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Sex workers, Stigma and Self-Image: Evidence from Kolkata Brothels*

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Abstract

This paper studies the link between self-image and behavior among those who face stigma due to poverty and social exclusion. Using a randomized field experiment with sex workers in Kolkata (India), we examine whether a psychological intervention to mitigate adverse effects of internalized stigma can induce behavior change. We find significant improvements in participants' self-image, their savings choices and health clinic visits. Administrative data confirm that these changes in savings and preventive health behavior persist fifteen and 21 months later respectively. Our findings highlight the potential of purely psychological interventions to improve life choices and outcomes of marginalized groups.

JEL Codes: O12, J15, D91

Key words: stigma, self-image, savings, public health, HIV prevention, gender, sex workers

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‘The reason poverty causes pain is not just because it can leave people feeling hungry, cold and sick, but because it is associated with unfavourable regard...the poor man...is ashamed of his poverty’. – Adam Smith, *The Theory of Moral Sentiments*

‘Failure to address the psychosocial determinants of human behavior is often the weakest link in social policy initiatives. Simply providing ready access to resources does not mean that people will take advantage of them.’ – Albert Bandura

1 Introduction

The large body of economics literature on poverty and social exclusion examines the role of various resource constraints that are external to an individual in perpetuating these phenomena: lack of access to nutrition, credit and education, or information about the returns to certain activities, such as education (Jensen, 2010) or health precautions (Dupas, 2011). Nevertheless, such external constraints do not quite explain some self-defeating behaviors of those so marginalized: e.g., significant non-take up of benefits by the poor under government programs they are eligible for (Moffit, 1983; Currie et al., 2001), reluctance to open and use bank accounts for savings and daily transactions (Bertrand et al., 2004) or to adopt cheap, preventive health measures (Katz and Hofer, 1994). These behaviors prompt us to consider an alternative approach, one that examines the role of *internal* or psychological constraints that emerge under poverty and social exclusion.

Many of the choices we make – be it about education, career choice, marriage, or even simply what we eat – are influenced not just by our material resources or information, but as much by how we perceive ourselves, i.e. our *self-image*. (Akerlof and Kranton, 2000). Being poor or marginalized often brings with it considerable stigma, which can greatly distort a person’s self-image, resulting in a ‘spoiled identity’ (Goffman, 1963).¹

There are multiple, potentially overlapping pathways through which a self-image distorted by stigma can adversely affect behavior. For one, it can limit the set of choices seen as appropriate for oneself (Akerlof and Kranton, 2000). It can lead to a “self-fulfilling pessimism about the returns to effort for certain activities” (Loury, 1999) and induce sub-optimal choices resulting in a psycho-

¹As this author notes in his classic work on stigma, “[t]hose who have dealings with [the stigmatized individual] fail to accord him respect and regard ...; he echoes this denial by finding that some of his own attributes warrant it”.

logical poverty trap.² The psychology literature on Self-Affirmation (Steele, 1988; Sherman and Cohen, 2006) posits that every individual desires to maintain a self-image of being a good, moral person whose actions are consistent with her values and beliefs. Hence, threats to the adequacy of one's self-image can create defensive reactions yielding counter-productive outcomes.

In this paper, we evaluate a psychological intervention that aims to mitigate the adverse effects of such *internalized* stigma on individual choices, by reshaping the self-image of those who face it. Given this research focus, we selected a group of individuals that faces these adversities especially acutely: female sex workers in India. The stigma they face is rooted in repugnance (Roth, 2007) towards sex work and by implication, their perceived immorality. In the words of one of our program participants: "I have lost everything...[and] ended up in these blind alleys [only to] face torture and society's contempt." Owing to strong social prejudice against their profession, female sex workers in India find it difficult to access healthcare and credit, or to enrol their children in local schools (Pai et al., 2014). They are also subject to gender bias widespread in Indian society. They seem to internalize such stigma and suffer from a poor self-image.³

Apart from the direct adverse impact on the women themselves, both stigma and its internalization among sex workers has been identified as a serious public health threat, hampering progress on HIV testing, prevention and treatment worldwide (Shannon and Montaner, 2012). The latter study notes that internalized stigma that worsens sex workers' self-image keeps them from accessing HIV and other health services. It concludes that there is an urgent need for more community-based, scalable interventions (as opposed to specialized, costlier clinical interventions) to mitigate the adverse effects of self-stigma on HIV prevention in low and middle income countries.

In the present study, we evaluate the impact of one such intervention designed to improve the self-image of female sex workers living in the eastern Indian megacity Kolkata, on their psychological well-being as well as their savings and health behavior. This intervention involved a training program that encouraged sex workers to re-examine their self-image in multiple ways. The program was developed and conducted by Durbar, a Kolkata-based NGO that has been engaged in

²See Benabou and Tirole (2002) and Köszegi (2006) for theoretical frameworks within economics that link self-image concerns to sub-optimal choices.

³This phenomenon of *internalized* stigma leading to a low self-image is also referred to as 'self-stigma'. As Nag (2006) reports in his book on sex workers in India, survey data reveals that many of them describe themselves as "*Hum log bahut kharab aurat hain*" which translates to "We are very bad (fallen) women".

promoting the welfare of sex workers for over 25 years. It consisted of 8 weekly sessions in the form of discussions among groups of 15-20 sex workers, led by experienced associates of the NGO. The program began with a discussion of their individual identity as sex workers, encouraging them to reflect on a few questions: Could they perceive what they do as providing entertainment, and hence themselves as entertainment workers? Do they regard themselves as people doing an honest day's work to earn a living? If so, aren't they morally superior to a thief? The intervention also tried to recast their group self-image in a more positive light, citing their successful sex workers' cooperative bank initiative (USHA) as an example of their collective power. It used this basic building block of a positively recast self-image (individual and collective) to then suggest pathways involving directed and perseverant efforts towards better life outcomes.

In terms of psychological well-being, we find that the training significantly improved the self-image of sex workers. Endline comparisons show that sex workers in the treatment group fared significantly better on every dimension of self-image studied, relative to the control group: a lower sense of shame about their occupation, higher self-worth, greater ability to face challenges and greater ease in public interaction. They were also more likely to report being happy.

In terms of economic outcomes, we examine the impact of the training program on their choice of savings products. During each week of the training program, sex workers from both treatment and control groups were asked to choose how they wanted to receive a small transfer of Rs.100 (approximately \$1.41): either as an injection into a current account or invested in one of two fixed deposit options. We find that sex workers in the treatment group were 25-50 percentage points more likely than the control group to choose a fixed deposit option over the current account, indicating greater effort towards securing their future. We also attempt to rule out several alternative mechanisms that could be driving our results, including inadequate financial literacy, peer effects, potential commitment features of the savings products, reciprocity etc.

One concern here could be that experimenter demand effects (social desirability bias) may be driving our findings on self-image and savings choices. Interactions with the experimenters during the training sessions may have "nudged" the participants to invest in a fixed deposit option. Several additional pieces of evidence help to allay such concerns. First, following Dhar et al. (2018)'s approach with the savings data, we find that participants who place greater value on respect (as

a measure of social desirability) at baseline are not systematically more likely to choose a fixed deposit, following exposure to the program. Second, we examine the impact of the training program on another action that is particularly important for sex workers' long-term well-being, but which was not discussed at any stage of the program: preventive health behavior. We find that in the short-run, treated sex workers were on average 9 percentage points more likely to report having visited a doctor (in a Durbar-run local clinic) for a routine check-up in the previous month, relative to control. This is quite remarkable, given the high baseline level of such doctor visits in this sample (77%) and the fact that health decisions were never discussed in the training program.⁴

Our strongest evidence on the impact of the program comes from longer-term (non self-reported) administrative data that we obtained from the official records of the cooperative bank and health clinics. This allows us to address not just concerns about experimenter demand effects but also another common concern with psychological interventions: merely short term effects, with no lasting impact. These individual-level administrative (non self-reported) data allow us to assess the impacts of the training program on savings and health outcomes 15 and 21 months later respectively.

We find that the positive effects of the training program persist for both type of outcomes. The treated sex workers were 53 percentage points more likely to keep their accounts open 15 months after the program. This magnitude of impact compares favorably to other recent studies trying to improve savings behavior; for instance, Dupas and Robinson (2013b) find that six months after being offered formal savings accounts, 40% of female micro-entrepreneurs in rural Kenya still had their accounts open and were using them. We also find that our treatment group had higher balances in their accounts 15 months after the training program concluded. On health-seeking behavior, we find that the participants in our treatment group were 15 percentage points more likely to continue with preventive health check-ups 21 months after the program. In comparison, economic interventions to encourage doctor visits (among hypertension patients in rural India) such as price subsidies or commitment contracts have found little impact (Bai et al., 2017).

In summary, we see a clear positive impact of the training program both on self-image of the sex workers, as well as on purposive actions taken by them towards better future financial and health outcomes, not only at the time of the intervention, but persisting over almost a 1.5-2 year horizon.

⁴This increase in doctor visits does not appear to be 'need-based': sex workers in the treatment group did not service more clients nor earn more following exposure to the training program (see Appendix Table A19).

