receive the information about the stigma (*Stigma flag*). The remaining one third of respondents are assigned to a *Pure control* group that features no mention of stigma (*Pure control*). After these treatments, we elicit our respondents' willingness to pay for therapy. At the end of the experiment, we elicit an additional set of beliefs to elucidate mechanisms.

2.2.2 Beliefs about social stigma

Pre-treatment beliefs. To get a quantitative measure of perceived stigma, we truthfully tell our respondents that we conducted a survey with a sample of over 100 Americans whose composition resembles the American population at large. We then ask them to guess the percentage of Americans from this survey that agreed or strongly agreed with the following statement:

> People with depression are lazy, hard to be around, and have weak character.[6]

They are informed that if their answer in the selected question is within 3 percent of the truth, they will receive a 50 cent bonus.[7]

On top of this quantitative question, we also elicit a qualitative question. We ask our respondents how likely it is that the majority of Americans from this survey agreed or strongly

[6]Rather than imposing our own definition of stigma, we conducted qualitative pilots to inform our design by participants' construal of stigma. Our pilots asked respondents to describe, in their own words, how they think other people think about depressed individuals and which stereotypes they consider particularly harmful. See Appendix C.

[7]Respondents are told that one of the questions in which they make quantitative estimates will be randomly selected for payment. We follow best-practices and emphasize that it is in respondents' best interest to provide their best guess (Danz et al., 2022).

agreed with the statement on a 5-point Likert scale, ranging from (i) very unlikely to (v) very likely.

Treatments. Respondents in both the *Stigma info* and *Stigma flag* condition are reminded of their quantitative beliefs about social stigma:

> You said that you believe that X% of Americans either agree or strongly agree with the following statement: People with depression are lazy, hard to be around, and have weak character.

Respondents in the *Stigma info* condition are also told:

> According to our survey of over 100 Americans, the actual share of Americans that either agree or strongly agree with this statement is 16.

Respondents in the *Stigma info* condition are also shown a chart contrasting their estimate along with the true value, while respondents in the *Stigma flag* condition are shown a chart displaying only their estimate. Respondents in the *Pure control* do not state pre-treatment beliefs and are not given any information about stigma.

Post-treatment beliefs. In order to mitigate experimenter demand effects, we elicit post-treatment beliefs about the stigma associated with depression based on a related but somewhat different statement about people with depression. We elicit beliefs about the percentage of Americans that agreed or strongly agreed with the following statement:

> People with depression are often unreliable, incompetent, and have weak character.

To test whether our respondents extrapolate from general beliefs about stigma to beliefs about the stigma they face personally, we ask them whether people they regularly interact with would hold negative views about them if they learned that they struggled with depression.

2.2.3 Willingness to pay elicitation

Our main outcome is our participants' willingness to pay for BetterHelp, a prominent online therapy platform in the U.S. We inform respondents about BetterHelp's offerings, highlighting that clients can reach their therapists anytime via audio, video, or text messages in a dedicated messaging room. Additionally, clients have the option to arrange weekly live sessions, lasting 30 to 45 minutes, for real-time communication through phone, video, or live chat. To contextualize the service's value, we mention its standard rate of $320 for a four-week period. We then ask respondents to specify the maximum amount they are willing to pay for a four-week therapy service from BetterHelp, between $0 and $350. Further, we truthfully inform respondents that the stated preferences of 10 participants in our study will be actualized. We also reiterate the specifics of the Becker-DeGroot-Marschak (BDM) mechanism to our respondents for clarity.

Immediately after stating their willingness to pay, participants are asked for an open-ended response about the considerations underlying their valuations.

2.2.4 BDM explanation

We first explain the BDM mechanism at the very beginning of the experiment, where it is applied to determine participants' hypothetical willingness to pay for a one-month spa membership. This early explanation and example serves two purposes. First, assessing

willingness to pay for an alternative good yields a potent control variable that allows us to adjust for individual variations in scale usage (Dizon-Ross and Jayachandran, 2022). Second, the initial BDM elicitation streamlines subsequent explanations regarding willingness to pay for therapy and reduces the time gap between the administered treatments and the main outcomes.

We inform participants that they will be asked to specify the maximum price they are prepared to pay for the spa membership. They understand that this exercise does not involve spending their own money. After stating their price, a computer program will randomly select a price between \$0 and \$350. Participants are informed that if this random price exceeds their stated price, they receive the cash amount. Conversely, if the random price is lower, they gain the spa membership. We stress the importance of honestly stating the maximum price they would pay, supporting this with a simple, illustrative example. Unlike the main elicitation of willingness to pay for therapy, this willingness to pay elicitation is not implemented for any participants.

To verify participants' comprehension, we incorporate a control question. Specifically, we ask them to assess the accuracy of various statements about the payment rules, involved stakes, and potential rewards. Participants must accurately judge the truthfulness of each statement before proceeding with the survey.

2.3 Data quality

Our survey design sought to assure high data quality by providing respondents with monetary incentives in the belief elicitations and by incentivizing their stated willingness to pay for

therapy. Several features of our data are suggestive of high data quality. First, the open-ended data reveals that respondents engaged with the question and exerted substantial effort. Respondents wrote an average of 38 words and virtually no respondents provided a nonsensical response. Second, our survey measures exhibit a high degree of internal consistency (see Appendix Table A.2). For example, the quantitative pre-treatment measure of stigma perception is highly correlated with the qualitative measure ($\rho = 0.72, p < 0.01$), which is elicited on a different scale. Third, pre-treatment stigma beliefs are strongly correlated with the WTP measure ($\rho = 0.17, p < 0.01$) and predictive of the effects of the information treatment (see Section 4.3.2 for details).

3 Main results

3.1 Perceived and actual depression stigma

We start by examining how perceptions of depression stigma differ from actual stigma. In an initial survey with a sample that is broadly representative of the US population, 16 percent of Americans agree with the statement that "People with depression are lazy, hard to be around, and have weak character." Instead, respondents in our main experiment estimate that 38 percent of Americans agree with this statement. A large majority of our respondents (83 percent) overestimate the extent of stigma. The idea that depressed individuals are more pessimistic than people not suffering from depression represents a prominent hypothesis in the literature on depression (Beck et al., 1961). Here, we document pessimism in incentivized beliefs about the prevalence of depression stigma against an objective benchmark. This

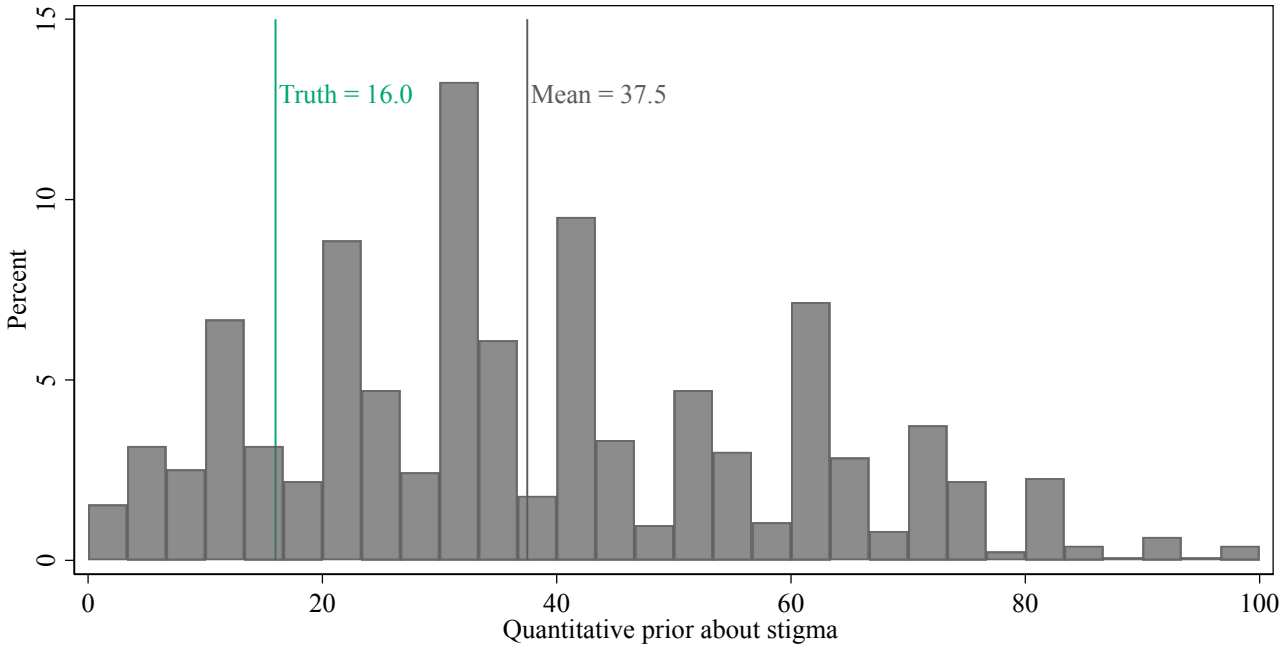

Figure 1: Prior beliefs about the prevalence of depression stigma

Notes: This figure displays the distribution of prior beliefs on stigma measured by asking participants what percentage of Americans agree with the statement: "People with depression are lazy, hard to be around, and have weak character." The blue vertical line indicates the mean of these prior beliefs, while the red vertical line represents the true value, based on an initial survey representative of the US population (see Online Appendix C). This distribution includes data from 1,226 observations within the *Stigma flag* and *Stigma info* treatment groups, from whom the prior beliefs were elicited.

finding implies scope for correcting average misperceptions with objective information.

3.2 The effect of information on the demand for online therapy

Our main treatment (*Stigma info*) provides accurate information on the prevalence of depression stigma and thereby decreases average pessimism about stigma in our participants.[8] We now ask whether *Stigma info* affects the demand for therapy. Panel A of Figure 2 presents the treatment effect of information on participants' elicited willingness to pay (WTP) for online therapy. *Stigma info* reduces WTP by 9.168 dollars ($p = 0.050$). Column 1 of Table

[8]In column (1) of Appendix Table A.3, we show that *Stigma info* decreases the perceived prevalence of stigma by 16.22 percentage points ($p < 0.01$). Columns (2) and (3) find similar effects of *Stigma info* on a qualitative measure of stigma prevalence as well as on a quantitative measure of stigma prevalence in the respondent's closer social circle. The comparison group in these first stage analyses is not the *Pure control* condition, where we took care to make no mention of stigma and consequently did not elicit stigma beliefs. Instead, we compare *Stigma info* with *Stigma flag* where we elicited stigma beliefs but did not provide information.

A.4 confirms this effect. The positive effect of perceived stigma on therapy demand runs counter to correlational evidence in a large literature on stigma and help-seeking in psychology (Clement et al., 2015; Corrigan and Rüsch, 2002) and speaks against the hypothesis that stigma constitutes an important barrier to the demand for online therapy.

We find that the negative treatment effect of information is substantially more pronounced among those who are more depressed, as captured by their PHQ8 score (Table A.4, column 2).[9] As it becomes clear from looking at Panel B of Figure 2, the estimated treatment effect rises to over 40 dollars among the most depressed and is close to zero for the least depressed. We also find that the treatment effect is larger among those who were not previously diagnosed with depression (Table A.4, column 3). These heterogeneous effects indicate that information about stigma is especially relevant to those who stand to gain the most from the support of a therapist.

4 Mechanisms

In this section, we shed light on mechanisms underlying our treatment effect. In Section 4.1 we use additional outcomes from our main experiment to analyze mechanisms put forth in prior work that argues that social stigma may act as a barrier to taking up psychotherapy, because it raises fears of social backlash and leads to a reluctance to self-label as mentally ill (Corrigan et al., 2006; Corrigan and Penn, 1999). We then ask whether *Stigma info* affects our participants' self-stigma because they internalize the social stigma they perceive. Section 4.2 presents a mechanism experiment that seeks to explain our main result by investigating

[9]This analysis was not pre-registered.