Our access to longer term, administrative data that is not self-reported increases our confidence in these findings. These findings make a distinct contribution to the literature on poverty and social exclusion: they show that an exclusively psychological intervention with no material resource support, can lead to significant and sustained positive behavior changes, by restoring a damaged self-image.⁵ This feature is distinct from other programs to uplift poor and marginalized groups that lower material resource constraints, be it through skills training, capital infusions or cash transfers (McKenzie and Woodruff, 2013; Banerjee et al., 2011; Bandiera et al., 2017).⁶

Recent work has highlighted the paucity of rigorous evidence on which psychological interventions are effective in dealing with challenging life experiences (Wilson, 2011) and the need for such evaluations, especially in the context of developing countries (Haushofer and Fehr, 2014). Our paper fills the gap on both counts. It also contributes to the very nascent literature on the economics of mental health by evaluating the economic repercussions of a psychological intervention. In this respect, the closest paper to ours is Blattman et al. (2017), which combines cash incentives with cognitive behavioral therapy (CBT) intervention to combat crime among youth in Liberia. In a similar vein, Baranov et al. (2020) examine the long-term impact of an intervention to tackle maternal depression on economic outcomes and children's welfare in Pakistan, though without any specific focus on marginalized groups, while Heller et al. (2017) evaluate the impact of interventions for disadvantaged youth on their criminal activity in the U.S.

Our paper also ties into the literature on female empowerment interventions that seek to achieve this goal by reshaping attitudes and beliefs about gender roles (Dhar et al., 2018) and intimate partner violence (Green et al., 2017). Our subject group – female sex workers – is of independent interest, given that criminalization of this profession makes it harder to shed light on this group, even as it creates several adverse consequences (Cunningham and Shah, 2018).

Finally, our paper also contributes to the literature on discrimination in two ways. First, previous literature has focused a lot on documenting the existence of discrimination and its adverse effects (e.g., see Bertrand and Mullainathan (2004); Hoff and Pandey (2006)). Our paper shifts the

⁵Given the overlap across the different channels through which self-image can affect behavior as outlined earlier, we do not attempt to parse out the impact of any of these channels separately.

⁶For evaluations of Self-Affirmation interventions offered to racial minorities facing education and health challenges in the U.S., see Cohen et al. (2006, 2009) and for those targeted to the poor, see Hall et al. (2014).

focus towards effective interventions to mitigate such adverse effects.⁷ Second, it considers a fresh approach to tackling the challenges of stigma and discrimination, by psychologically empowering those who suffer its consequences to contest it. Existing interventions to mitigate discrimination have focused more on the prejudiced rather than those who are the objects of prejudice.⁸

The rest of the paper is organized as follows. Section 2 gives a brief description of the setting of our study. Section 3 details the training content and experimental design while Section 4 outlines the conceptual framework. Section 5 describes the data, variables and estimation methods, and Sections 6 and 7 presents our main empirical findings. Section 8 concludes.

2 The Setting

Nag (2006, pp. 271-80) estimates that there are between 2 and 3 million sex workers in India. Those living in brothels, the focus of the present study, are typically engaged in the profession full-time.

The brothel-based sex work industry in Kolkata, the city in eastern India where our study is located, is estimated to include about 18,000 women located in different ‘red-light’ areas across the city (AIIHPH, 1992). While the largest of these areas in terms of size is Sonagachi, with an estimated population of around four thousand to six thousand prostitutes (Rao et al., 2003), our three study localities of Bowbazar, Kalighat and Chetla are more medium-range in this respect, with a mean of around 500 prostitutes per area.⁹ A majority of the sex workers (roughly 80% in our sample) are migrants from impoverished rural parts of nearby districts in the state of West Bengal (of which Kolkata is the capital) or neighbouring countries like Nepal and Bangladesh. Destitution and coercion are common reasons why women end up in this profession (Basu et al., 2004).

Sex work sites in these areas consists of a number of houses that serve as brothels, as well as small businesses (e.g. liquor shops, food stalls, teashops etc.) that have grown around these brothels to support sex workers and their clients. Within these brothels, sex workers live and work under

⁷Bertrand and Duflo (2017)’s review of the experimental evidence on discrimination concludes that “...while field experiments in the last decade have been instrumental in documenting the prevalence of discrimination, field experiments in the future decade should aim to play as large of a role in isolating effective methods to combat it.”

⁸Some examples of such work within economics include Boisjoly et al. (2006); Beaman et al. (2009); Rao (2019). See Paluck and Green (2009) for a review of the extensive psychology literature in this area.

⁹Of the three, Bowbazar is the largest in terms of size and Chetla is the smallest. According to the NGO Durbar’s census of these 3 areas in 2012, the total number of sex workers in Bowbazar is 621, in Kalighat is 559 and in Chetla is 297.

primarily three types of contracts. The first type of contract is one in which the sex worker pays a fixed rent to the owner for a room in the brothel and works independently (*self-employed*). The second type is one in which the sex worker splits her daily earnings approximately 50:50 with the owner in return for lodging and use of room (*adhiya*). The third is one where the sex worker (typically very young) effectively works as a bonded labourer to the owner who has paid a lumpsum amount in advance for her to her family or a trafficker (*chukri*). Due to the efforts of the NGO Durbar in the prevention of under-age prostitution, *chukri* contracts have almost disappeared from these areas.¹⁰ A fourth type of contract also exists, called a 'flying' contract, in which the sex worker is not resident in the brothel but comes to work there from outside the 'red-light' area. She typically hires a room from the owner of the brothel on a per-hour or per-act basis to carry out her services.

As is true for sex workers in most parts of the world, sex workers in India are severely stigmatized owing to their profession. In addition, the ambiguous legal status of activities related to sex work in India effectively criminalises the profession.¹¹ Together, these factors contribute to sex workers being stigmatized and routinely discriminated against in Indian society: e.g. their children are denied admission to government schools, they themselves face difficulties in obtaining voter ID cards, accessing housing and healthcare or opening a bank account (Pai et al., 2014).

Sex workers in India appear to internalize such stigma. For example, approximately 62% of the respondents in our baseline survey said they felt ashamed of their occupation. Their sense of being 'fallen' women also leads to undue tolerance of such exploitation, rather than challenging it. For instance, Gupta (2011) reports her initial surprise when, while talking to a group of 102 sex workers outside of Delhi, they claimed that they faced no violence. Further probing revealed that they were not considering being slapped, having broken bones and even worse acts as violence, simply because their understanding was that "he (the client) paid for it, so why is it violence?"

Such experience of stigma leading to low self-image among these sex workers can induce choices that are self-defeating in the long term. A sex worker in the Araria district of Bihar, writing about her efforts to form a self-help group in her red-light area of Khawaspur, says "I would go to ...the women and ask them to join the group and begin saving a portion of their earnings. They would

¹⁰In our sample, the percentage of *chukri* contracts is less than 1%.

¹¹The Indian anti-sex work criminal law, Immoral Traffic Prevention Act, 1956 (ITPA) does not proscribe sex work *per se* but penalises specific activities related to commercial sex, such as soliciting, maintaining a brothel, living off the earnings of prostitution, etc. (Kotiswaran, 2014)

say: Why? Our lives are going to end this way, why should we save?" (Nat, 2011)

The training program offered by the NGO Durbar stems from the premise that to improve sex workers' life outcomes, what is needed is a change in their mindset that lets them break free of such pessimism induced by stigma. It persuades sex workers to adopt such a change in mindset by plausibly reshaping their self-image in a positive direction. Based on this foundation of a positive self-image, the training program also suggests to them pathways to take charge of their future lives.

3 Training Content and Experimental Design

3.1 Training Content

The training program was developed by our local partner Durbar, an NGO working with sex workers in Kolkata over the last two decades. It consisted of 8 group sessions run over 8 weeks (1 per week), during which experienced trainers associated with the NGO attempted to reshape sex workers' impaired self-image through interactive discussion, verbal persuasion and role-playing.

Given that most sex workers' current self-image is heavily burdened by their past experience, the training program began with Session 1 focusing on the need to reconsider past experiences and modes of thinking, for a better future. Session 2, a core building-block of the training program, then built on this theme by working on re-casting the sex worker's current self-image. This was done by initiating a discussion on whether they could look upon themselves as entertainment service providers, rather than someone performing a morally depraved act, and whether they could regard themselves as someone trying to make an honest living, hence better than a thief or dishonest person. It raised comparisons of sex workers with members of mainstream society, to bring out how they are not that different from them, and hence equally entitled to lead a fulfilling and dignified life. The discussion aimed to bring home the point that neither their occupation nor any of their implied that they 'deserved' the stigma they encounter in society.

Based on this foundation of a more positively recast self-image of the participants, the remaining sessions focused on pathways and purposive actions to improve their future life outcomes, both at an individual as well as at a collective level. They did not, however, attempt to 'orient' the participants towards any specific life goals.

Session 3 focused on the importance of savings and sex workers' collective agency. It used the sex worker-run cooperative bank (USHA) as an excellent example of how belief in their collective ability to improve their future had successfully brought about positive change. The session also provided information on various savings options available within USHA. In order to ensure that the treatment group did not have any informational advantage over the control, identical information on these savings options was also provided to the control group at the same time.

Session 4 focused on the issue of violence in the day-to-day lives of these sex workers. Due to the ambiguous legal status of sex workers in India (as referred to in Section 2), they are frequently subjected to violence, be it from clients, landlords or the police etc. The session engaged participants on what constitutes violence and how to deal with it and/or challenge it. It was emphasized that sex workers *do not deserve* violent treatment just because they are in a profession that society considers 'fallen' or 'bad', which links back to their self-image (theme of Session 2).

Sessions 5 and 6 emphasized the role of trust, mutual support and organization among sex workers in improving their collective self-image, taking charge and enhancing their shared life outcomes. This was not only with respect to dealing with issues like violence but also asserting their legal and political right to greater social acceptance. Session 7 focused on a discussion about the sex workers' children, and the need to instil in them a positive self-image that empowers them to strive for a better future. Session 8 was an offsite visit to a residential home for sex workers' children run by the NGO, where the key messages of the entire program were summarized.¹²

Every attempt was made to keep the program content authentic, while remaining sensitive to the vulnerable state of the participants. Towards this end, program trainers were Durbar members with long-standing associations with the sex worker community, including a former sex worker.

The training program avoided any discussion on pathways *out* of the profession, in the form of encouragement or suggestions on escape routes. Neither did it provide any information on alternative employment opportunities. This is in keeping with the NGO's conscious policy to focus efforts on empowering sex workers within the profession, rather than on facilitating pathways out of it. The program focused entirely on boosting sex workers' psychological resources while keeping their material conditions (including information, alternative employment options, etc.) unchanged.

¹²The full transcripts of the various training sessions are provided in Online Appendix C, including the translated version in English as well as the original version in Bengali.

3.2 Experimental Design

Brothels in ‘red-light’ areas of Kolkata are typically located in one to three-storey residential buildings or houses with multiple rooms, where sex workers live and work. This is unlike the image of neon-lights and women out on the street, associated with such areas in developed countries. In our three study areas – Kalighat, Bowbazar and Chetla – sex workers are housed across 98 brothels.¹³

Our pilot survey revealed that interaction among sex workers *within* brothels was far more intense compared to across brothels: more than 75% in a random sample of 50 sex workers reported that *all* their close friends lived in the same brothel as they did, while approximately 85% reported that majority of their close friends did so. Hence, the brothel was chosen as the unit of randomization to minimize the risk of contamination.

We randomized two-thirds of the brothels (66 out of 98) into treatment after stratifying by brothel size, as follows. To determine brothel size, we first ranked brothels within each area by the number of ‘eligible’ women, defined as sex workers 35 years of age or less at the time of baseline survey. We then formed triplets of brothels ranked by size. Within each triplet, we randomly selected two brothels to the treatment group and one brothel to the control group.

Next, to select sex workers *within* brothels for our study sample, we randomly surveyed between 50-70% of the eligible sex workers across our three study localities, giving us a final baseline sample of 467 surveyed sex workers. All surveyed sex workers in treatment brothels were invited to participate in the training program, while those surveyed in the control brothels were not.

Participants in treatment groups gathered in groups of 15-20 in a room for the training session every week for 8 weeks. Assignment to these groups was random and included women from multiple brothels. Hence there was random variation in the fraction of women from a single brothel within each group. Each training session lasted about one hour, and the same group met in all sessions. All sessions were held in a pre-designated venue in each of the three study areas, except for the last session which was held at an offsite location. Each week’s training session was led by a different trainer, but within any given week, all groups were led by the same trainer.

At the end of each weekly training, participants were offered a payment of Rs. 100 (approximately \$ 1.41) to all program participants, with two options on how they could receive this payment:

¹³The distribution of brothels by study area is: 45 in Bowbazar, 30 in Kalighat and 23 in Chetla.

1. as an injection directly into their current account
2. as an injection to a fixed deposit, with or without a matching contribution from the participant, up to a specified amount limit.

Both these types of accounts were newly opened accounts, held with the sex workers' cooperative bank, USHA. These were distinct from any pre-existing bank accounts that participants held with USHA (as reported in Table 1, bottom row). Accounts were opened for all survey respondents, irrespective of participation in the training program. While the current account offers greater liquidity than fixed deposits, the latter offer a higher interest rate and hence a higher longer-term return. In this sense, investing in a fixed deposit reflects greater future-oriented effort. The (annual) interest rates on these products were 8% for current account balance, 12% on a fixed deposit without a matching contribution and 15% with such a contribution. An important design feature of these products was that participants faced no penalty if they were to break their fixed deposit midyear. They would simply earn the lower rate of interest as offered on the current account (8%). The participants' choices across these savings products were recorded at the end of each weekly training session. We note that these payments and the same menu of savings product options were offered to all participants in *both* the treatment and control groups,¹⁴ which allows us to use these savings decisions as one of the key outcome variables of our analysis (discussed in Section 5.2.2). The conditions for the treatment and control groups were kept as similar as possible. Significant care was taken to ensure that both groups had access to exactly the same factual information about the various savings options within USHA at the same point in time, i.e. after Session 3.

Moreover, to maintain parity, the control group participants were also required to meet at the same frequency as the treatment group, i.e. every week (in groups of approximately 20-25) for 8 weeks, to give us their savings choices.¹⁵ Owing to the somewhat larger size of these control groups, the sex workers waited in groups for their turn to give us their choices and take their money, and unstructured conversation would often organically ensue among them. However, there were no formal activities that the control groups participated in during this waiting time. Hence, the main

¹⁴The payment was offered as a 'thank you' gift to the treatment group for participating in the training program and to the control group, for participating in the baseline survey.

¹⁵The justification offered to the control group was that administrative constraints necessitated the staggered nature of payments.

difference between the treatment group and control group meetings was that, for the latter, their choices were not preceded by the weekly training session. This design feature of regular meetings of the control group enables us to address the potential concern that any observed difference between the treatment and control groups post intervention might be driven, not by the training program itself, but by the frequency of contact (Feigenberg et al., 2013) or of opportunities to network and exchange ideas that maybe naturally fostered in such group gatherings.

In order to minimize the chances of spillovers in the savings choices of participants in the treatment group, whereby they could observe and mimic each other's choices, we asked each participant to reveal her choice to us in a separate room at the end of the training session. We also ensured that she was not able to return to the training room (where the other participants from her group sat) after declaring her choice. We followed a similar protocol for the control group as well.

The amount of money offered to the participants was Rs. 100 (i.e. approximately \$1.41) per week. This is equal to 40% of their median daily earnings of approximately Rs. 250 (about \$3.54) – hence not an insignificant amount, in terms of reflecting sex workers' choices over the savings options made available. Moreover, due to the nature of their trade, sex workers manage their finances on a day-to-day basis (Evans and Lambert, 2008), which is consistent with anecdotal evidence from the field on the popularity of daily savings schemes in these 'red-light' areas. Thus the savings decisions presented as part of the experiment are familiar to participants from their daily life.

4 Conceptual Framework

How does the experience of stigma affect an individual's self-image? Through what pathways did the intervention we evaluate impact the efforts and behavior of sex workers who participated in the program? We draw on a rich literature on self-image and stigma in economics, sociology and psychology to address these questions.

It is perhaps a truism to say that individuals care about having a positive self-image (or identity), of being a competent and moral person who acts in accordance with her values and beliefs (Akerlof and Kranton, 2000; Steele, 1988). This could be either for instrumental reasons, inasmuch as a positive self-image motivates a person to put in more effort into any endeavour (Benabou and Tirole, 2002); or it could be for its own sake (Köszegi, 2006).

Being the object of social stigma can have an adverse impact on a person's self-image. As the eminent sociologist Erving Goffman has noted in his classic work on stigma (Goffman, 1963), it can lead her to believe that some of her personal attributes justify the lack of favourable regard from others. In the case of our particular study population of sex workers, the social stigma and discrimination they face is likely rooted in repugnance towards prostitution (Roth, 2007). As he observes, even where there may be willing suppliers and demanders of certain transactions, aversion to those transactions by others may constrain or even prevent the transactions.¹⁶ Whether or not such repugnance is justified, it induces sex workers to internalize stigma that they face, hence diminishing their self-image (as we noted in footnote 3 in the introduction).

Given that individuals care about a positive self-image, such internalized stigma could lower their efforts to achieve better life outcomes, for multiple reasons. A diminished self-image or identity may lead them to perceive a more limited set of response choices available in any given situation (Akerlof and Kranton, 2000). For instance, sex workers who believe themselves to be morally inferior may not feel entitled to resist any violence inflicted on them by clients, or to a better quality of life. The continual struggle to maintain a positive self-image could also capture scarce mental bandwidth, reducing a person's ability to exercise agency to achieve desirable outcomes (Mullainathan and Shafir, 2013). In fact, a fragile self-image may even induce them to avoid any endeavour that carries some risk of confirming their worst suspicions: that they lack the capacity or perseverance to succeed (Köszegi, 2006; Steele, 1988). Loury (1999) discusses how the combination of discrimination and internalized stigma leads to learned helplessness and self-fulfilling pessimism about the returns to effort. What is common across these different mechanisms is that a poor self-image raises the cost of effort (actual or perceived) required to improve one's life outcomes.