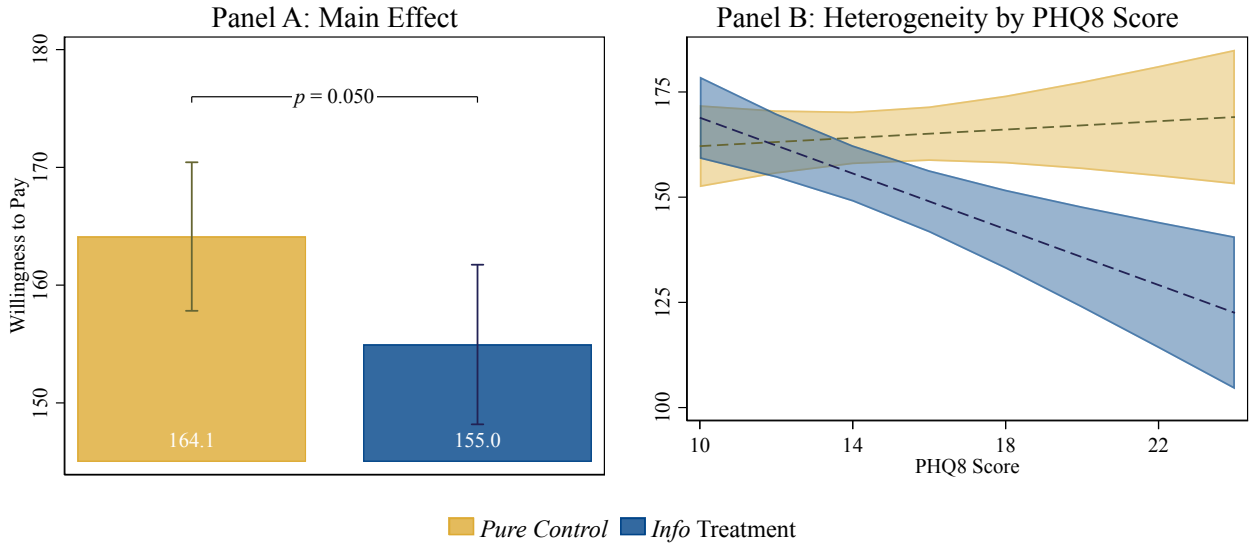

Figure 2: Average and heterogeneous treatment effects of stigma information on willingness to pay for therapy

Notes: Panel A presents the predicted values of willingness to pay for BetterHelp, derived from a regression analysis that examines the effect of treatment status on the willingness to pay for BetterHelp among the *Pure control* and *Stigma info* treatment groups. Panel B depicts the predicted willingness to pay for BetterHelp across different PHQ8 scores for the same groups, utilizing a regression that incorporates both the treatment indicator and its interaction with a continuous measure of PHQ8 score. The control variables used in the regressions include the PHQ8 score, willingness to pay for a month of spa membership, an indicator for prior awareness of BetterHelp, and an indicator for previous consideration of individual online therapy for depression. 95 percent confidence intervals and p-values are computed using robust standard errors from relevant regressions.

whether lower depression stigma may decrease the perceived need for therapy by increasing optimism about future mental health absent therapy (Andrade et al., 2014). Finally, Section 4.3 studies the role of belief movements in driving therapy demand.

4.1 Mechanism analysis in main experiment

Social backlash and self-labeling. Figure 3 includes tests for several of the mechanisms emphasized in the psychology literature (see Corrigan and Rüsch 2002), based on post-treatment survey measures, by which high perceived stigma may act as a barrier to demand. In line with the fact that we do not observe a positive treatment effect of *Stigma info* on willingness to pay, we find no evidence that reducing perceived stigma affects how comfortable participants feel to share their identity during therapy (0.02σ, $p = 0.72$) or to interact with a therapist

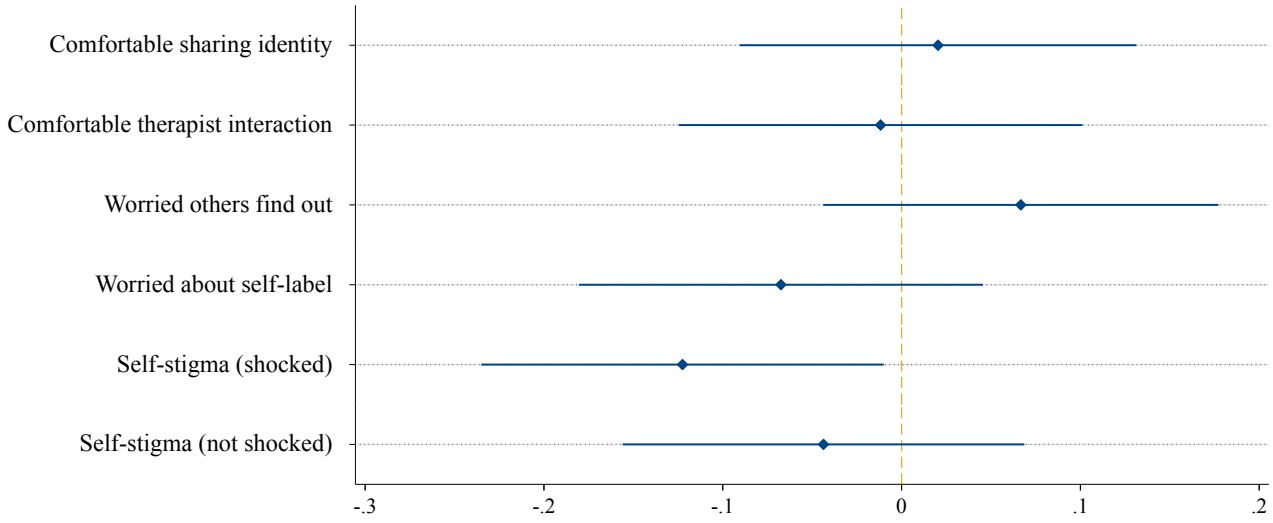

Figure 3: Effects of *Stigma info* treatment on measures of the mechanisms

Notes: This is a coefficient plot for the effect of the *Stigma info* treatment, estimated against the *Pure control*—denoted by the dashed line. Dependent variables are denoted on the y-axis. For comparability of effect sizes, all outcome variables are standardized by subtracting the mean and dividing by the standard deviation of the variable in the overall sample. 95 percent confidence intervals are based on robust standard errors.

(-0.01σ, $p = 0.84$). Neither does reducing perceived stigma significantly affect worry about others finding out about therapy (0.07σ, $p = 0.24$) and worry that seeking therapy labels the participant as depressed (-0.07σ, $p = 0.24$).

Self-stigma. We also study whether *Stigma info* affects self-stigma. We asked participants how often they feel that they are unpredictable, incompetent, unreliable, lazy, hard to be around and that they have a weak character. The variable self-stigma (shocked) in the fifth row of Figure 3 captures participants' agreement, on a Likert scale, with the assertions that they are respectively lazy, hard to be around and have weak character. These three harmful stereotypes are what our information treatment explicitly mentions. The last row looks at self-stigma about the remaining three attributes (non-shocked), which the *Stigma info* treatment did not mention.

We see that the *Stigma info* treatment significantly decreases the self-stigma along explic-

itly mentioned dimensions by 0.12σ ($p = 0.033$), but not along dimensions that were not mentioned ($p = 0.45$). Reducing perceived social stigma seems to positively affect how participants view themselves, precisely along the dimensions the social stigma encompasses. This suggests that social stigma is internalized. Once internalized, social stigma may affect how people feel and expect their future mental health to be. After all, if I think of myself as being lazy and having weak character, I might justifiably be more pessimistic about improving my future mental health absent therapy. In this way, higher perceived stigma may increase my perceived need for therapy, which would explain the observed treatment effect.

Considerations during willingness to pay elicitation. Data on the considerations on participants' minds when they make their demand decision is broadly consistent with the above evidence.[10] A majority of participants mention concerns about effectiveness (67 percent) and financial costs (67 percent) as salient considerations informing their willingness to pay. Only a very small minority mention social stigma, even in *Stigma info* (1 percent). Therefore, social stigma does not appear to affect therapy demand through easily expressed mechanisms like those relating to how others might react if they found out about therapy. Instead, taken together with the causal effect of perceived stigma on therapy demand, the low prevalence of explicit mentions of stigma suggest that stigma might affect demand more indirectly, in ways that are not verbalized because perceived stigma has already been internalized and subsumed in feelings about oneself and one's future.[11]

[10]This data was hand-coded by a team of research assistants.

[11]This relates to prior findings arguing that verbal reports about some issues can be misleading and not revealing of actual underlying motives and decision processes (Nisbett and Wilson, 1977).

4.2 Mechanism experiment: Social stigma and the perceived need for therapy

To provide more direct evidence for the effect of perceived stigma on the perceived need for therapy, we conducted a mechanism experiment.

Sample and Design. We relied on a sample of 1,008 Americans suffering from depression. The experiment was conducted on Prolific in the summer of 2023. It delivers the same *Stigma info* and *Stigma flag* treatment as the main experiment and compares them to the *Pure control* condition. Our main pre-registered[12] outcomes are related to participants' perceived need for therapy.

Results. The first row of Figure 4 shows the treatment effect of *Stigma info* on agreement with the statement "Right now, I am feeling down and I don't have the motivation to do anything about it." on a 5-point Likert scale. This measure is meant to capture negative emotions and is similar to items on the PHQ8 scale used to diagnose depression, without being identical. We find that lowering perceived stigma decreases the incidence of momentary feelings of sadness and low motivation by 0.16σ ($p = 0.035$). The second row shows that stigma information increases agreement with the statement "Right now, I am feeling fairly good and I don't see the need to do anything about my mental health" by 0.11σ, albeit not to an extent that rises to statistical significance ($p = 0.146$). The third row shows that *Stigma info* decreases agreement with the statement "The way others view depressed people keeps me from being optimistic about improving my future mental health by myself" by 0.20σ

[12]See AsPredicted registry (#137055).

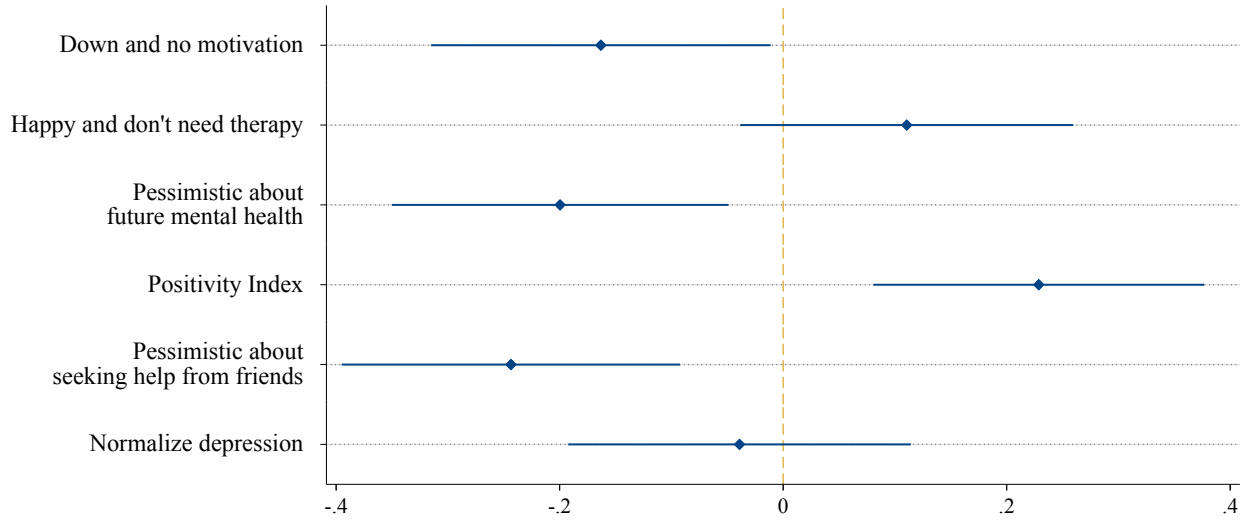

Figure 4: Effects of *Stigma info* treatment on emotions and beliefs

Notes: This is a coefficient plot for the effect of the *Stigma info* treatment, estimated against the *Pure control*–denoted by the dashed line. Dependent variables are denoted on the y-axis. For comparability of effect sizes, all outcome variables are standardized by subtracting the mean and dividing by the standard deviation of the variable in the overall sample. 95 percent confidence intervals are based on robust standard errors.

($p < 0.01$). To alleviate concerns about multiple hypothesis testing, we combine our measures into a positivity index (fourth row), and find that the *Stigma info* treatment leads to an increase in this index by 0.23σ ($p < 0.01$).