Consistent with these mechanisms, the psychology literature on Self-Affirmation (Cohen and Sherman, 2014) suggests that addressing a person's core need for a positive self-image of being a moral and competent individual can lower this cost of effort, hence breaking a self-fulfilling pessimism trap. Going back to the mechanisms outlined above, an adequately positive self-image

¹⁶Roth (2007) identifies three possible concerns that may give rise to such repugnance of certain market transactions: objectification – how the introduction of money changes many kinds of social relationships and their meanings; coercion or exploitation of one party to what may only appear to be a voluntary market transaction; and finally, a worry that condoning certain kinds of transactions may be a slippery slope leading society towards legitimizing other more morally dubious ones.

would imply that a person's scarce mental bandwidth is less likely to be devoted to protecting a fragile self-image. It may open her mind to actions previously perceived to be off-limits, or as threats that could expose her inadequate abilities. This openness could then increase her capacity and willingness to put in greater effort to achieve better life outcomes.¹⁷ Figure 1 provides a graphical illustration of the possible causal pathways through which self-image can affect effort and outcomes.

The program we study addressed sex workers' core need for a better self-image by recasting their work as that of entertainment workers and acknowledging the honesty of their efforts, unlike that of a thief. We are unable to unbundle the impact of the intervention in terms of the contribution of any particular pathway summarized in Figure 1, but the discussion above does point to three testable predictions in the context of our study:

1. First, the program works to restore a more positive self-image among sex workers. (Table 3).
2. Through an improved self-image, the program then encourages greater efforts among treated sex workers to achieve better life outcomes in savings (Table 4, 7) and health (Table 6).
3. Finally, the effects on effort in (2) are stronger for those who have a poorer self-image at the start of program, given potential complementarity between self-image and effort (Table 5).

5 Data, Variables and Estimation

5.1 Data

5.1.1 Short-term Data

In Feb-April 2012, we conducted a baseline survey that collected detailed information on a number of psychological outcome measures, as well as socio-economic characteristics, past histories and occupational details of the sex workers.¹⁸ As reported earlier, our baseline sample consisted of the 467 sex workers in our study sample. The training program was carried out between October and December 2012, during which we collected weekly data on the savings choices of our subjects. For

¹⁷A formal exposition of the key features of the framework outlined above is available in the working paper version of our paper (Ghosal et al., 2019).

¹⁸The details of the project timeline are depicted in Appendix Figure 4.

the treatment group, refusal to attend the training program was low at 3.8%.¹⁹ The follow-up survey was conducted in January-February 2013. Attrition from the baseline to the follow-up survey was 6.4%, leaving us with an endline sample of 437 participants. Appendix Table A1 estimates the probability of not attriting as a function of treatment status and baseline characteristics. We find that attrition rates do not differ significantly between treatment and control groups. We also do not find any imbalance between the treatment and control groups (based on key observable sample attributes), as a result of attrition (except religion).²⁰

In order to address the potential concern that survey responses by our treatment participants might suffer from “social desirability bias” i.e. they just give the “right” answers, we recruited and trained a separate team of surveyors (independent of Durbar staff who were in charge of conducting the training) who carried out all the surveys.

Table 1 presents descriptive evidence on the individual characteristics of the sex workers in our study areas. The average sex worker is 32 years old, most likely Hindu, with very little formal education, and has been in this profession for an average of 9 years. Close to half of them are self-employed. Sex workers appear to suffer a loss of around 26% in prices they can charge for their service by using condoms, similar to a loss rate of 23% reported for sex workers in Mexico by (Gertler et al., 2005).²¹ Average monthly earnings are about Rs. 9,000 (about \$127.37). Most of these sex workers are members of Durbar but fewer than half have bank accounts (in USHA). We note that the savings accounts opened as part of our intervention were in addition to these accounts.

Sex workers in treatment and control brothels also appear to be similar on most of these observable characteristics, with the exception of religion and the proportion of *adhiya* sex workers. All our results presented below are robust to the inclusion of these and other baseline characteristics as controls (see Appendix Tables A2, A4 and A6). Moreover, we find no statistically significant

¹⁹Refusal to attend is measured as the proportion of invited sex workers who were part of the baseline survey but who failed to turn up on the first week of the training program. Among the control group, failure to turn up to give us their savings choices in the first week is not significantly different, at 4.4%.

²⁰Overall, our attrition rate compares favorably with other studies evaluating interventions for the poor. Bandiera et al. (2017) report an attrition rate of 15% for the Targeted Ultra-Poor program conducted by BRAC in rural Bangladesh over 4 years, Banerjee et al. (2011) report an attrition rate of 17% in their baseline sample in West Bengal over an 18-month period, while Morduch et al. (2012) report an attrition rate of 12% over 3 years in Andhra Pradesh.

²¹While this is a sizeable loss, it is still significantly lower compared to the estimates of Rao et al. (2003) who reported estimated losses of 66-79% in a similar population of sex workers in Kolkata. This difference could be a significant increase in condom usage, thanks to Durbar’s sustained effort over the last decade, in generating awareness among sex workers in Kolkata regarding value of practicing of safe sex.

differences in outcomes by religion and baseline contract type (see Appendix Tables A7 and A8).

5.1.2 Medium-term Data

We also obtained related savings data on program account closures and final balances directly from the NGO (based on administrative records of its cooperative bank USHA), twelve and fifteen months after the program ended. This data was made available to us for only two of our three original study localities, Kalighat and Chetla. We note that the random assignment of brothels to treatment and control groups was done within each of the three red-light districts, and confirm that the balance on the variables originally reported in Table 1 holds for this restricted sample too (see Appendix Table A9). There continues to be no significant baseline differences between treatment and control groups for any of the key outcome variables either (see Appendix Table A10).

Similarly, we obtained administrative data on actual visits to health clinics (run by the NGO Durbar) undertaken by the *universe* of sex workers living in our study localities, for up to 21 months after the program ended (till September 2014). This data was made available to us anonymised at the individual level, for confidentiality reasons (since it included sensitive STI test information), but we do know the brothel in which each individual resides. As a result, we are able to match the medium-term, administrative data on health clinic visits at the brothel level, rather than to specific participants in our study sample. Our sample data covers approximately 35% of the total population of sex workers in our study localities at the time of baseline.

We hence present medium-term results on health-seeking behavior for all sex workers living in our treatment and control brothels during this time. Field visits to 20 randomly selected brothels (out of the original 98) in February 2019 revealed that on average around 76% of the sex workers from our original sample still reside in these brothels, indicating relatively low attrition.

The use of administrative data for savings and health choices provides significantly bolsters the reliability of our results, in two ways. First, it provides an important additional check against social desirability bias, given that it is data routinely collected as part of the NGO's internal records. It serves as a useful complement to the self-reported data (on health-seeking behavior) from our surveys and experimental data (on savings choices) during the program. Second, given that the administrative data pertains to a period well beyond the end of the program, it sheds valuable light

on the longer-term sustainability of the impacts of the program.

5.2 Variables

5.2.1 Key Psychological Dependent Variables

The first set of dependent variables that we focus on in this paper are self-reported psychological variables, including various proxies of self-image as well as other related outcomes. These measures were constructed based on questions developed in close consultation with Durbar, given their experience and familiarity with our study population and context.

Proxies of Self-Image Self-image is a multi-dimensional concept, hence we attempt to capture different proxies of it, as detailed below. These context-relevant metrics were developed in consultation with our NGO partner.

Shame: This measure is constructed on the basis of the question: "Are you ashamed of your occupation?" The answer options are "1-Yes", "2-Sometimes", "3-Never". A binary variable for shame is constructed that equals 1 if the answer is 1 or 2 and zero otherwise.

Self-worth: This measure is constructed on the basis of the question: "How do you view yourself?" The answer options are "1-Bad woman", "2-Fallen woman", "3-Woman with no future", "4-Service provider/entertainment worker", "5-Somehow managing life", "6-Criminal". A binary variable for self-worth is created that takes the value 1 if the answer is 4 and zero otherwise.

Ability to face challenges: This measure is constructed using the following questions: "Do you feel capable of: resolving a situation of conflict with the police; resolving problems with the landlord/lady; resolving problems with local youths; resolving problems with goons; resolving problems with your pimp; resolving problems with your madam; dealing with aggressive clients; dealing with emergencies like sudden illness; developing a new skill to engage in another occupation; making plans for a future business; determining your child's future; buying property." The answer options for each of these situations are: "1-Strongly agree", "2-Agree", "3-Neither agree nor disagree", "4-Disagree", "5-Strongly disagree. For each of the 12 scenarios described above, a binary variable is created that equals 1 if the answer is either 1 or 2, and 0 if the answer is 3, 4 or 5. These 12 binaries are added up to generate an agency score between 0-12, and then converted into a standardized z-score.

Comfort in Public interaction: This measure is based on the question: "Are you comfortable about: speaking in meetings; participating in public processions; interacting with a police officer; talking about your profession with your children; talking about your profession with your neighbour; talking about your profession to the police; allowing your children to bring home their friends." The answer options are same those for the previous variable. For each of the 7 scenarios described above, a binary variable is created that equals 1 if the answer is either 1 or 2, and 0 if the answer is 3, 4 or 5. These 7 binaries are added up to generate a comfort score between 0-7, and then converted into a standardized z-score by subtracting the mean and dividing by the standard deviation.