Rows 5 and 6 or Figure 4 show tests for two further ways in which *Stigma info* may affect participants' perceived need for therapy, which we pre-registered as secondary hypotheses. In row 5 we see that information makes our participants significantly more optimistic about seeking help for their mental health from friends. In row 6 we do not see that *Stigma info* increases agreement with the sentiment that "The way others view depressed people makes me feel that depression is rather common and normal and not something that needs to be treated with therapy." We take this as evidence that good news about stigma does *not* reduce the perceived need for therapy by normalizing the condition and thereby reducing the perceived (social) costs of depression. Instead, *Stigma info* primarily increases participants'

optimism about their future mental health.

4.3 Beliefs versus attention: Evidence from the *Stigma flag* condition

Next, we investigate whether changes in therapy demand are indeed driven by changes in stigma beliefs. We then study the effect of a condition that precludes beliefs changes and merely flags the presence of depression stigma. This section leverages data from our main experiment described in Sections 2 and 3.

4.3.1 Correlation of pre-treatment beliefs with WTP

To provide direct evidence on the relationship between beliefs and willingness to pay for online therapy, we first start by analyzing their bivariate correlation. This simple descriptive exercise also allows us to examine the external validity of our experimental estimates, which capture a local average treatment effect identified largely off of those with the largest ex-ante misperceptions.

Because our control condition did not mention stigma nor measure beliefs about it and our *Stigma info* treatment shocked stigma beliefs, we rely on our third condition (*Stigma flag*) in which we elicited prior beliefs and merely flagged that information about the prevalence of stigma exists without revealing the information content. The correlation between perceived stigma and willingness to pay for online therapy is 0.168 ($p < 0.001$), in contrast to previous correlational evidence in the psychology literature (Corrigan and Rüsch, 2002). This, in turn, suggests that the differences in results may not be due to differences in the type of evidence (causal vs. correlational estimates), but due to more substantive differences between our and the previous literature's sample and setting.

4.3.2 Heterogeneity by pre-treatment beliefs

To provide direct evidence on the role of beliefs in driving our treatment effect, we use data from *Stigma info* and in *Stigma flag* to study heterogeneous treatment effects by pre-treatment stigma perceptions. Table 1 shows the difference between willingness to pay in the *Stigma info* and *Stigma flag* treatments for different levels of pre-treatment perceptions of stigma. Consistent with an important role of beliefs, we find that information increased the demand of treated respondents who are ex-ante optimistic about stigma, but decreased the demand of treated pessimists. Column 1 shows that for participants that were ex-ante pessimistic, *Stigma info* reduces demand significantly by \$10.38 ($p = 0.042$). In column 2, the smaller group of participants who are optimistic about stigma in their priors increase willingness to pay for therapy by \$43.57 ($p < 0.01$). In column 3, we confirm these results with the pre-specified specification that interacts pre-treatment stigma perceptions with the treatment indicator. This evidence is consistent with an important role of changes in beliefs rather than attentional mechanisms in driving the main reduced form effects on demand for therapy. Moreover, the prior dependence of our treatment effect corroborates the high quality of our pre-treatment belief measures.[13]

4.3.3 The effect of merely flagging stigma to participants

Finally, we turn to the reduced form comparison of willingness to pay for online therapy among respondents from *Stigma flag* and *Pure control*. This allows us to investigate whether merely asking participants to think about the extent of stigma has an effect on their therapy

[13]Many studies in this literature fail to detect statistically significant heterogeneity of treatment effects by pre-treatment beliefs (Grigorieff et al., 2020; Haaland and Roth, 2020; Hager et al., 2023) and this is commonly attributed to measurement error in those beliefs (Haaland et al., 2023).

Table 1: Treatment Effect on Willingness to Pay

	(1) Willingness to pay	(2) Willingness to pay	(3) Willingness to pay	(4) Willingness to pay
Stigma info	-10.38**	43.57***	22.23**	-9.247**
	(5.107)	(11.53)	(9.663)	(4.676)
Prior (quant.)			0.650***	
			(0.160)	
Prior (quant.) x *Stigma info*			-0.634***	
			(0.224)	
Stigma flag				-7.826*
				(4.558)
Sample restriction	Prior >16	Prior ≤16	None	None
Excluded condition	*Pure control*	*Pure control*	*Pure control*	None
Control mean	164.54	132.16	158.59	162.99
Observations	1019	210	1229	1844
R^2	0.237	0.272	0.240	0.257

Notes: Regressions contain preregistered controls of willingness to pay for a hypothetical example good, age, gender, openness to online therapy, and PHQ-8 score. Column 3 interacts *Stigma info* with quantitative prior about stigma. Control mean is *Stigma flag* [*Pure control*] mean for columns 1-3 [4]. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

demand. This comparison may be informative about the effect of information campaigns that purposefully or inadvertently raise stigma awareness without debiasing beliefs about the level of stigma.

Column 4 of Table 1 shows that the *Stigma flag* treatment reduces the demand for therapy, at marginal statistical significance ($p = 0.086$). It follows from the negative effect of *Stigma flag* that therapy demand in *Stigma flag* and *Stigma info* are, on average, not significantly different ($p = 0.764$), thereby shrouding the striking heterogeneity in treatment effects by pre-treatment stigma perceptions that we discussed in Section 4.3.2.

In Appendix B, we show that our data allow us to rule out that *Stigma flag* backfires by directing attention to a meaningful barrier to demand without removing participants' pessimism. In the main experiment, we see no effect of the *Stigma flag* treatment on attention to stigma, as measured in an open-ended question during the willingness to pay elicitation. Moreover, such a backfiring effect is incompatible with the positive correlation between

stigma beliefs and therapy demand and the prior-dependent treatment effect of *Stigma info*.

Instead, exploratory analyses of our mechanism experiment suggest that the *Stigma flag* treatment reduces demand by mechanisms similar to those driving the effect of the *Stigma info* treatment. Appendix Table B.3 shows that the *Stigma flag* treatment also increases positive emotions and hopefulness about shaking depression absent therapy. This begs the question of why asking participants to engage with stigma and estimate its prevalence have such positive effects? One speculative answer to this question may be provided by evidence on cognitive behavioral therapy that shows that explicitly expressing or modifying ways of engaging with frightening thoughts, like those about social stigma, can improve mental health (González-Sanguino et al., 2023).

5 Robustness

In this section, we provide additional evidence on the robustness of our findings.

5.1 Evidence from an experiment on group therapy

5.1.1 The effect of reducing perceived stigma on the demand for group therapy

To examine whether the results we obtain in the setting of one-to-one online therapy extend to a setting in which the act of seeking therapy is more social, we turn to evidence from a field experiment on group therapy demand we conducted in the fall of 2021. We ran this experiment in collaboration with a provider of online group therapy by licensed therapists.

In this experiment, we document a similar first-stage of our information intervention.

The information treatment significantly reduces perceived depression stigma. Our main finding from this experiment is that reducing perceived social stigma has a negative (albeit not statistically significant) effect on the demand for therapy. In analyses that impose more similar sample inclusion criteria compared to our main experiment, we even find virtually identical point estimates on the willingness to pay measure. The field experiment also allows us to gauge whether perceived stigma affects actual enrollment to group therapy. Enrollment data confirms the main finding based on willingness to pay for therapy. Taken together, this evidence suggests that positive effects of reducing stigma on the demand for group therapy are unlikely and is suggestive of the generality of our findings from the main experiment. In Appendix D, we provide additional details from this field experiment.[14]

5.1.2 External validity

It might be a-priori unclear whether increases in willingness to pay translate into changes in actual therapy take-up. Evidence from our field experiment with the provider of group therapy suggests that an increase in willingness to pay for online group therapy is significantly positively associated with the likelihood of actually signing up and enrolling in online group therapy ($\rho = 0.171$, $p < 0.001$).

[14]The analysis of the experiment is relegated to an Appendix because difficulties in the implementation with the field partner kept us from achieving the targeted sample size, limiting the statistical power of our analyses.

5.2 Alternative Explanations

5.2.1 Experimenter demand

We think that experimenter demand effects are unlikely in our setting for several reasons: First, we conjecture that it is more likely for participants to believe that experimenters expected positive effects of the information intervention on therapy demand. Second, heterogeneity by pre-treatment stigma perceptions suggests that our patterns could only be explained by heterogeneously occurring demand effects. Third, our willingness to pay involves real stakes making demand effects somewhat less plausible. Fourth, as outlined in more detail in Appendix E, only a very small fraction of respondents correctly guessed the study purpose[15] and our results are not sensitive to excluding the few participants who guessed the aim of our study.

5.2.2 Substitution to in-person therapy

One possible side-effect of the stigma treatment could be that people substitute from online to in-person therapy as the social cost of attending in-person therapy is more strongly reduced by the information intervention. To evaluate this conjecture, we analyze people's open-ended considerations elicited during their willingness to pay decisions. In these open-ended considerations a substantial fraction of respondents talk about substitutes to online-therapy, such as in person-therapy. However, our open-ended data reveals no significant differences by treatment in whether participants mention the in-person therapy substitute in the open-ended responses. Indeed, Appendix Table A.5 shows that the fraction of respondents who

[15]This uncertainty in participants' beliefs makes experimenter demand effects less likely to constitute a threat to our findings (de Quidt et al., 2018).

mention substitutes are close to 7 percent across treatment arms.

6 Conclusion

In the United States, the market for online therapy services was valued at $5.81 billion in 2021, with online therapy fast becoming the dominant delivery mode for counseling services. Our study set out to provide causal evidence for the effect of perceived stigma on the demand for affordable online therapy.

The extant literature views high perceived social stigma as a barrier to seeking therapy. Under this view, policies that reduce perceived stigma are predicted to increase demand and are unambiguously welfare-improving. We find that reducing perceived stigma actually decreases demand. Our data show that this effect is plausibly driven by the reduction in perceived stigma making participants feel better about themselves and more hopeful about their future mental health, thereby reducing the perceived need for therapy. Whether our information intervention is welfare-improving then depends both on the persistence of its effects on participants' mental health and on whether participants' perceived need for therapy is well-calibrated. If we believe that the average person tends to be too reluctant to seek therapy or that the well-being and hopefulness we induce are highly transitory, then reducing perceived stigma may not improve welfare. Future work should provide more systematic evidence on the effects of perceived social stigma on mental health and their persistence over time.

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Online Appendix: Depression Stigma

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A Additional Tables and Figures

Table A.1: Demographics comparisons, general population and treatment conditions (means and standard errors in parentheses)

	(1) NHANES	(2) NHANES PHQ8 $\geq$ 10	(3) Study Sample	(4) *Control*	(5) *Flag*	(6) *Info*	(7) p-value (2)-(3)	(8) p-value (4)-(5)-(6)
Age	49.568	49.604	30.037	30.550	29.338	30.225	0.000	0.189
	(0.259)	(0.846)	(0.232)	(0.422)	(0.381)	(0.399)		
Female	0.511	0.616	0.567	0.566	0.564	0.570	0.060	0.978
	(0.007)	(0.023)	(0.012)	(0.020)	(0.020)	(0.020)		
PHQ8 Score	3.188	13.575	14.145	14.148	14.065	14.221	0.006	0.973
	(0.058)	(0.157)	(0.085)	(0.150)	(0.138)	(0.155)		
Heard of BetterHelp			0.527	0.520	0.520	0.539		0.749
			(0.012)	(0.020)	(0.020)	(0.020)		
Insurance Covers Therapy			0.483	0.474	0.483	0.494		0.794
			(0.012)	(0.021)	(0.021)	(0.021)		
Observations	5068	445	1844	615	615	614		

Notes: Column 1 presents statistics for a representative sample of the U.S. population based on the 2017-2018 National Health and Nutrition Examination Survey (NHANES), excluding individuals lacking demographic data or PHQ8 responses. Column 2 consists of a subset of the NHANES sample exhibiting depressive symptoms, defined by a PHQ8 Score of 10 or above. The p-value in column 7 results from a Kruskal-Wallis test comparing the study sample (column 3) to the NHANES subset with depressive symptoms (column 2). The p-value in column 8 is based on a Kruskal-Wallis test comparing three treatment conditions presented in columns 4 to 6. Due to missing values, *Insurance Covers Therapy* contains 1,721 observations (574, 574, 573 in *Pure control*, *Stigma flag*, and *Stigma info* conditions, respectively).

Table A.2: Correlation of stigma beliefs

	(1) Prior, quantitative	(2) Prior, qualitative	(3) Posterior, quantitative	(4) Posterior, qualitative	(5) Posterior, neighborhood
Prior, quantitative	1.000				
Prior, qualitative	0.721***	1.000			
Posterior, quantitative	0.790***	0.614***	1.000		
Posterior, qualitative	0.257***	0.299***	0.330***	1.000	
Posterior, neighborhood	0.616***	0.462***	0.702***	0.433***	1.000

Notes: "Prior [Posterior], quantitative" is a response to question asking the perceived share of Americans in an initial [another] survey who agreed with the statement that people with depression are lazy, hard to be around, and have weak character [are often unreliable, incompetent, and have weak character], ranging from 0 to 100. "Prior [Posterior], qualitative" is a response to question asking the likelihood that the majority of Americans from an initial [another] survey agreed with the statements above, ranging from 1 (very unlikely) to 5 (very likely). "Posterior, neighborhood" is a reponse to a question asking the perceived share of people in the participants' neighborhood who agree with the statement that people with depression are often unreliable, incompetent, and have weak character, ranging from 0 to 100. * p<0.1, ** p<0.05, *** p<0.01.

Table A.3: Treatment effect on posteriors about stigma

	(1) Posterior quantitative	(2) Posterior qualitative	(3) Posterior neighborhood
Stigma info	-16.22***	-0.205***	-12.93***
	(0.956)	(0.0704)	(1.182)
Stigma flag mean	35.23	2.76	35.77
Observations	1229	1229	1229
R^2	0.198	0.026	0.098

Notes: "Posterior, quantitative" is a response to question asking the perceived share of Americans in a survey who agreed with the statement that people with depression are lazy, hard to be around, and have weak character, ranging from 0 to 100. "Posterior, qualitative" is a response to question asking the likelihood that the majority of Americans from a survey agreed with the statements above, ranging from 1 (very unlikely) to 5 (very likely). "Posterior, neighborhood" is a reponse to a question asking the perceived share of people in the participants' neighborhood who agree with the statement that people with depression are often unreliable, incompetent, and have weak character, ranging from 0 to 100. The reference group is *Stigma flag*. Regressions contain preregistered controls of indicator for having heard of BetterHelp, openness to online therapy, and PHQ-8 score; robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

Table A.4: Treatment Effect on Willingness to Pay

	(1) Willingness to pay	(2) Willingness to pay	(3) Willingness to pay
Stigma info	-9.224**	-23.36***	-14.09***
	(4.675)	(6.329)	(5.273)
PHQ-8 Score (rescaled)		0.497	
		(0.812)	
PHQ-8 Score (rescaled) x *Stigma info*		-3.704***	
		(1.195)	
Diagnosed (d)			-22.69***
			(7.002)
Diagnosed (d) x *Stigma info*			22.37**
			(11.32)
Pure control mean	162.99	162.99	162.99
Observations	1229	1229	1229
R^2	0.258	0.263	0.263

Notes: Regressions contain preregistered controls of willingness to pay for a hypothetical example good, age, gender, and openness to online therapy, columns 1 and 3 also feature a participants PHQ-8 score. To ease the interpretation of regression coefficients, the PHQ-8 score is linearly transformed to start from 0. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

Table A.5: Balance table for open-ended data (means and standard errors in parentheses)

	(1) Whole Sample	(2) Control	(3) Flag	(4) Info	(4) p-value
Effectiveness	0.633	0.668	0.629	0.603	0.056
	(0.011)	(0.019)	(0.019)	(0.020)	
Financial Cost	0.689	0.668	0.683	0.717	0.172
	(0.011)	(0.019)	(0.019)	(0.018)	
Time	0.208	0.210	0.190	0.223	0.360
	(0.009)	(0.016)	(0.016)	(0.017)	
Social Concerns	0.013	0.005	0.016	0.018	0.090
	(0.003)	(0.003)	(0.005)	(0.005)	
Medication	0.006	0.005	0.005	0.008	0.690
	(0.002)	(0.003)	(0.003)	(0.004)	
Therapist	0.028	0.031	0.021	0.031	0.483
	(0.004)	(0.007)	(0.006)	(0.007)	
Insurance	0.095	0.122	0.096	0.067	0.004
	(0.007)	(0.013)	(0.012)	(0.010)	
Substitute	0.073	0.078	0.073	0.068	0.810
	(0.006)	(0.011)	(0.011)	(0.010)	
Low Duration	0.022	0.021	0.021	0.023	0.975
	(0.003)	(0.006)	(0.006)	(0.006)	
Inflation	0.012	0.015	0.013	0.010	0.736
	(0.003)	(0.005)	(0.005)	(0.004)	
In-Person Therapy	0.104	0.098	0.114	0.101	0.616
	(0.007)	(0.012)	(0.013)	(0.012)	
Observations	1844	615	615	614	

Notes: Frequency of considerations in the open-ended data, per the categorization presented in Appendix Table A.6. The p-value in the last column is from a Kruskal-Wallis test comparing the 3 groups.

Table A.6: Handcoding scheme of open-ended data on considerations of the downsides and benefits of buying therapy

Category	**Description**	**Example Responses**
Cost	Financial cost of therapy	"BetterHelp's pricing seems reasonable compared to traditional therapy, especially given its accessibility and flexibility."
Effectiveness	Focus on effectiveness of therapy	"Therapy can be life-changing, offering new perspectives and coping mechanisms that significantly improve mental health"
Inflation	Rise in costs or lower disposable incomes	"The increasing costs of living and healthcare make budgeting for therapy more challenging, especially for those with fixed incomes."
In-Person Therapy	Preference for in-person therapy sessions	"I prefer in-person therapy sessions for their personal touch and direct interaction, despite the convenience of online options like BetterHelp."
Insurance	Therapy covered by insurance	"Having therapy covered by insurance is crucial for me, as it significantly reduces the financial burden of mental health care."
Low Duration	Insufficient duration (4 weeks) for mental health improvement	"A short therapy duration might not be enough to address deep-rooted issues, raising concerns about its long-term effectiveness."
Medication	Concerns about medication	"I'm open to medication as part of my treatment plan, hoping it can provide the relief I need to function better daily."
Social Concerns	Positive or negative stereotypes about therapy and other social concerns	"There's a lingering fear that seeking therapy might lead others to perceive me as weak or unable to handle my problems on my own."
Substitute	Availability of better substitutes	"I'm exploring other options like support groups or self-help resources as alternatives to traditional therapy."
Therapist	Excitement or concerns about interacting with the therapist	"I'm looking forward to building a rapport with a therapist who can provide guidance and support through my challenges."
Time	Time commitment for therapy	"Finding time for therapy sessions is difficult with my current work and family commitments, making scheduling a key concern."

Notes: To categorize open-text responses, research assistants were provided with one-paragraph descriptions of each category and instructed to identify all categories applicable to each case.

Table A.7: Handcoding scheme of open-ended data on the perceived aim of the study

Category	**Description**	**Example Responses**
Correct Stigma	State that survey tried to measure how information about stigma in the experiment affect the valuation of therapy.	"How stigma or stereotypes associated with therapy and depression affect people's willingness to spend money on getting help."
Depression	State that survey tried to measure views about depression	"Just to understand how people view depression in the world."
Depression History	State that survey tried to study if people had depression, and how depression might impact the result	"If depressed people are more willing to spend more or less money."
Determinants of Therapy Demand	State that survey tried to measure why people seek therapy	"To see what are deciding factors as to why people choose to seek out therapy or not."
Don't Know	Indicate uncertainty	"I have no idea what the goal of this study is."
Junk	Nonsensical responses	"Too cold to type."
Marketing	Survey is a method of marketing for BetterHelp	"To get the name of BetterHelp out there."
Mental Health Awareness	Survey is interested in awareness or concerns about mental health	"Maybe it is related to how we value our mental wellness."
Opinions on Therapy	State that survey tried to measure opinions about therapy	"Seeing how people perceive therapy."
Other	Some other explanation that is not junk	"I think it was to see if people who have depression can focus on reading."
Perception of Online Therapy	Specifically mention the concept of online therapy	"To gauge people's interest in online therapy."
Perceptions of Stigma	State that survey tried to measure perceptions of social or self stigma	"How people feel about the stigma of therapy."
Perceptions of Therapy Effectiveness	State that survey tried to measure perceptions of therapy effectiveness.	"To see if people found therapy effective or not."
Valuation	State that survey tried to measure how much people are willing to pay for therapy	"I think it has something to do with seeing how people value therapy."

Notes: To categorize open-text responses, research assistants were provided with one-paragraph descriptions for each category and instructed to identify all categories applicable to each case.

B The *Stigma flag* treatment

This appendix analyzes the effect of the *Stigma flag* treatment, which did not provide information about stigma, but merely elicited pre-treatment beliefs and tried to direct attention to the fact that information about stigma exists and will be shared with participants at the end of the experiment. In Table B.1, we regress several measures of attention on whether or not a participant was in the *Stigma flag* condition. Columns 1 through 3 estimate whether being in *Stigma flag* raised the likelihood of participants mentioning stigma or esteem as considerations that informed their willingness to pay. We find no such effects. Column 4 features a more structured elicitation of attention to stigma that asks participants to pick possible drivers of demand from a list. *Stigma flag* did not affect whether participants stated that being afraid of what others thought about them informed their demand decision. Table B.2 repeats the mechanism analysis from the main experiment for the *Stigma flag* treatment. We see that the *Stigma flag* treatment did not have sizable effects on post-treatment measures of the kind of barriers to demand emphasized in the psychology literature. We find that the *Stigma flag* treatment has a small effect on worries about others finding out, but the effect only achieves marginal statistical significance. This measure was elicited separately from the measure that featured in column 4 of Table B.1 and is contradicted by it. Together with the fact that perceived stigma and willingness to pay are positively correlated (while stigma and worry about others is not), these results speak against the idea that by merely flagging stigma, we raise the salience of an important barrier to demand.

In Table B.3, we explore whether the *Stigma flag* treatment shifted the three main outcomes in our mechanism experiment. The first column shows a small negative effect of *Stigma flag* on

Table B.1: Effect of *Stigma flag* on attention to stigma

	(1) Negative Stigma	(2) Positive esteem	(3) Esteem or stigma	(4) Afraid what others think
Stigma flag	-0.00488	-0.0114	0.00325	0.0130
	(0.0219)	(0.0223)	(0.0268)	(0.0175)
Pure control mean	0.18	0.19	0.33	0.10
Observations	1230	1230	1230	1230
R^2	0.000	0.000	0.000	0.000

Notes: All regressions include data from the *Stigma flag* and the *Pure control* condition. Dependent variables in columns 1 through 3 are based on open-ended considerations participants said went into their willingness to pay decision. We handcoded whether participants mentioned stigma (column 1) or positive esteem (column 2) or any notion of esteem or stigma (column 3). The dependent variable in column 4 measures whether participants selected that they were afraid of what others might think from a list of possible considerations that went into their demand decision. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

Table B.2: Effects of *Stigma flag* on measures of the mechanisms

	(1) Comfortable sharing identity	(2) Comfortable therapist interaction	(3) Worried others find out	(4) Worried about self-label	(5) Self-stigma (shocked)	(6) Self-stigma (not shocked)
Stigma flag	-0.0263	-0.0822	0.109*	0.0159	0.0148	0.161
	(0.0693)	(0.0642)	(0.0574)	(0.0653)	(0.152)	(0.144)
Pure control mean	3.04	2.82	1.67	2.42	8.31	7.38
Observations	1225	1225	1225	1225	1225	1225
R^2	0.000	0.001	0.003	0.000	0.000	0.001

Notes: Dependent variables in columns 1-4 are based on 5-point Likert scales and are responses to questions about comfort levels with sharing their identity (column 1) or interacting with a therapist (column 2); concerns about others discovering their therapy (column 3); and the extent of agreement that seeking treatment would lead to self-labeling as depressed, resulting in worsened self-perception (column 4). The dependent variable in column 5 is the sum of responses to three questions, also measured on 5-point Likert scales, which gauge the extent to which participants agree that they possess a weak character, are lazy, and are hard to be around. Column 6 contains the sum of responses to questions assessing perceptions of being unreliable, incompetent, and behaving unpredictably. Column 6 Regressions do not contain controls; robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

Table B.3: Effect of *Stigma flag* on attention to stigma

	(1) Down and no motivation	(2) Happy and no need	(3) Pessimistic: mental health	(4) Positivity Index	(5) Pessimistic: seeking help	(6) Normalize depression
Stigma flag	-0.127*	0.0567	-0.180**	0.364**	-0.181**	-0.156*
	(0.0760)	(0.0741)	(0.0785)	(0.161)	(0.0883)	(0.0823)
Pure control mean	3.57	2.38	3.06	-4.25	3.09	2.87
Observations	674	674	672	672	672	672
R^2	0.004	0.001	0.008	0.008	0.006	0.005

Notes: Dependent variables in columns 1-3, 5-6 measure agreement with the following statements: "Right now, I am feeling down and I don't have the motivation to do anything about it" (Column 1); "Right now, I am feeling fairly good and I don't see the need to do anything about my mental health" (Column 2); "The way others view depressed people keeps me from being optimistic about improving my future mental health by myself" (Column 3); "The way others view depressed people keeps me from seeking help from my social circle when my mental health is not good" (Column 5); "The way others view depressed people makes me feel that depression is rather common and normal and not something that needs to be treated with therapy" (Column 6). Column 4 features an index of positively valenced beliefs and emotions that subtracts the column 1 and 3 from column 2. Robust standard errors in parentheses, * p<0.1, ** p<0.05, *** p<0.01.

agreement with the statement "Right now, I am feeling down and I don't have the motivation to do anything about it." In the second column, we see that *Stigma flag* increases agreement with the statement "Right now, I am feeling fairly good and I don't see the need to do anything about my mental health", albeit not to an extent that rises to statistical significance. The third column shows that *Stigma flag* decreases agreement with the statement "The way others view depressed people keeps me from being optimistic about improving my future mental health by myself." The effect of *Stigma flag* on a Positivity Index, explained in the main text, that aggregates the previous three measures is positive and highly significant. These findings suggest that *Stigma flag* may have increased willingness to pay through a mechanism that is not too different from the mechanism behind the effect of *Stigma info*.