Other Psychological Outcomes We also look at other psychological outcome measures such as happiness, aspiration for own future, and decision-making power that are impacted by self-image.

Happiness: This measure is constructed on the basis of the question: "On a scale of 1-5, how happy would you classify yourself to be in life?" The answer options are "1-Very happy", "2-Somewhat happy", "3-Indifferent", "4-Somewhat unhappy", "5-Very unhappy". A binary variable for happiness is created that takes the value 1 if the answer is either 1 or 2 and zero otherwise.

Aspiration: This measure is constructed on the basis of the question: "Where do you see yourself five years from now?" The answer options are "1-Own a house", "2-Become a peer worker", "3-Become an organization member of the NGO, Durbar", "4-Become a madam", "5-Leave this profession", "6-Same as now", "7-Don't know". A binary variable for aspiration is created that equals 0 if the answer is either 6 or 7 and 1 otherwise.

Decision-making power: This measure is constructed on the basis of the following question: "For each of the following, specify who takes the decision: number/choice of customer; financial matters; children's future; purchase of clothes and jewellery; own medical treatment; condom usage with babu (fixed client); condom usage with other ordinary client." The answer options for each of scenarios are "1-Self", "2-Husband/babu", "3-Other family member", "4-Madam", "5-Pimp", "6-Other sex workers", "7-Durbar official". For each of the 7 scenarios described above, a binary variable is created that equals 1 if the answer is 1, and 0 otherwise. These 7 binaries are added up to generate a decision-making score between 0-7, and then converted into a standardized z-score by subtracting the mean and dividing by the standard deviation.

5.2.2 Key Economic Dependent Variables

The second set of outcomes we study measure participants' future-oriented economic behavior.

Savings product choice: This variable uses the choices made by participants across the two types of savings products offered, current account and fixed deposit, as described earlier. Savings choices are captured with a binary variable that equals 1 if the current account is chosen and 0 if one of the fixed deposits is chosen. A higher value is interpreted as reflecting a more present-oriented (less future-oriented) choice.

Health-seeking behavior: An alternative measure of future-orientation we use is health-seeking behavior of our participants. Since sex work puts a lot of stress on the physical condition of the sex worker, investment in physical health is very important for future sustainability. We proxy health-seeking behavior with the frequency of visits to the doctor. In particular, the measure is based on the question: "When was the last time you visited your doctor for a regular check-up regarding your physical health?" The answer options are "1-A week or less ago", "2-A month of less ago", "3-A year or less ago", "4-More than a year ago", "5-More than 5 years ago". For health seeking behavior we use a binary variable equal to 1 if the answer is 1 or 2 and zero otherwise.

It is important to emphasize here that these visits are made by sex workers to see doctors based in local clinics run by the NGO Durbar itself, since sex workers are often denied access to formal government and private health care agencies (as referred to in Section 2 above). These visits are typically regular and preventive in nature, rather than being need-based.²²

Table 2 reports the baseline values of the key dependent variables. There appear to be no significant baseline differences between treatment and control groups along any of these dimensions.

Medium-term Outcomes: For the medium-term savings outcomes, we focus on the likelihood of closing the program accounts twelve and fifteen months after the program ended, and their final account balances fifteen months later. For health-seeking behavior, we examine the probability of visiting the health clinic (in three-month intervals) up to 21 months after the program ended.

²²A potentially interesting outcome variable to explore in this context would have been condom usage. However, due to the extensive efforts of Durbar as part of a national anti-AIDS initiative for promoting condom use (Rao et al., 2003), reported condom usage in red-light areas of Kolkata is very high. For instance, 99% of our respondents report using a condom in the baseline.

5.3 Estimation

In order to evaluate the impact of the training program on the psychological variables of interest, we estimate the following regression ANCOVA specification:

$$Y_{ijl} = \alpha_l + \beta T_{jl} + Y_{ijl}^{baseline} + \epsilon_{ijl} \quad (1)$$

where Y_{ijl} indicates the dependent variable of interest for individual i living in brothel j in area l . T_{jl} is a binary variable equal to 1 if the individual lives in a treatment brothel (a brothel whose eligible residents were invited to participate in the training program). $Y_{ijl}^{baseline}$ indicates baseline level of the relevant dependant variable. The coefficient β captures the average difference in outcomes of individuals living treatment relative to control group brothels, and identifies the intention-to-treat (ITT) parameter. It is close to the average treatment-on-treated effect, since less than 4% of those invited to the training program refused to attend. α_l denote area fixed effects and are included to improve efficiency since randomization was stratified by locality (Bruhn and McKenzie, 2009).²³

In order to estimate the program impact on future-oriented economic behavior, in terms of saving products choice, we estimate the following regression specification:

$$S_{ijls} = \alpha_l^s + \rho T_{jl} + \epsilon_{ijls} \quad (2)$$

where S_{ijls} is a binary variable which equals 1 if the individual i chooses an injection into their current account and 0 otherwise (i.e. injection into fixed deposit account). The subscript s denotes the order of the weekly training session [$s = 1, \dots, 8$]. Since both types of fixed deposits (with and without matching contributions from participants) entail some degree of future-orientation, we club them together. We estimate equation 2 above separately for each session, as well as with and without individual fixed effects.²⁴

Finally, in order to estimate program impact on health-seeking behavior and medium-term

²³As a robustness check, we present endline and difference-in-difference estimates in Appendix Tables A3-A6, and SUR results in Appendix Table A21. Our results also remain robust to estimating 2SLS (just-identified), with the random assignment being the instrument and the training session being the treatment, using JIVE to address some of the leverage issues inherent in IV estimation (Young, 2020).

²⁴Since the savings choice data was collected each week after the training session during the 8-week period of the intervention, inclusion of individual fixed effects addresses the concern that our findings may get contaminated by differential attrition between the treatment and control groups.

savings outcomes, we use specifications similar to (1) above.

6 Short-term Impacts

6.1 Psychological Outcomes

Table 3 presents the ITT estimates of the training program's impact on the various proxies of self-image (columns 1-5) and other psychological variables (columns 6-9). The first five columns present the simple differences in various dimensions of self-image between treatment and control groups from the endline survey, using an ANCOVA specification. Column 1 indicates that sex workers assigned to the treatment group are 40 percentage points (pp) less likely to report feeling ashamed of their occupation compared to their counterparts in the control group (relative to a baseline measure of 0.63). Column 2 indicates that they are also 68 pp more likely to report having higher self-worth than those in the control (relative to a baseline mean of a mere 0.18). It is reassuring to find that the self-worth results are consistent with those for shame, since in the context of our study, these two variables may be regarded as being inversely related. The training program also increased their self-reported ability to face challenges by 0.43 standard deviations compared to those assigned to the control group (column 3), as well as their comfort/ease in public interaction by 0.30 standard deviations (column 4).

Columns 6-8 depict the impact of the training on other psychological variables that may be affected by an improved self-image. Column 6 indicates that treated sex workers are 12 pp more likely to report being happy in the end line survey, an increase of 25% from the baseline mean. A positively recast self-image may make them feel better about themselves and hence increase happiness. However, we see no significant impact on their aspiration level (column 7). This is consistent with the fact that the program aimed to strengthen a sex-worker's belief in her ability to take charge of her own future and achieve her existing goals – not to reorient her goals in any particular direction *per se* (e.g. by providing skills opening up new opportunities). It is also consistent with the positive impact of the training program on happiness, since existing evidence indicates that a stronger sense of self-efficacy has been found to foster happiness (Caprara et al., 2006).

Column 8 indicates that the training program had no impact on sex workers' self-reported

decision-making power. However, baseline levels of decision-making power were already quite high amongst this population: 77% sex workers in our sample report taking *all* decisions on their own, while 93% report taking more than 50 percent of decisions on their own. Thus, with relatively less margin for improvement, it is not surprising that the training program has little additional impact on decision-making power of the participants.

Since we examine the impact of the training program on seven psychological variables, this raises the concern that these effects are simply observed by chance among all of the different outcome variables. We follow two approaches to address this multiple inference problem. Following Anderson (2000), the first approach is to reduce the number of tests being conducted by constructing summary indices of the two groups of our dependent variables: proxies of self-image and other psychological outcomes. The results for the two summary indices are presented in Table 3 (columns 5 and 10). Both are statistically significant at the 5% level.²⁵

The second approach, following Sankoh et al. (1997), uses the Bonferroni correction for multiple testing, adjusted for correlated multiple outcomes. Using an alpha of 5 percent, and actual mean inter-variable correlations (varying between -0.01 to 0.06,) the Bonferroni p-values work out to be between 0.006 and 0.007.²⁶ All our psychological variables remain statistically significant (for $\alpha=0.05$) at these adjusted levels, except for happiness, which is now marginally significant at $\alpha=0.1$.

6.2 Economic Outcomes

6.2.1 Saving Product Choices

The program was designed to create a more positive self-image among participants – an objective that the results above suggest it did achieve. Below we examine whether a better self-image also encouraged more purposive actions among participants, to improve their future life outcomes.