C Stigma measurement

C.1 Qualitative pilots on stigma measurement

Rather than adopting lengthy psychometric scales (such as the often-used 20-item scale proposed by Link et al. (1989)) or imposing our own definition of stigma, we decided to conduct qualitative pilots to inform our design by participants' construal of stigma.

Sample. We conducted this pilot with two samples of respondents from Amazon Mechanical Turk in January 2021, both selected based on a score on their PHQ8 questionnaire greater or equal than 10. The first sample includes 103 individuals that were asked to express what depression stigma is in an open-text form. The second sample includes 97 individuals that were asked to select the harmful stereotypes that they believe to be associated with depression from a closed list.

Qualitative question. The first sample of respondents completes the following open-ended question:

> Imagine a person with depression. What views about depressed people by others does this person worry about most?

We then carefully read through all of these responses and hand-coded them into 12 harmful stereotypes, which include: boring, cannot be trusted, childish, dangerous, hard to be around, impatient, incompetent, just pretending to be sick, lazy, overconfident, selfish, weak character. We then used these 12 harmful stereotypes in a pilot with a structured question.

Closed question. The second sample of respondents completes the following question:

> Imagine a person with depression. What views about depressed people by others does this person worry about most? From the list below, please select the three most harmful views about depressed people.

The order of items from this list is randomized.

Results. Based on this structured list from the second sample of respondents, we find that the most commonly mentioned characteristics associated with depressed people were the following: weak character (37%), lazy (33%), and hard to be around (31%).[1] These three stereotypes come to form the statement that we use to quantify stigma:

> People with depression are lazy, hard to be around, and have weak character

[1] Followed by dangerous (31%), selfish (30%), cannot be trusted (26%), just pretending to be sick (26%), incompetent (25%), boring (21%), impatient (15%), overconfident (13%), childish (12%).

C.2 Pre-survey to quantify stigma

Sample. We conducted this pilot with respondents from a representative sample of the US population that were recruited on Lucid between November 2020 and January 2021.

Design. We asked our respondents to what extent they agree to each of the following statements:

1. People with depression are lazy, hard to be around, and have weak character (517 observations).

2. People with depression are often unreliable, incompetent, and have weak character (235 observations).

Whereby 1. follows from the preliminary work described in the previous section and 2. captures stereotypes that are particularly harmful in the workplace. They respond on a 5 point-scale (Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree).

Results. We find the following distribution of responses. For the first statement: 5% strongly agree, 11% agree, 20% neither agree nor disagree, 30% disagree, 34% strongly disagree. For the second statement: 7% strongly agree, 19% agree, 19% neither agree nor disagree, 23% disagree, 32% strongly disagree.

D Group therapy experiment

In this section, we describe an experiment on group therapy.

D.1 Sample

Respondents were recruited primarily in New York State using Prolific, Dynata and CloudResearch, as most of our partner's therapists only have licenses to practice therapy sessions in New York State.[2] This recruitment took place in the fall of 2021. Moreover, we only included participants who qualify as depressed based on having a PHQ8 score of 10 or above and who had pessimistic pre-treatment beliefs about stigma. Because we hypothesized that increasing perceived stigma would decrease demand and be unambiguously disadvantageous to participants, we did not include participants for whom accurate information would have been bad news. As a result of these restrictions on the recruitment pool, we managed to recruit only 1100 participants, which is substantially less than we aimed for, even though we recruited participants over a period of several months.[3]

D.2 Design

Treatment groups. Our main treatment administered information about stigma in exactly the same way that our main experiment did. Participants in a control condition stated their pre-treatment beliefs about stigma, but did not receive information. This condition was, therefore, similar to the *Stigma flag* condition in the main experiment.

Group therapy. The key difference of this experiment is that rather than eliciting willingness to pay for one-on-one online therapy, we offered respondents online group therapy from a prominent online group therapy service based in the US. This provider offers treatment for a

[2] A few respondents were recruited from neighboring US states.
[3] This experiment was pre-registered on aspredicted #74868.

wide range of diagnoses and life challenges, including anxiety, depression, and relationship issues, among others. The service primarily consists of one-hour weekly sessions of group cognitive-behavioral therapy, led by a licensed therapist. An initial consultation allows new subscribers to sort into the group that best suits them. Each group has at most twelve members, who take part in the session via Zoom. Participants can always choose how much to interact during the session depending on how much they have to say or how comfortable they feel, and they can choose to be anonymous to the rest of their group by using a nickname when they enter the Zoom meeting.

Pre-registered outcomes. Our main outcome measures willingness to pay for therapy, elicited using a 31-item multiple price list (where the monetary alternative to therapy ranges from 0$ to 300$, in 10$ increments). Every participant had one decision implemented at random, and received either a voucher for therapy or money depending on their choice. Among those who received a voucher for therapy, we also measured whether they enrolled in the therapy service that we offered, in which case we covered their cost. Our software selects with probability 90 percent the choice between 0$ and therapy, which comes with the two main advantages of (a) maximizing access to therapy and (b) allowing us to investigate the correlation between willingness to pay and actual enrollment net of mechanical effects. We also collected information on whether participants showed up for therapy sessions, but problems on behalf of the provider with scheduling sessions may make this data unreliable.

Table D.1: Treatment effect on posterior beliefs and willingness to pay

	(1) Posterior belief	(2) Willingness to pay	(3) Willingness to pay	(4) Enrollment to therapy	(5) Enrollment to therapy
Stigma info	-20.10***	-1.809	-10.24	-0.00444	-0.0165
	(1.174)	(5.965)	(6.989)	(0.0184)	(0.0209)
Sample restriction	None	None	Not being treated	0$ choice	Not being treated; 0$ choice
Stigma flag mean	47.00	70.28	68.04	0.0948	0.0836
Observations	1100	1100	708	993	636
R^2	0.206	0.000	0.003	0.000	0.001

Notes: The reference group is *Stigma flag*. Sample contains only participants with pessimistic prior. Column 3 restricts the sample to those not currently being treated for mental health; column 4 restricts the sample to those for whom the choice implemented for payoff was the one between 0$ and therapy; column 5 combines the restrictions in columns 3 and 4. Regressions do not contain controls; robust standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

D.3 Results

Table D.1 presents the results of the group therapy experiment. Column 1 features a manipulation check and shows that the information significantly reduced posterior beliefs about stigma. Column 2 shows a small negative effect of correcting stigma on willingness to pay that is statistically indistinguishable from zero. Column 3 repeats the analysis, but restricts the sample to those who are not already being treated for mental health problems. This is what we did and pre-registered in our main experiment with BetterHelp. However, this sample restriction was not pre-registered in the group therapy experiment. In this sub-sample, reducing perceived stigma leads to a reduction of willingness to pay by 10.24 dollars, although the effect is not statistically significant at conventional levels. The relevant point of comparison with our main experiment is given by column 1 of Table 1, where we present the treatment difference between *Stigma info* and *Stigma flag* for participants with pessimistic priors and find that *Stigma info* reduced WTP by 10.38 dollars, a strikingly similar point estimate.

There are several potential reasons for why estimates in the group therapy experiment

appear to be more noisy than in the main experiment. Two reasons stand out. First, we did not elicit and include as a control willingness to pay for an example good, a strategy that has been shown to improve the statistical power of analysis that feature willingness to pay measures as an outcome variable. Second, 381 participants seem to categorically dislike group therapy and are not willing to pay anything for it. Others already use alternative forms of therapy. So, the group of participants whose demand our treatment could reasonably affect is small, thereby reducing our effective sample size.

Column 4 shows that *Stigma info* has a negative but close-to-zero effect on whether participants who received the voucher sign up for the therapy service. Column 5 repeats the analysis for only those who are not currently under alternative treatment for mental health problems, finding a somewhat more negative yet still statistically insignificant effect.[4] These results line up with the analyses that use willingness to pay as the outcome variable. In both cases, we do not observe significant negative effects. Yet our results rule out meaningful positive effects of reduced stigma on the demand for group therapy that are hypothesized in the extant literature.

D.4 Does willingness to pay predict enrollment?

The group therapy experiment allows us to speak to the external validity of our willingness to pay measure because we observe it alongside the real outcome of participants who actually fill out the forms required to enroll in the online group therapy service and subsequently

[4]Only participants for whom a multiple price list scenario that had them receive the therapy voucher was realized had a choice of whether or not to go through the process of enrolling in the service. Realized scenarios where drawn randomly from a very skewed distribution that featured a "price of zero" scenario 90 percent of the time. Our analysis in columns 4 and 5 looks at the ninety percent of participants who received the voucher regardless of their stated willingness to pay.

choose to enroll. We see that willingness to pay and enrollment exhibit a correlation of 0.171 ($p < 0.001$), thereby increasing our confidence in the ecological validity of our WTP measure.

E Experimenter demand effect

To examine the potential role of experimenter demand effects, we rely on an open-ended question: "Please describe in a few words what you think the aim was of the research conducted through this survey." Appendix Figure E.1 shows that only 2.2 percent of respondents correctly guessed our study's purpose, i.e., studying the effects of perceived social stigma on therapy demand; 5.8 percent of respondents guessed that the study purpose was studying perceptions of stigma. The vast majority of responses are very unspecific: 42 percent of respondents mention that the survey tried to measure people's valuation of therapy. 16.5 percent mention that the survey was about depression, 12 percent thought it was about perceptions of online therapy and 11.8 percent believed that it was about opinions on therapy. 8.4 percent of respondents explicitly indicate that they are quite unsure about the purpose. Table E.1 shows that our main treatment effects are robust to excluding those respondents that correctly guessed the study hypothesis or believed that the study purpose was about stigma perceptions. In light of the evidence on the muted quantitative importance of experimenter demand effects (de Quidt et al., 2018) and the above findings, experimenter demand effects seem less likely to account for the treatment effects we uncover in our experiment. At the same time, we acknowledge that we cannot fully rule them out.

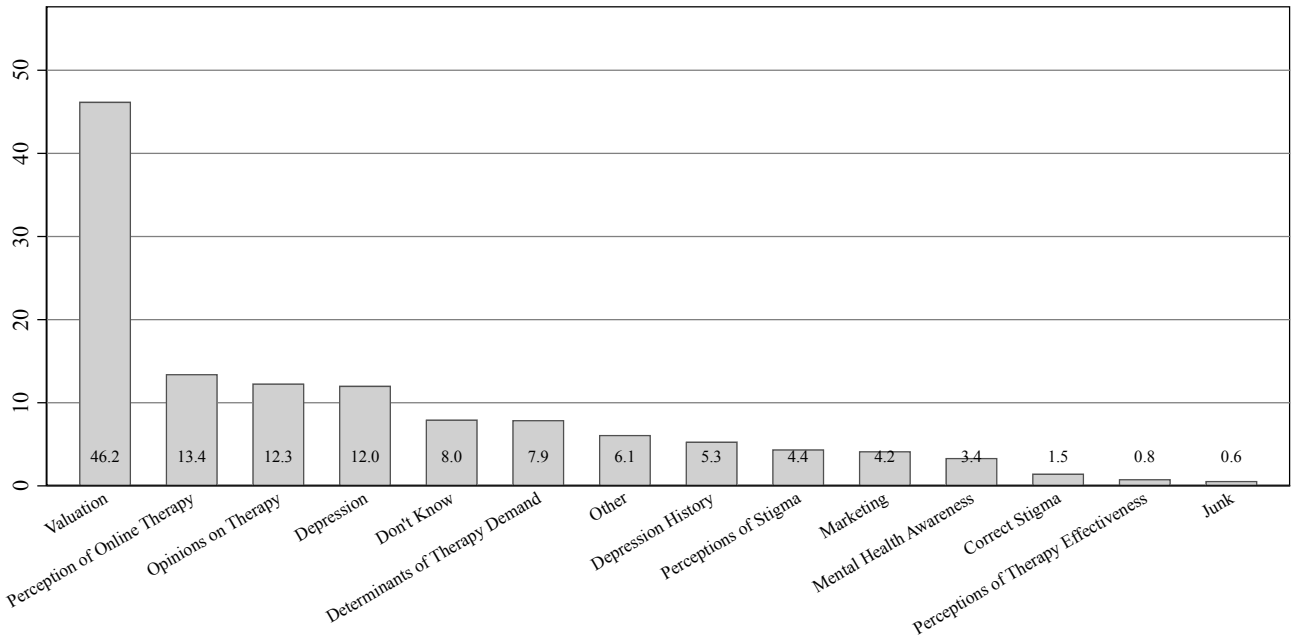

Figure E.1: Open-text responses when participants are asked to guess the research objective

Notes: The bars represent the fractions of respondents (1844 observations) who mentioned a given category in their written responses when asked what they thought the study is about.

Table E.1: Treatment Effect on Willingness to Pay: Experimenter Demand Effect Robustness Check

	(1) Willingness to pay	(2) Willingness to pay
Stigma info	-9.224**	-8.879*
	(4.675)	(4.824)
Pure control mean	162.99	163.57
Observations	1229	1171
R^2	0.258	0.257

Notes: Regressions contain preregistered controls of willingness to pay for a hypothetical example good, age, gender, and openness to online therapy, participants PHQ-8 score. Column 2 excludes the respondents that correctly guessed the study hypothesis or believed that the study purpose was about stigma perceptions. Robust standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01.

F Instructions: main experiment

Consent

Thank you for taking part in this survey. You must be 18 or above to participate. You are not allowed to participate in this study more than once. The survey takes just a few minutes. If you decide to participate in the survey, then we ask you to take all questions seriously. Data is collected for the purpose of research. Keep in mind that your participation is voluntary and that you can decide to withdraw from the study at any point. At the end of the survey, we may offer you a health service to which you may enroll for 4 weeks. This service is sponsored by a research grant so that you will not have to pay anything out of pocket. All information is treated as highly confidential. Note that there will be no deception in the instructions. Everything we tell you about the tasks you face will be implemented in the exact way we tell you. Any analysis and publication will only use data in anonymous form. This study was cleared by the ethics committee of the University of Essex.

If you experience a technical error or problem, then do not try to restart or retake the study. Rather, send us an email with a description of your problem and we will get back to you. For any question or complaint, please contact Egon Tripodi (egontrpd@gmail.com). By clicking on "Yes, I consent to participate in the study" you give your consent to take part in the study.

[Yes, I consent to participate in the study; No, I would not like to participate in the study]

Attention screener

The next question is about the following problem. In questionnaires like ours, sometimes there are participants who do not carefully read the questions and just quickly click through the survey. This means that there are a lot of random answers which compromise the results of research studies. To show that you read our questions carefully, please enter 333 as your answer to the next question. Given the above, what is your favorite number?

[Number]

Demographics

What is your age?

[Dropdown list of possible ages]

What is your gender?

[Male; Female; Non-binary]

In which state do you currently reside?

[Dropdown list of possible states]

Personal health questions

Over the last 2 weeks, how often have you been bothered by any of the following problems?

- Little interest or pleasure in doing things
- Feeling down, depressed, or hopeless
- Trouble falling or staying asleep, or sleeping too much
- Feeling tired or having little energy
- Poor appetite or overeating
- Feeling bad about yourself or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television
- Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety restless that you have been moving around a lot more than usual
- Thoughts that you would be better off dead, or of hurting yourself in some way

[Not at all; Several days; More than half of the days; Nearly every day]

The previous questions are commonly used to measure depression. By depression we mean a mental disorder that can be characterized by sadness, a lack of interest and a loss of pleasure, feelings of guilt and low self-esteem, sleep disorders, loss of appetite, tiredness and poor concentration.

We will now ask you a few additional questions about depression.

- Have you ever been diagnosed with depression?
- Have you ever overcome depression?
- Have you ever attended psychological therapy for depression?
- Are you currently undergoing any form of treatment for depression (e.g. psychological therapy)
- Do you have health insurance that covers psychological therapy?
- Would you ever consider taking part in individual online therapy for depression?

[Yes; No]

Do you want to continue participating in this study, answer additional questions for 5 more minutes, and receive a $1.2 bonus for your participation?

[Yes, I will take part in this 5 minute survey for a $1.2 bonus; No, I don't want to participate]

Explanation for WTP

HOW MUCH ARE YOU WILLING TO SPEND? During this experiment, we may ask you how much you would be willing to pay for certain products or services. These decisions may have real consequences in that they will actually be implemented for some participants in the survey. Let us take you through a hypothetical example to explain how this kind of buying decision will play out. Please make sure you understand the example. Example: How much would you spend on a 1 month spa membership? Suppose the product in question is a one month membership at a spa in your area, valued at 250 dollar. The membership entitles you to use a sauna, an indoor swimming pool, and to receive one free massage a week.

We will ask you for the maximum amount of money you would be willing to pay for the membership. We call this amount your valuation. You will state your valuation using a slider. You will not have to use your own money to buy the product. After you stated your valuation, the computer will randomly pick a dollar amount between 0 and 300. If this dollar amount is larger than your valuation, then the dollar amount will be paid out to you.

If the dollar amount is smaller than your valuation, then you will receive the spa membership.

This rule means that it is in your best interest to state the maximum amount of money you would be willing to pay for the product. To see why, consider the case where you selected a number smaller than your true valuation. Then there is a chance that the computer picks a dollar amount that is larger than your chosen amount, but smaller than your true valuation. Receiving this dollar amount means that you would have been better of stating your true valuation, which would have resulted in you receiving the product. Remember, during the survey the buying decision of some participants will actually be implemented. Depending on their decisions and the random dollar amount generated by the computer, these participants will then either receive money or the product.

Control question

- ☐ Given the payment rule, it is in my best interest to state the largest amount of money that I would be willing to pay for the product.
- ☐ My buying decision during the survey may have real consequences because it may be implemented.
- ☐ If my decision is implemented, then I will either receive money or the product, depending on my choices.

Practice question

Just for practice, please state your valuation: On the slider below, indicate the maximum amount of money you would pay for the one month spa membership? (Please give us your best answer)
My valuation is __

[Slider from 0 to 300]

Explanation of incentives

WHAT IS YOUR BEST GUESS?
Some of the questions that follow will ask you to make estimates and will be marked with a $ sign. One of these questions will be randomly selected for payment, regardless of whether your buying decision is implemented. If your answer in the selected question is within 3 percent of the truth, then you will receive a $0.50 dollar bonus. Therefore, it is in your best interest to provide your best guess.

Prior stigma

We recently conducted a survey with a sample of over 100 Americans. The composition of this sample resembles the American population at large.

$ What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Number from 0 to 100]

Here is a related question. How likely is it that the majority of Americans from this survey agreed or strongly agreed with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Very unlikely; Unlikely; Neither likely nor unlikely; Likely; Very likely]

Stigma flag

You said that you believe that XX% of Americans either agree or strongly agree with the following statement:

"People with depression are lazy, hard to be around, and have weak character."

At the end of this study we will send you the correct answer to this question as a private message on Prolific.

Stigma information

You said that you believe that XX% of Americans either agree or strongly agree with the following statement:

"People with depression are lazy, hard to be around, and have weak character."

According to our survey of over 100 Americans, the actual share of Americans that either agree or strongly agree with this statement is XX%.

Post-treatment stigma beliefs

$ We recently conducted another survey with a sample of over 100 Americans. The composition of this sample resembles the American population at large. What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are often unreliable, incompetent, and have weak character."

[Number from 0 to 100]

Next, suppose that we conducted the same survey with 100 people from your neighborhood. What percentage of these people would you say would agree or strongly agree with the following statement?

"People with depression are often unreliable, incompetent, and have weak character."

[Number from 0 to 100]

How likely do you think it is that people you regularly interact with would hold negative views about you if they learned that you struggled with depression?

[Very unlikely; Unlikely; Neither likely nor unlikely; Likely; Very likely]

Betterhelp

On the next screen we introduce BetterHelp, one of the leading online therapy services in the United States. We will then ask you some questions to understand how valuable you find this type of service. This is not promotional material.

Have you ever heard of BetterHelp?

[Yes; No]

betterhelp.com is an online therapy service. They offer treatment for a wide range of diagnoses and life challenges, including anxiety, depression, and relationship issues, among others. You can send audio, video, or text messages to your therapist at any time in the messaging room. You can also schedule weekly live sessions (30 to 45 min) with your therapist to communicate via phone, video, or live chat. If you don't like your therapist, you can ask to be matched to a different therapist. BetterHelp has over 25,000 therapists with different qualifications and areas of expertise.

Willingness to pay

We will now ask you about the maximum amount of dollars you are willing to spend on four weeks of therapy from BetterHelp. This service is normally priced at $320 for 4 weeks.

Please indicate the maximum dollar amount you are willing to spend, your valuation, using the slider below. The choice of 10 participants in this study will be implemented. If your choice is implemented, then you will either receive a voucher for four weeks of therapy from BetterHelp or a dollar amount, based on the payment rule we explained to you at the beginning of the survey. (Remember: After you stated your valuation, the computer will randomly pick a dollar amount between 0 and 350. If this dollar amount is larger than your valuation, then the dollar amount will be paid out to you. If the dollar amount is smaller than your valuation, then you will receive therapy from BetterHelp.) You will find out whether your choice was implemented and whether you receive money or therapy at the end of the survey.

It is not important that you understand the details of the payment rule, just remember that it is in your best interest to state your true valuation.

Your decision

What is your valuation, i.e., the maximum amount of money you would pay for the four weeks of therapy from BetterHelp?

My valuation is __

[Slider from 0 to 300]

Considerations (open-ended)

What considerations do you have on your mind when choosing how much you would be willing to spend on 4 weeks of online therapy from BetterHelp? Please write 2-3 sentences. You may mention both downsides and benefits of buying therapy (if any were on your mind).

[Open text]

Considerations (structured)

On the previous page you provided the following considerations.
Please select from the list below the considerations you had in mind when you wrote this. Please tick all that apply.

- ☐ Hard to make time for therapy
- ☐ Easy to make time for therapy
- ☐ Afraid of meeting the therapist
- ☐ Looking forward to interacting with the therapist
- ☐ Afraid of what other people will think of me
- ☐ Happy to show others I am taking care of myself
- ☐ Afraid of medication
- ☐ Hopeful of receiving help in the form of medication
- ☐ High financial cost of therapy
- ☐ Low financial cost of therapy
- ☐ High effectiveness of therapy
- ☐ Low effectiveness of therapy
- ☐ Negative stigma about people seeking therapy
- ☐ Positive stereotypes about people seeking therapy
- ☐ None of the above

Did you find the way in which you were asked to state your valuation of 4 weeks of BetterHelp therapy confusing?

[Very confusing; Confusing; Slightly confusing; Not at all confusing]

Post main outcomes

Please describe in a few words what you think the aim was of the research conducted through this survey.

[Open text]

To what extent do you agree with each of the following statements about yourself?

- I am often unreliable
- I am often incompetent
- My behavior is sometimes unpredictable
- Generally speaking, I have a weak character
- I am often lazy
- I am often hard to be around

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

Imagine that you decide to seek treatment in the form of online therapy. How worried would you be about any problems caused by coworkers, friends, or family finding out about your seeking therapy.

[Not worried at all; Slightly worried; Somewhat worried; Moderately worried; Very worried]

Imagine that you decide to seek treatment in the form of online therapy. How effective do you think completing therapy would be for you in overcoming depression?