Our first set of findings on participants' future-oriented actions as reflected in their savings product choices, are presented in Figure 2.

²⁵In Appendix Table A11, we also present results for a summary index constructed over all seven psychological variables. The results are statistically significant.

²⁶Unlike in the standard Bonferroni correction where the outcomes are assumed to be independent, this adjusted Bonferroni correction allows for the case of correlated outcome variables where the mean correlation between outcome variables can be included as a parameter in the Bonferroni adjustment. A mean correlation of zero would yield the full Bonferroni adjustment, whereas a mean correlation of one would mean no adjustment (see p. 23 in Aker et al. (2016).

Each bar represents the proportion of individuals opting for deposit into their current account rather than their fixed-deposit account in a particular weekly session. Initially, the proportion of individuals in the treatment group choosing a current account is similar to that in the control group. For the control group, this proportion remains more or less unchanged over the course of the 8-week program, with a slight rise towards the end. For the treatment group, however, there is a significant shift towards a fixed deposit (as indicated by a fall in the take-up of the current account option) from Session 4 onwards.

Table 4 presents the ITT estimates of the training program on choices over savings products using specification (2), and confirms the patterns observed in Figure 2. There is no statistically significant difference in the propensity to choose the present-oriented option between the treatment and control groups up to Session 3 (columns 1-3), with the coefficients being small in magnitude. But in Session 4, the treatment group is 25 pp less likely to choose the present-oriented option than the control (column 4), which increases to approximately 50 pp in Session 5 (column 5) and remains more or less stable until the end of the program. This captures the move away from the present-oriented current account option towards the fixed deposit options among the treated sex workers, over the course of the training program.²⁷

Table 4 uses variation across individuals for empirical analysis. However, we observe some attrition in attendance over the course of the training programme. In particular, attendance in the last session was disproportionately affected due to its offsite location. Until Session 7, attrition was approximately 11%, but increased a further 8% in Session 8. One might worry that this may lead to estimation bias if different kinds of individuals attrit in the treatment relative to control, even if the average rate of attrition does not differ significantly between the two groups. We address this concern by including individual fixed effects in an alternative specification and find similar treatment effect sizes (see Appendix Table A12).²⁸

Finally, we also examine heterogeneous treatment effects by baseline levels of stigma and fi-

²⁷The regression results presented in Table 4 cluster standard errors at the brothel level. However, since the training was imparted to women in groups of size 15-17, there arises a possibility that outcomes could be correlated within these training groups. The results are found to be robust when standard errors are clustered at the training group level instead of brothel level (results available upon request).

²⁸In the last session of the program, the participants were also given the option to overturn their decisions in the previous seven sessions in favour of their decision in the final session. Approximately 33% of the participants made such a switch in the final session. As seen in Appendix Table A14, treatment group sex workers are 32 pp more likely to switch to a fixed deposit in the last session relative to the control group.

nancial characteristics. Internalized stigma is captured by the variable for shame. Interestingly, we find that participants who reported a greater sense of shame in the baseline are more responsive to the training program: they are 9 pp more likely to choose a fixed deposit rather than a current account, relative to those who report a lower sense of shame (Appendix Table A13, column 1).

This is in contrast to the impact of participants' baseline financial characteristics, which are measured by whether sex workers have a bank account with USHA (the sex workers' co-operative bank), and whether they possess any savings. Here, we find no interaction effects of the treatment with sex workers' baseline financial characteristics (Appendix Table A13, columns 2 and 3). This is consistent with the intervention's impact on participants' behavior working through an improvement in their self-image.²⁹

6.2.2 Alternative Explanations

Our results in Appendix Table A13 suggest that the training had a favorable impact on savings choices by enhancing sex workers' self-image. Furthermore, we are able to rule out several other alternative explanations for the results described above. Specifically, we show that these results are not explained by lack of financial literacy among some sex workers, peer effects among study participants, an increase in their demand for commitment savings, or their sense of reciprocity or trust towards the NGO (see discussion in Online Appendix B.1 - B.4 for further details).

One may also worry that during the discussion about the sex workers' cooperative bank and savings in this session, the experimenters may have unwittingly "nudged" participants to choose a fixed deposit. We take two concrete approaches to allay such concerns of experimenter demand effects. First, following the approach suggested by Dhar et al. (2018) and adopted by Bandiera et al. (2019), we examine whether there is any heterogeneity in sex workers' savings choices, as a function of how much they value social approval at baseline. We do not find this to be the case (see discussion in Online Appendix B.5 for details).

As a second approach to alleviate this concern, the next subsection presents evidence on another form of future-oriented behavior that was not discussed at any point of the training program: preventive health behavior. We use a combination of self-reported (short term) and non-self-reported administrative data (medium term) for this outcome, to strengthen the confidence in our findings.

²⁹Here we show the combined effect for all weeks. Week by week results are available on request.

6.2.3 Health-seeking Behavior

As mentioned earlier, a potential concern with the findings on savings choices is that participants may have been “nudged” towards the fixed deposit options, consciously or unconsciously. To allay this concern, we present evidence of the impact of exposure to the training program on another future-oriented decision that is particularly important for sex workers, but was not mentioned explicitly during the training program at all: preventive health-seeking behavior.

We first proxy health-seeking behavior by self-reported frequency of regular visits to the doctor. As seen in column (1) of Table 5, we find that, three months after the end of the training program, the treatment group is 10 pp more likely to have visited a doctor in the past week or month compared to the control group. This represents an increase of nearly 13% over the baseline mean of 0.77.³⁰

We also test for and confirm that the treated sex workers do not service any more clients nor have more earnings as a result of exposure to the training program (Appendix Table A20). This addresses the concern that the increased number of health visits could be driven by treated sex workers taking more risk as a result of a potential “disinhibition effect” resulting from the intervention. In other words, the increase in such doctor visits appear to be driven by regular, preventive check-ups rather than being ‘need-based’.

The estimates presented in Column 1 of Table 5 are based on self-reported data. However, the good news is that we were also able to obtain administrative records data on health visits made by sex workers in our study areas, directly from the clinics themselves. The fact that these administrative data are routinely collected goes a long way in allaying any concerns about social desirability bias in the observed outcomes.

The administrative health visit data *objectively* confirms the findings from our self-reported data. As mentioned in Section 5.1.2, we are unable to identify our study subjects in this data for confidentiality reasons, hence we present results for all sex workers living in treatment and control brothels. Sex workers in treatment brothels are found to be 13pp more likely to visit the clinic for regular health check-ups three months after the program, based on an ANCOVA specification (Table 5, Column 2). In fact, the magnitude of impact estimated from administrative data is somewhat

³⁰As a robustness check, we also present endline and difference-in-difference estimates in Appendix Tables A19.

larger than the estimate from self-reported data in Column (1) of Table 5. Some of this could be because we cannot disentangle the direct impact on our study subjects from spillovers effects (on untreated sex workers in the treated brothels). Overall, the analysis here based on administrative data greatly increases our confidence in the objectivity and reliability of our results.

7 Medium-term Impacts

A common concern with the effects of psychological empowerment methods relates to their persistence over the long run. The findings presented above focus on immediate program impacts, i.e. those measured either during, immediately after, or within three months of the conclusion of the program – which may raise some skepticism about the ‘true’ and enduring impact of the training program. To address such legitimate skepticism, we also tested whether the overall positive response to the training program is merely a short-term ‘feel-good’ response to a new type of training, or whether it is representative of a more lasting change in participants’ behavior.

We note that our analysis below is entirely based on administrative data, both for health clinic visits and savings choices of our study participants. As with the short-term health results reported in Table 5, Column 2 above, this greatly increases the confidence in the reliability of the medium-term results we report below.

7.1 Economic Outcomes

7.1.1 Health-seeking Behavior

Continuing with our analysis of health-seeking behavior from the previous sub-section, we examine the impact of the training program on health clinic visits as much as 21 months after the program. We find that sex workers in our treatment brothels remain 15 pp. more likely to have visited the health clinic (in 3-month intervals) than those in the control brothels (Table 5, Columns 3). This pattern holds in estimated treatment coefficients plotted over this time period (Figure 3).

Before the training, sex workers in the treatment brothels have a marginally lower frequency of health clinic visits than their counterparts in control brothels. However, the training program makes them 13 pp more likely than control to have visited the health clinic in the previous 3 months.

This effect persists until the end of the 21 month period for which we have administrative data.

7.1.2 Program Accounts and Balances

Turning next to medium-term savings behavior, we examine the probability that participants close the bank accounts opened for them during the training program, up to 15 months after the end of the program. We also examine their final account balances at that time. As noted in Section 3 on experimental design, accounts were opened for all survey respondents irrespective of participation in the training. Accordingly, all participants, including those who did not take up the training (4%), are included in the analysis of account closures and final balances below (Table 6). As a result, these medium-term savings results are unlikely to be affected by selection in program non-take up.

Table 6 reports the results on the likelihood of program account closures at various points in time as well as final account balances. For account closures, the dependent variable is a binary variable that takes the value 1 if the account has been closed at a given point in time and zero otherwise. The three points in time we focus on are: immediately after the program ended (December 2012), twelve months after the program ended (January 2014) and fifteen months after the program ended (March 2014). Column 1 indicates that the treatment group is 53 pp less likely to close their program account(s) immediately after the program ended (control mean is 0.57).