[Very effective; Effective, Somewhat effective; Ineffective; Very ineffective)]

Imagine that you decide to seek treatment in the form of online therapy. How would you feel about having to interact with the therapist?

[Very comfortable; Mostly comfortable; Neither comfortable nor uncomfortable; Moderately uncomfortable; Very uncomfortable]

Imagine that you decide to seek treatment in the form of online therapy. How would you feel about sharing your identity during sessions?

[Very comfortable; Mostly comfortable; Neither comfortable nor uncomfortable; Moderately uncomfortable; Very uncomfortable]

To what extent do you agree with the following statement?

> "If I were to seek treatment, then that would label me as depressed, which would make me feel worse about myself."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

How painful is it for you to think about potential problems with your mental health and what they entail for your life?

[Very painful; Painful; Slightly painful; Not painful at all]

How relevant did you find the information on effectiveness provided in this survey?

[Very relevant; Relevant; Slightly relevant; Not relevant at all]

How trustworthy did you find the information on effectiveness provided in this survey?

[Very trustworthy; Trustworthy; Neither trustworthy nor untrustworthy; Untrustworthy; Very untrustworthy]

To what extent would you say that you paid close attention to the instructions throughout the survey? The answer to this question does not affect your task approval or earnings.

[To a great extent; Somewhat; Little; Not at all]

G Instructions: mechanism experiment

Consent

Thank you for taking part in this survey. You must be 18 or above to participate. You are not allowed to participate in this study more than once.

The survey takes just a few minutes. If you decide to participate in the survey, then we ask you to take all questions seriously. Data is collected for the purpose of research. Keep in mind that your participation is voluntary and that you can decide to withdraw from the study at any point.

Note that there will be no deception in the instructions. Everything we tell you about the tasks you face will be implemented in the exact way we tell you. Any analysis and publication will only use data in anonymous form. This study was cleared by the ethics committee of the University of Essex.

If you experience a technical error or problem, then do not try to restart or retake the study. Rather, send us an email with a description of your problem and we will get back to you. For any question or complaint, please contact Egon Tripodi (egontrpd@gmail.com). By clicking on "Yes, I consent to participate in the study" you give your consent to take part in the study.

[Yes, I consent to participate in the study; No, I would not like to participate in the study]

Attention screener

The next question is about the following problem. In questionnaires like ours, sometimes there are participants who do not carefully read the questions and just quickly click through the survey. This means that there are a lot of random answers which compromise the results of research studies. To show that you read our questions carefully, please enter 333 as your answer to the next question. Given the above, what is your favorite number?

[Number]

Demographics

What is your age?

[Dropdown list of possible ages]

What is your gender?

[Male; Female; Non-binary]

In which state do you currently reside?

[Dropdown list of possible states]

Personal health questions

Over the last 2 weeks, how often have you been bothered by any of the following problems?

- Little interest or pleasure in doing things
- Feeling down, depressed, or hopeless
- Trouble falling or staying asleep, or sleeping too much
- Feeling tired or having little energy
- Poor appetite or overeating
- Feeling bad about yourself or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television
- Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety restless that you have been moving around a lot more than usual
- Thoughts that you would be better off dead, or of hurting yourself in some way

[Not at all; Several days; More than half of the days; Nearly every day]

The previous questions are commonly used to measure depression. By depression we mean a mental disorder that can be characterized by sadness, a lack of interest and a loss of pleasure, feelings of guilt and low self-esteem, sleep disorders, loss of appetite, tiredness and poor concentration.

We will now ask you a few additional questions about depression.

- Have you ever been diagnosed with depression?
- Have you ever overcome depression?
- Have you ever attended psychological therapy for depression?
- Are you currently undergoing any form of treatment for depression (e.g. psychological therapy)
- Do you have health insurance that covers psychological therapy?
- Would you ever consider taking part in individual online therapy for depression?

[Yes; No]

Do you want to continue participating in this study, answer additional questions for 5 more minutes, and receive a $1.2 bonus for your participation?

[Yes, I will take part in this 5 minute survey for a $1.2 bonus; No, I don't want to participate]

Betterhelp

On the next screen we introduce BetterHelp, one of the leading online therapy services in the United States. We will then ask you some questions to understand how valuable you find this type of service. This is not promotional material.

Have you ever heard of BetterHelp?

[Yes; No]

betterhelp.com is an online therapy service. They offer treatment for a wide range of diagnoses and life challenges, including anxiety, depression, and relationship issues, among others. You can send audio, video, or text messages to your therapist at any time in the messaging room. You can also schedule weekly live sessions (30 to 45 min) with your therapist to communicate via phone, video, or live chat. If you don't like your therapist, you can ask to be matched to a different therapist. BetterHelp has over 25,000 therapists with different qualifications and areas of expertise.

Explanation of incentives

WHAT IS YOUR BEST GUESS?
Some of the questions that follow will ask you to make estimates and will be marked with a $ sign. One of these questions will be randomly selected for payment, regardless of whether your buying decision is implemented. If your answer in the selected question is within 3 percent of the truth, then you will receive a $0.50 dollar bonus. Therefore, it is in your best interest to provide your best guess.

Prior stigma

We recently conducted a survey with a sample of over 100 Americans. The composition of this sample resembles the American population at large.

$ What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Number from 0 to 100]

Here is a related question. How likely is it that the majority of Americans from this survey agreed or strongly agreed with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Very unlikely; Unlikely; Neither likely nor unlikely; Likely; Very likely]

Stigma flag

You said that you believe that XX% of Americans either agree or strongly agree with the following statement:

"People with depression are lazy, hard to be around, and have weak character."

At the end of this study we will send you the correct answer to this question as a private message on Prolific.

Stigma information

You said that you believe that XX% of Americans either agree or strongly agree with the following statement:

"People with depression are lazy, hard to be around, and have weak character."

According to our survey of over 100 Americans, the actual share of Americans that either agree or strongly agree with this statement is XX%.

Post-treatment stigma beliefs

$ We recently conducted another survey with a sample of over 100 Americans. The composition of this sample resembles the American population at large. What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are often unreliable, incompetent, and have weak character."

[Number from 0 to 100]

Next, suppose that we conducted the same survey with 100 people from your neighborhood. What percentage of these people would you say would agree or strongly agree with the following statement?

"People with depression are often unreliable, incompetent, and have weak character."

[Number from 0 to 100]

How likely do you think it is that people you regularly interact with would hold negative views about you if they learned that you struggled with depression?

[Very unlikely; Unlikely; Neither likely nor unlikely; Likely; Very likely]

Emotions

To what extent do you agree with the following statement?

> "Right now, I am feeling down and I don't have the motivation to do anything about it."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

To what extent do you agree with the following statement?

> "Right now, I am feeling fairly good and I don't see the need to do anything about my mental health."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

Post outcomes

Do you agree with the following statement?

> "At this point, I have a fairly good idea of how Americans view depressed people."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

The next couple of statements concern how society's current views of depressed individuals affect your expectations and plans. To what extent do you agree with the following statements:

- "The way others view depressed people keeps me from being optimistic about improving my future mental health by myself."

- "The way others view depressed people keeps me from seeking help from my social circle when my mental health is not good."
- "The way others view depressed people makes me feel that depression is rather common and normal and not something that needs to be treated with therapy."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

We recently conducted a survey with a sample of over 100 Americans. The composition of this sample resembles the American population at large. Participants were asked the same questions about depression symptoms you were asked at the beginning of your survey today, i.e., about negative symptoms like having little interest in doing things and having trouble concentrating etc.

What percentage of Americans from the survey would you say reported depression symptoms that are as severe as or more severe than yours?

[Number from 0 to 100]

People who report having many of the depression symptoms on several or even most days, are diagnosed as being depressed. In light of this, what percentage of Americans from the survey would be diagnosed as being depressed?

[Number from 0 to 100]

H Instructions: group therapy experiment

Consent

Thank you for taking part in this survey. You must be 18 or above, and currently reside in New York State to participate. You are not allowed to participate in this study more than once.

The survey takes just a few minutes. If you decide to participate in the survey, then we ask you to take all questions seriously. Data is collected for the purpose of research. Keep in mind that your participation is voluntary and that you can decide to withdraw from the study at any point.

At the end of the survey, we may offer you a health service to which you may enroll for 8 weeks. This service is sponsored by a research grant so that you will not have to pay anything out of pocket. The service provider may share information about your service usage with us. All information is treated as highly confidential.

Note that there will be no deception in the instructions. Everything we tell you about the tasks you face will be implemented in the exact way we tell you. Any analysis and publication will only use data in anonymous form. This study was cleared by the ethics committee of the University of Essex.

If you experience a technical error or problem, then do not try to restart or retake the study. Rather, send us an email with a description of your problem and we will get back to you. For any question or complaint, please contact Egon Tripodi (egon.tripodi@essex.ac.uk). By clicking on "Yes, I consent to participate in the study" you give your consent to take part in the study.

[Yes, I consent to participate in the study; No, I would not like to participate in the study]

Do you have an account with Prolific (a platform for online surveys)?

[Yes; No]

Attention screener

The next question is about the following problem. In questionnaires like ours, sometimes there are participants who do not carefully read the questions and just quickly click through the survey. This means that there are a lot of random answers which compromise the results of research studies. To show that you read our questions carefully, please enter 333 as your

answer to the next question. Given the above, what is your favorite number?

[Number]

Demographics

What is your age?

[Dropdown list of possible ages]

What is your gender?

[Male; Female; Non-binary]

In which state do you currently reside?

[Dropdown list of possible states]

Personal health questions

Over the last 2 weeks, how often have you been bothered by any of the following problems?

- Little interest or pleasure in doing things
- Feeling down, depressed, or hopeless
- Trouble falling or staying asleep, or sleeping too much
- Feeling tired or having little energy
- Poor appetite or overeating
- Feeling bad about yourself or that you are a failure or have let yourself or your family down
- Trouble concentrating on things, such as reading the newspaper or watching television
- Moving or speaking so slowly that other people could have noticed. Or the opposite being so fidgety restless that you have been moving around a lot more than usual

- Thoughts that you would be better off dead, or of hurting yourself in some way

[Not at all; Several days; More than half of the days; Nearly every day]

Over the last 2 weeks, how often have you been bothered by any of the following problems?

- Feeling nervous, anxious or on edge?
- Not being able to stop or control worrying?
- Worrying too much about different things?
- Trouble relaxing?
- Being so restless that it is hard to sit still?
- Becoming easily annoyed or irritable?
- Feeling afraid as if something awful might happen?

[Not at all; Several days; More than half of the days; Nearly every day]

The previous questions are commonly used to measure depression. By depression we mean a mental disorder that can be characterized by sadness, a lack of interest and a loss of pleasure, feelings of guilt and low self-esteem, sleep disorders, loss of appetite, tiredness and poor concentration.

We will now ask you a few additional questions about depression.

- Have you ever been diagnosed with depression?
- Have you ever overcome depression?
- Have you ever sought treatment for depression?

[Yes; No]

Imagine that you had a depression. What would be the main reasons not to seek depression treatment (select all that apply)?

☐ Cannot afford it

☐ Afraid others will find out

☐ My condition is not too serious

☐ Other (please specify)

[Open text for "Other" option]

- Are you currently undergoing any form of treatment for depression (e.g. psychological therapy)?
- Would you ever consider taking part in group therapy for depression?

[Yes; No]

To what extent do you agree with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

Prior stigma

In January 2021 we conducted a survey with a sample of 500 Americans. The composition of this sample resembles the American population at large.

What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are lazy, hard to be around, and have weak character."

[Number from 0 to 100]

Stigma treatment

You said that you believe that XX% of Americans either agree or strongly agree with the following statement:

"People with depression are lazy, hard to be around, and have weak character."

According to our survey of 500 Americans, the actual share of Americans that either agree or strongly agree with this statement is only XX%.

Post-treatment stigma beliefs

In November 2020 we conducted another survey with a sample of 300 Americans. The composition of this sample resembles the American population at large.

What percentage of Americans from this survey would you say agreed or strongly agreed with the following statement?

"People with depression are often unreliable, incompetent, and have weak character."

[Number from 0 to 100]

redacted-therapy-service-name

On the next screen we introduce *redacted-therapy-service-name*, one of the leading online group therapy services in the United States. We will then ask you some questions to understand how valuable you find this type of service. This is not promotional material.

Have you ever heard of *redacted-therapy-service-name*?