The pattern continues to hold up to twelve months after the program, where the treatment group is 40 pp more likely to keep their accounts open (column 2). The dip in this figure relative to column (1) (3 months after the end of the program) suggests that some participants in the treatment group closed their accounts at the end of the 12-month lock-in period for fixed deposits. However, any concern that such a mechanical reason is the key driver of lower account closures in the treatment group overall is allayed by the impact 15 months later: those in the treatment group remain significantly less likely (52 pp) to close their account than the control group (column 3).

The program accounts could be fixed deposits or standard current accounts, depending on the final choices made by the participant at the end of the training. Appendix Table A22 shows that the impact on account closure rates 15 months after the program is similar for both types of accounts.

Apart from account closure, we are also interested in final balances in these accounts since people may not bother closing their accounts even if they have very small balances in them. Column

(4) in Table 6 presents the results for final balances in these accounts fifteen months after the program concluded (for accounts that were closed before the fifteen month-mark was reached, we assign an account balance of zero). We observe that, on average, the treated participants had Rs. 404 more in their accounts relative to their control group counterparts, and this coefficient is highly significant. This corresponds roughly to a 4 times higher savings balances for the treatment group.

7.2 Cost Benefit Considerations

Our medium-term results on health and savings outcomes show that the intervention had lasting benefits for the treated sex workers. These are particularly relevant for assessing the cost effectiveness of the intervention. Our program impacts compare favorably with those found by other recent studies in developing countries, on multiple dimensions. For instance, with regard to savings accounts use, treatment group participants in our study are 53 percentage points more likely to continue use of their savings accounts 15 months after the program. In comparison, Dupas and Robinson (2013b) find that 40% of female micro-entrepreneurs in rural Kenya continued to use formal savings accounts six months after they were offered. In terms of account balances, treatment group participants in our study have balances four times as large as that of those in the control group, fifteen months after the program. In comparison, Somville and Vandewalle (2018) find that an intervention to encourage savings by offering payments in bank accounts rather than cash doubles account balances, five months after offer.

With regard to health-seeking behavior, we find that the participants in our treatment group were 15 percentage points more likely to continue with preventive health check-ups 21 months after the program. In comparison, economic interventions to encourage doctor visits (among hypertension patients in rural India) such as price subsidies or commitment contracts have found little impact (Bai et al., 2017). These estimated impacts on savings and health behavior are in addition to the enhanced psychological well-being of program participants in our study, in terms of their improved self-image and greater self-confidence. Overall, it is reassuring to find that the training program not only succeeded in changing saving and health behavior in the short term, but that these effects persisted in the medium term as well. These findings are therefore encouraging for the sustainability of such initiatives and hence their cost-effectiveness over time.

8 Conclusion

In this paper, we take seriously the view that facing stigma and social exclusion can distort an individual's self-image in ways that lead to sub-optimal life choices. We examine whether such distortions can be mitigated by means of an intervention to reshape the self-image of a stigmatized group, sex-workers in India. We find that this training program has significant positive effects, both on how the sex-workers perceive themselves and on their savings and health choices. Using administrative data gathered independently from our intervention, we find that these improvements in their savings and health behavior persist in the medium-run, up to 15 and 21 months after the program respectively.

Stigma and discrimination against female sex workers remains a significant barrier to HIV prevention across the world. Thus, our findings here have important implications not just for the welfare of individual sex workers, but for public health initiatives too. More broadly, they present a case for the value of a self-image (or identity) centered approach for lasting empowerment of other marginalized groups, such as racial/ethnic minorities and the poor. As Cohen and Sherman (2014) note in their review of the literature on self-affirmation, an impactful intervention can work not in isolation but rather like a turning point in a story that sets in motion a positive feedback loop between an individual's response (to the intervention) and the reaction of their social environment. Integrating such psychological interventions with existing programs to support marginalized groups can generate valuable insights both about potential interactions across different approaches and effective program scale up. This is a promising area for further research.

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Table 1: Summary Statistics – Individual Characteristics at Baseline

	Control	Treatment	Difference
<i>Panel A: Demographic</i>			
Age (years)	32.47 (7.09)	32.08 (7.62)	0.38 [0.92]
Muslim (%)	0.13 (0.34)	0.22 (0.41)	-0.09** [0.04]
Low caste (%)	0.42 (0.49)	0.35 (0.48)	0.06 [0.05]
Education (years)	2.11 (2.92)	1.73 (2.81)	0.38 [0.26]
<i>Panel B: Work behaviour</i>			
Has fixed client (%)	0.26 (0.44)	0.31 (0.46)	-0.05 [0.04]
Years in profession	9.36 (8.06)	8.87 (7.57)	0.49 [0.91]
Adhiya contract (%)	0.06 (0.24)	0.18 (0.38)	-0.12** [0.04]
Self-employed contract (%)	0.57 (0.50)	0.47 (0.50)	0.10 [0.07]
Flying contract (%)	0.37 (0.48)	0.36 (0.48)	0.01 [0.06]
Rate per sex act (w/ condom, Rs.)	129.13 (128.54)	121.06 (54.90)	8.07 [8.90]
Rate per sex act (w/o condom, Rs.)	175.00 (91.57)	150.00 (50.00)	25.00 [40.60]
No. of customers per day	3.13 (1.24)	3.14 (1.16)	-0.01 [0.14]
Monthly income (Rs.)	8576.63 (5617.70)	9701.32 (19434.31)	-1124.69 [1271.93]
Uses condom (%)	0.99 (0.10)	1.00 (0.00)	-0.01 [0.01]
Member of the NGO (%)	0.81 (0.39)	0.77 (0.42)	0.04 [0.04]
Has bank a/c (%)	0.43 (0.50)	0.45 (0.50)	-0.02 [0.06]

Notes: The sample contains sex workers who are surveyed at baseline (N=467). Standard deviations are in parentheses. Standard errors, clustered at the brothel level, are in square brackets. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. Default group for religion is Hindu and for caste is High Caste. Education refers to years of completed education. *Adhiya* contract implies that the sex worker is in a sharing contract where she splits her monthly earnings 50:50 with the landlady of the brothel. Self-employed contract, the omitted group here, implies that the sex worker pays the landlady a fixed rent from her monthly earnings and keeps the rest for herself. Flying contract implies that the sex worker does not reside in the brothels but comes to work there from outside the ‘red-light’ area. Bank account refers to having account with USHA, which is associated with the NGO.

Table 2: Summary Statistics – Means of Key Dependent Variables at Baseline

	Control	Treatment	Difference
<i>Panel A: Self-image</i>			
Shame (0/1)	0.66 (0.48)	0.61 (0.49)	0.05 [0.05]
Self-worth (0/1)	0.15 (0.36)	0.20 (0.40)	-0.04 [0.04]
Ability to face challenges raw score (0-1)	0.43 (0.25)	0.41 (0.24)	0.02 [0.03]
Ability to face challenges z-score	-0.02 (1.00)	-0.11 (0.99)	0.09 [0.11]
Comfort in public raw score (0-1)	0.41 (0.27)	0.38 (0.28)	0.03 [0.02]
Comfort in public z-score	0.01 (0.98)	-0.11 (1.04)	0.11 [0.08]
Happiness (0/1)	0.48 (0.50)	0.51 (0.50)	-0.02 [0.05]
Aspiration (0/1)	0.77 (0.42)	0.75 (0.43)	0.02 [0.05]
Decision-making raw score (0-1)	0.77 (0.15)	0.78 (0.15)	-0.01 [0.01]
Decision-making z-score	-0.11 (0.98)	-0.06 (1.01)	-0.05 [0.09]
<i>Panel B: Health</i>			
Visited doctor in health clinic (0/1)	0.76 (0.43)	0.77 (0.42)	-0.01 [0.05]

Notes: The sample contains sex workers who are surveyed at baseline (N=467). Standard deviations are in parentheses. Standard errors, clustered at the brothel level, are in square brackets. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent. See text in Sections 5.2.1 and 5.2.2 for details on the various dependent variables.

Table 3: Program Impact on Proxies of Self-Image and Other Psychological Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Self-image				Psychological Variables				
	Shame	Self-worth	Ability to face challenge	Comfort in public	Self-image summary index	Happiness	Aspiration	Decision-making	Psych. Summary Index
Treatment	-0.40*** (0.04) [0.00]	0.68*** (0.04) [0.00]	0.43*** (0.09) [0.00]	0.30*** (0.09) [0.00]	0.28*** (0.02) [0.00]	0.11** (0.05) [0.02]	0.03 (0.04) [0.47]	0.05 (0.10) [0.61]	0.02 (0.02) [0.19]
Area fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Raw control mean in endline	0.57	0.23	-0.16	-0.13	-0.16	0.48	0.77	0.06	0.20
Adj. R-sq	0.17	0.47	0.05	0.04	0.35	0.01	0.01	0.00	0.00
N	424	429	429	429	409	430	426	429	414

Notes: Treatment indicates if individual was invited to training workshop. Standard errors, in parentheses, are clustered at the brothel level. Randomization inference p-values, clustered by brothel, are in square brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. Columns 1-4 report differences between treatment and control for the various proxies of self-image, while columns 6-8 report differences between treatment and control for the other psychological variables. See text in Sections 5.2.1 and 5.2.2 for details on the various dependent variables. Details on the self-image (Column 5) and psychological (Column 9) summary indices are presented in Section 6.1. Baseline level of the relevant dependent variable is included as control in all these regressions.