[Yes; No]

Public treatment

redacted-therapy-service-name `redacted-url` is an online group therapy service. They offer treatment for a wide range of diagnoses and life challenges, including anxiety, depression, and relationship issues, among others.

The service primarily consists of one-hour weekly sessions of group cognitive-behavioral therapy, led by a licensed therapist. An initial consultation allows new subscribers to sort into the group that best suits them.

Each group has at most twelve members that take part in the session via Zoom. As a participant, you can choose how much to interact during the session depending on how much you have to say or how comfortable you feel.

Private treatment

redacted-therapy-service-name `redacted-url` is an online group therapy service. They offer treatment for a wide range of diagnoses and life challenges, including anxiety, depression, and relationship issues, among others.

The service primarily consists of one-hour weekly sessions of group cognitive-behavioral therapy, led by a licensed therapist. An initial consultation allows new subscribers to sort into the group that best suits them.

Each group has at most twelve members that take part in the session via Zoom. As a participant, you can choose how much to interact during the session depending on how much you have to say or how comfortable you feel.

Please note, you can always choose to remain anonymous to the rest of your group on Zoom by using a nickname and by keeping your camera off.

Willingness to pay

We will now ask you to make a series of choices between receiving different dollar amounts and receiving a voucher for 8 weeks of online therapy from *redacted-therapy-service-name*.

This service is normally priced at $280 for 8 weeks, but *redacted-therapy-service-name* offers a 50% discount for the first 4 weeks; so that you could buy 8 weeks of therapy on your own for $210.

After you have made your choices, the computer will randomly select one of your choices and, depending on the selected choice, you will either receive the dollar amount or the voucher for therapy. You will learn which of your choices the computer selected to implement a few moments after you made them. Because each of your choices may count, please make them carefully.

- Would you rather receive $0 or a voucher for 8 weeks of therapy from *redacted-therapy-service-name*?

[$0 - I definitely don't want group therapy; Therapy]

- Would you rather receive $10 or a voucher for 8 weeks of therapy from *redacted-therapy-service-name*?
- Would you rather receive $20 or a voucher for 8 weeks of therapy from *redacted-therapy-service-name*?

  ⋮

- Would you rather receive $300 or a voucher for 8 weeks of therapy from *redacted-therapy-service-name*?

[Given $ amount; Therapy]

Auxiliary outcomes

To what extent do you agree with each of the following statements about yourself?

- I am often unreliable
- I am often incompetent
- My behavior is sometimes unpredictable
- Generally speaking, I have a weak character
- I am often lazy
- I am often hard to be around

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

Post outcomes

Imagine that you decide to seek treatment in the form of group therapy. How worried would you be about any problems caused by coworkers, friends, or family finding out about your seeking therapy.

[Not worried at all; Slightly worried; Somewhat worried; Moderately worried; Very worried]

Imagine that you decide to seek treatment in the form of group therapy. How would you feel about having to interact with your therapist and other group members about your mental health?

[Very comfortable; Mostly comfortable; Neither comfortable nor uncomfortable; Moderately uncomfortable; Very uncomfortable]

Imagine that you decide to seek treatment in the form of group therapy. How would you feel about sharing your identity with fellow group members during sessions?

[Very comfortable; Mostly comfortable; Neither comfortable nor uncomfortable; Moderately uncomfortable; Very uncomfortable]

To what extent do you agree with the following statement?

> "If I were to seek treatment, then that would label me as depressed, which would make me feel worse about myself."

[Strongly agree; Agree; Neither agree nor disagree; Disagree; Strongly disagree]

How painful is it for you to think about potential problems with your mental health and what they entail for your life?

[Very painful; Painful; Slightly painful; Not painful at all]

I Pre-analysis plans

Main Experiment

We note that we refer to a PHQ8 score of 18 as the cutoff for sample inclusion in the pre-analysis plan, while in the paper we refer to a cutoff of 10. This arises from the fact that we had coded the PHQ8 on a scale from 1 to 4 initially, rather than on a scale from 0 to 3. To make our coding consistent with the predominant convention in psychology we also use a scale from 0 to 3 in the paper. In other words, in the paper we stuck to the pre-registered inclusion criterion, despite the seeming deviation.

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Demand for therapy (#107190)

Created: 09/16/2022 09:27 AM (PT)

1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
In this paper, we provide evidence on behavioral frictions that impede the take-up of psychotherapy. Our main research question is the following: How do attention allocation and misperceptions casually shape the demand for therapy?

3) Describe the key dependent variable(s) specifying how they will be measured.
Our key dependent variable is people's willingness to pay for therapy, elicited using a BDM mechanism.

4) How many and which conditions will participants be assigned to?
5 treatment conditions of equal size:

Pure_control: no elicitation of priors or information provision or elicitation of posteriors before measuring WTP.
Stigma_flag: elicits beliefs about social stigma
Stigma_info: elicits beliefs about social stigma and provides information about the actual extent of social stigma associated with depressed people.
Effectiveness_flag: elicits beliefs about the effectiveness of therapy
Effectiveness_info: elicits beliefs about the effectiveness of therapy and provides information about the actual effectiveness of stigma as documented by research.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will estimate one reduced form specification, which estimates the effects of the different treatment arms on WTP compared to a pure control group.

Y_i = \alpha_0 + \alpha_1 Stigma_flag_i + \alpha_2 Stigma_info_i + \alpha_3 Effectiveness_flag_i + \alpha_4 Effectiveness_info_i + \varepsilon_i

In all of our regressions we will include all control variables that are elicited pre-treatment, such as interest in therapy, the PHQ8 score, gender and willingness to pay for an example good. For all of our analyses, we will use robust standard errors.

To isolate the effects of attention irrespective of information, we will estimate the following specification, using respondents from the pure control group the Stigma_flag group and the Effectiveness_flag group:

Y_i = \alpha_0 + \alpha_1 Stigma_flag_i + \alpha_2 Effectiveness_flag_i + \varepsilon_i

To isolate the effects of information irrespective of attention, we will estimate specifications of the following type (in this case we only use respondents in the Stigma_flag and Stigma_info groups):

Y_i = \alpha_0 + \alpha_1 belief_stigma_i + \alpha_2 Stigma_info_i + \alpha_3 belief_stigma_i x Stigma_info_i + \varepsilon_i

where belief_socialstigma_i is a continuous measure of prior beliefs about social stigma (we will also estimate this equation with a binary indicator for overestimators/underestimators).

We will estimate similar specifications for respondents in the Effectiveness_flag and Effectiveness_info groups:

Y_i = \alpha_0 + \alpha_1 belief_effectiveness_i + \alpha_2 Effectiveness_info_i + \alpha_3 belief_effectiveness_i x Effectiveness_info_i + \varepsilon_i

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
All of our main outcomes are bounded above and below, so we do not need to exclude outliers.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We plan to recruit 3000 US respondents using the online platform Prolific. We only include respondents with a PHQ8 score above 18. Moreover, we only include respondents that have never tried therapy before. Finally, respondents need to pass a simple attention screener.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
We will collect data on a set of post-treatment questions. We will also elicit the considerations that people have on their mind when deciding on their willingness to pay. This data will consist of a set of dummy variables for different kinds of topics people talk about in both an open-ended answer and a structured measure. These elicitations will be used to shed light on mechanisms.

Finally, a few days after the completion of the survey participants will get a direct message on prolific, in which they are told that there are extra spots available for therapy and that by taking a 3-question survey they qualify for entering a lottery which decides on who gets the therapy. Participation in this survey will be used as a secondary outcome to study the longer term effects of the information treatments.

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depression stigma - summer 23 (#137055)

Created: 06/28/2023 08:53 AM (PT)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
We provide evidence on how attention to and information about social stigma associated with depression affects people's emotional well-being and optimism about their mental health.

3) Describe the key dependent variable(s) specifying how they will be measured.
Our key dependent variables are people's agreement or disagreement with the following statements ([5point: strongly agree, agree, neither agree nor disagree, disagree, strongly disagree]):

- Right now, I am feeling down and I don't have the motivation to do anything about it
- Right now, I am feeling fairly good and I don't see the need to do anything about my mental health
- The way others view depressed people keeps me from being optimistic about improving my future mental health by myself.

As secondary outcomes we elicit participant's agreements with the following statements as well

- The way others view depressed people keeps me from seeking help from my social circle when my mental health is not good.
- The way others view depressed people makes me feel that depression is rather common and normal and not something that needs to be treated with therapy.

4) How many and which conditions will participants be assigned to?
3 treatment conditions of equal size:

- Pure_control: no elicitation of priors or information provision before measuring main outcomes.
- Stigma_flag: elicits beliefs about social stigma
- Stigma_info: elicits beliefs about social stigma and provides information about the actual extent of social stigma associated with depressed people.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will estimate one reduced form specification, which estimates the effects of the different treatment arms on the outcome of interest relative to a pure control group.

$$Y_i = \alpha_0 + \alpha_1 Stigma\_flag_i + \alpha_2 Stigma\_info_i + \varepsilon_i$$

In all of our regressions we will include all control variables that are elicited pre-treatment, such as interest in therapy, the PHQ8 score, and gender. For all of our analyses, we will use robust standard errors.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
All of our main outcomes are bounded above and below, so we do not need to exclude outliers.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We plan to recruit 1000 US respondents using the online platform Prolific. We only include respondents with a PHQ8 score above 18. Moreover, we only include respondents that have never tried therapy before. Finally, respondents need to pass a simple attention screener.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
None

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Stigma and the Demand for Group Therapy (#74868)

Created: 09/16/2021 09:20 AM (PT)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
Psychotherapy has been shown to be an effective tool to overcome mental illness, yet a large fraction of the population suffering from mental illness do not seek psychotherapy.

In this paper, we provide evidence on a behavioral friction that impedes the take-up of psychotherapy, the social stigma associated with depression. Our informational treatments allow us to shed light on the role of social stigma associated with depression in decreasing the demand for therapy.

We hypothesize that a simple informational intervention which corrects overly pessimistic misperceptions about high social stigma associated with depression increases people's willingness to pay for therapy and people's actual sign-up for and attendance of therapy sessions.

3) Describe the key dependent variable(s) specifying how they will be measured.
Our primary main outcome measures are the following:
+ A measure of willingness to pay for therapy elicited using a multiple price list.
+ A dummy taking value one for respondents who attend any therapy session with grouport

The secondary outcome measures are:
+ A dummy taking value one for respondents who sign up to receive therapy with grouport
+ The number of therapy sessions our respondents attend. This will be coded zero for respondents who never signed up for therapy to begin with.

4) How many and which conditions will participants be assigned to?
Treatment 1: No information
Treatment 2: Information about low stigma associated with depression.

We also cross-randomize whether we inform participants about the possibility to remain anonymous during the therapy sessions by keeping the camera turned off and by using a nickname.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
We will run OLS regressions of our main outcomes on dummies for the different treatment groups. In our main specifications, we will look at the effect of the information treatment by regressing the outcomes on a dummy for whether the respondent was randomly assigned to receive the information treatment. In our other main specifications, we will study how 'making it salient' that it is possible to remain anonymous during sessions interacts with the treatment. To do so, we regress our outcomes on a dummy for the information treatment, a dummy for having received instructions that make it salient that one can remain anonymous, and the interaction of these two dummy variables.

In all of our regressions, we will include a series of control variables in our regressions, such as interest in therapy, the PHQ8 score, gender, dummies for reasons not to take up therapy (elicited pre-treatment), prior beliefs about stigma associated with depression (coded as a continuous variable), and prior history of depression.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
There will be no outliers in our survey data as all variables are bounded above. Some outcomes are binary; others come from willingness to pay elicitations. The number of therapy sessions attended is also bounded above by the maximum number of therapy sessions available with Grouport.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
We only include respondents with a PHQ8 score above 18 and those who have pessimistic beliefs about others' views on depressed people (i.e. respondents who overestimate the extent of stigma associated with depression relative to what society actually thinks). We focus on respondents who overestimate the extent of stigma associated with depression relative to what society actually thinks for ethical reasons, to avoid making depressed individuals more pessimistic about the stigma associated with depression.

We aim to achieve a sample size of 2,000-3000 respondents, in order to have at least 200 depressed people who enroll into therapy.

Our respondents will be recruited primarily in New York State using Prolific and Dynata as most of Grouport's therapists have licenses to practice therapy sessions in New York State. In case we fail to recruit sufficiently many respondents in New York State, we may recruit participants from New Jersey.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
We also collect a set of post-treatment questions that we will use to shed light on mechanisms.