Table 4: Program Impact on Saving Product Choices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dummy=1 if Current Account chosen							
Sessions:	1	2	3	4	5	6	7	8
Treatment	0.09 (0.07) [0.07]	0.09 (0.06) [0.04]	0.06 (0.06) [0.21]	-0.25*** (0.05) [0.00]	-0.51*** (0.06) [0.00]	-0.50*** (0.05) [0.00]	-0.48*** (0.06) [0.00]	-0.36*** (0.06) [0.00]
Area fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Raw control mean in endline	0.55	0.58	0.49	0.48	0.61	0.65	0.69	0.75
Adj. R-sq	0.01	0.02	0.08	0.20	0.35	0.31	0.31	0.14
N	448	432	434	427	412	394	396	361

Notes: Treatment indicates if individual was invited to training workshop. Standard errors, in parentheses, are clustered at the brothel level. Randomization inference p-values, clustered by brothel, are in square brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. Columns report relative differences in savings product choice made between treatment and control over the course of the training program. The dependent variable is a dummy which equals 1 if the participant chooses payment as an injection to the current account and 0 if she chooses it as an injection into a fixed deposit account. Baseline level of the dependent variable is not included as control in these regressions as this information was only collected during the intervention.

Table 5: Program Impact on Health-Seeking Behaviour

	(1)	(2)	(3)
	Visited doctor in health clinic		
	Self-reported	Non self-reported	
	Up to 3 months after	Up to 3 months after	Up to 21 months after
Treatment	0.10** (0.04) [0.01]	0.13*** (0.02) [0.00]	0.15*** (0.01) [0.00]
Area fixed effects	Yes	Yes	Yes
Raw control mean in endline	0.79	0.70	0.70
Adj. R-sq	0.01	0.19	0.01
N	416	1520	12160

Notes: In Column 1, treatment indicates if individual was invited to training workshop. In Columns 2 and 3, treatment indicates if some residents of the brothel were invited to training workshop. Standard errors, in parentheses, are clustered at the brothel level. Randomization inference p-values, clustered by brothel, are in square brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. In Column 1, the dependent variable is a dummy that equals 1 if the participant self-reports having visited a doctor in the local Durbar-run health clinic at least once in the previous month, and zero otherwise. In Columns 2 and 3, the dependent variable is a dummy that equals 1 if the participant visited the clinic as per clinic records at least once in every 3 month period, and zero otherwise. Column 1 uses our study sample. In Columns 2 and 3, the sample contains the universe of sex workers in our three study red-light districts who were aged 35 years or less at the time of our baseline in Feb-Apr'12, and registered at the clinic by end 2011. This data was provided to us in anonymized format for confidentiality reasons (since it included sensitive STD test information), and hence we could not match it to the specific participants in our study sample. We know which brothel each sex worker lived in, hence we present results for all sex workers living in our treatment brothels relative to control brothels during this time. Intervention took place Oct-Dec'12. Columns 1 and 2 reports relative differences between treatment and control during period of the endline survey up to 3 months after program ended (Jan-Mar'13). Column 3 reports the same for up to 21 months after program ended (Jan'13-Sep'14). Baseline level of the dependent variable is included as control in these regressions.

Table 6: Program Impact on Account Closure and Final Balance

	(1)	(2)	(3)	(4)
	Dummy variable=1 if a/c closed:			Final Balance
	Immediately after program	Up to 12 months after program	Up to 15 months after program	15 months after program
Treatment	-0.53*** (0.05) [0.00]	-0.40*** (0.06) [0.00]	-0.52*** (0.06) [0.00]	404.81*** (122.49) [0.03]
Area fixed effects	Yes	Yes	Yes	Yes
Raw control mean in endline	0.57	0.71	0.89	95.56
Adj. R-sq	0.36	0.14	0.23	0.01
N	349	349	349	349

Notes: This table uses data from Kalighat and Chetla. Treatment indicates if individual was invited to training workshop. Standard errors, in parentheses, are clustered at the brothel level. Randomization inference p-values, clustered by brothel, are in square brackets. * significant at 10%, ** significant at 5%, *** significant at 1%. Columns report relative differences between treatment and control at various points in time after the conclusion of the training program. The dependent variable in Columns 1, 2 and 3 are dummy variables that equal 1 if an account was closed immediately after the program ended, up to 12 and upto 15 months after the program ended, respectively, and zero otherwise. In Column 4, the dependent variable is the final balance in the account 15 months after the program, measured in current rupees. Baseline level of the dependent variable is not included as control in these regressions as this information was only collected during the intervention and for 15 months after.

Figure 1: Causal Pathways

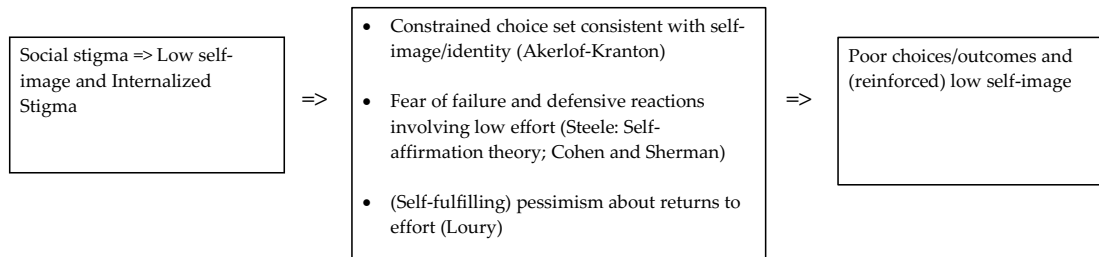


Figure 2: Percentage of sex workers choosing to put money into current account (over a fixed deposit), by session

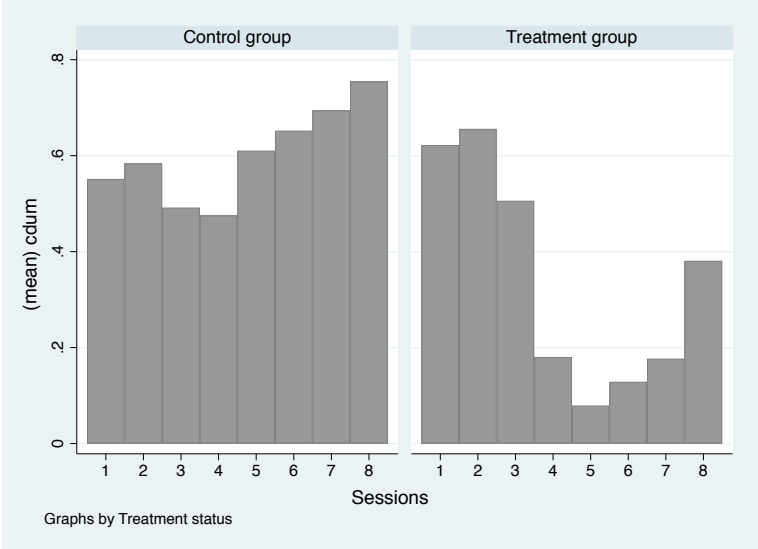
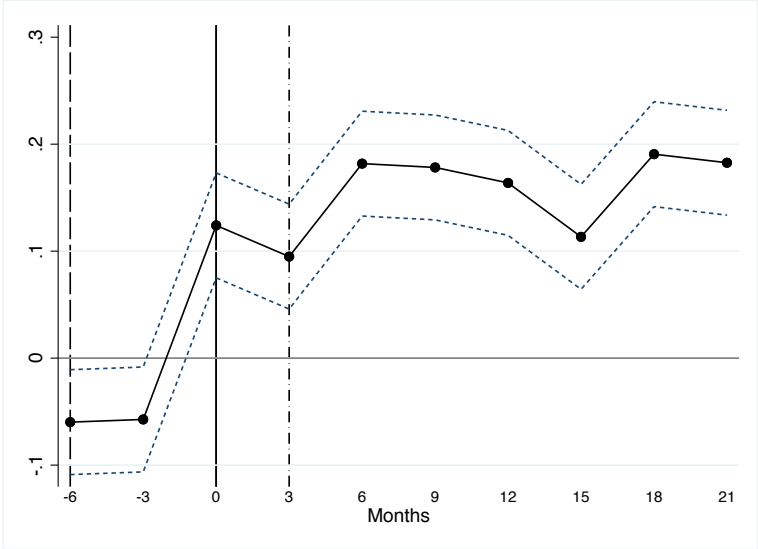


Figure 3: Coefficients of Interactions of Treat*Session Dummy in Savings Product Choice Regression



The long-dashed vertical line indicates baseline survey. The solid vertical line indicates intervention. The dash-dot vertical line indicates endline survey. The horizontal axis depicts duration in months, from 6 months prior to 21 months after program.