

SPOUSAL COOPERATION AND MARRIAGE NORMS

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ABSTRACT

This thesis presents three studies within the fields of behavioural and experimental economics. Chapter 1 introduces the thesis and provides an overview of the research themes and methods and reports the main research findings. Chapter 2 reports a lab-in-the-field experiment that investigates the systematic heterogeneity in cooperative decision-making across spouses in arranged and love matched marriages in Pakistan. We find that spouses in love matched marriages are significantly more likely to be unconditionally cooperative. Chapter 3 reports the second round of the field experiments and examines (1) whether the finding from Chapter 2 replicates, (2) whether it generalizes to couples living in more remote villages and, (3) whether the observed difference in unconditional cooperativeness between spouses in love versus arranged marriages can be explained by the selection of unconditionally cooperative people into love marriages. We find that in villages close to the city love matched spouses are significantly more likely to be unconditionally cooperative. However, as distance from the city increases, the love matched effect declines. We conjecture that this is owing to less tolerance for love marriages in more remote areas. Chapter 4 investigates the content and strength of the social norms and personal normative beliefs relating to marriage arrangements. It also examines the second-order social norms and personal normative beliefs on marriage. We investigate the social norms by implementing incentivised coordination games and the personal normative beliefs using unincentivized surveys. We find that there is indeed a social norm against love matched marriages and that this norm is stronger in more remote villages. However, the subjects' personal normative beliefs often diverged from the social norm. Our results also confirm that men are extended greater autonomy to deviate from the arranged marriage norm compared to women. We find no substantive evidence supporting the existence of a second-order norm. Chapter 6 summarises the findings and concludes.

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CHAPTER 1

INTRODUCTION

First comes marriage — then comes love. For many Asian, Middle Eastern and African cultures marriage is not just a union of two individuals, but more importantly, of two families. Which is why family members of young men and women take it upon themselves to find suitable partners for their children to marry. Unlike marriages in the Western part of the world, love is not a prerequisite for the couple to enter a marital contract. A love marriage, in which the couple decides to be joined into matrimony deviates from the social norm as it eliminates the traditional role of family members as matchmakers.

In the last decade, the social fabric of society has been changing with traditional norms being more openly challenged by the younger generations (Javed, 2020). Recently, there has been an unprecedented expansion of the internet and affordable technology that has dramatically improved human connectivity and access to modern media. Geographical distances are no longer binding on human interactions and are therefore less marginalizing. Perhaps, it is not surprising that love marriages are on a rise. According to different news articles, love marriages, measured by the incidence of registered court marriages have increased across Pakistan (Dawn, 2011; Munir and Akhter, 2017; The Express Tribune, 2018). However, social norms are sticky and resistant to change. In more traditional segments of society there is not just a social stigma, but also a social penalty attached to entering a love marriage (Watson, 2004). The penalty can vary from occasional maltreatment by in-laws or community members, to estrangement by families and sometimes even honour killings (Ijaz, 2017).

Marriage is the one of the most significant man-made institutions binding two individuals into a single decision-making unit. The quality of a marriage is a crucial element in determining household outcomes. In recent years, the scope of experimental research on decision-making has expanded from individuals to couples and household units. A large number of experimental and nonexperimental studies examine efficiency in household decisions (Munro, 2018). For instance, studies have looked at asymmetric information as a source of inefficiency in household decisions (Ashraf, 2009; Iversen et al., 2011; Mani, 2011; Kebede et al., 2014; Hoel, 2015). Hoel (2015) carries out a series of dictator games between spouses in Kenya and links opportunistic behaviour in the lab with greater knowledge about household finances suggesting that complete information at home is not attributed to trust but it is an ‘endogenous’ response to noncooperative behaviour between spouses. Barr et al. (2019) are one of the few studies that also examine cooperation between spouses belonging to two distinct marital constructs — polygynous versus monogamous couples and they find spouses in polygynous households are less cooperative with one another compared to those in monogamous households.

Most studies on household decision-making make common assumptions about the behaviour of spouses based on Western societies, from where most economic theories originate (Batabyal and Beladi, 2002). Literature remains largely silent on the efficacy of decision-making and cooperation between couples in arranged marriages. A study on relationship harmony between arranged and self-selected marriages in China finds more closeness and less disharmony between love matched couples (Pimentel, 2000).

Arranged marriages in developing countries are often associated with early marriage for girls, which has adverse consequences for women’s physical, emotional and mental well-being (Jensen and Thornton, 2003). Weak bargaining power of women in arranged marriages translates into poor household outcomes such as early childbirth, low educational attainment of children and low female labour force participation rates.

Chapters 2 and 3 of this thesis expand on the experimental literature on household decision-making by examining the cooperative types across married couples. No other study has

investigated behavioural types in the context of intra-household cooperation before. The two chapters focus on unconditional cooperation between married couples belonging to two very different marital constructs; namely arranged versus love marriages. Given that these two marriage types are based on significantly different emotional foundations, it is not unreasonable to expect these two types of households to differ in terms of cooperative decision-making.

Specifically, in Chapter 2, we test the hypothesis that unconditional cooperation is more prevalent between spouses within love matched marriages. We engaged married couples in a specially designed one-shot two-player sequential public goods game, in which we applied the strategy method to the second mover. Then, we applied hierarchical clustering analysis to the strategy data in order to categorize spouses into cooperative types.

We find that spouses in love matched marriages are significantly more likely to be unconditionally cooperative.

In Chapter 2, we studied cooperation between husbands and wives living in villages close to the city of Faisalabad. For Chapter 3, we conduct another series of experiments to investigate (1) whether the Chapter 2 finding replicates, (2) whether it generalizes to couples living in more remote villages and (3) whether the observed difference in unconditional cooperativeness between spouses in love versus arranged marriages can be explained by the selection of unconditionally cooperative people into love marriages. As in the previous chapter, we find that in villages close to the city love matched spouses are significantly more likely to be unconditionally cooperative. However, as distance from the city increases, the love matched effect declines. We conjecture that this is owing to less tolerance for love marriages in remote villages where the communities are likely to be more conservative. There is evidence that non-traditional relationships are viewed negatively by the society. Moreover, perceived discrimination against socially devalued relationships can negatively affect the quality of relationship between couples — sometimes even leading to divorce (Bratter and King, 2008; Lehmler and Agnew, 2006; Otis et. al., 2006). The behaviour of husbands and wives in a corresponding series of *inter*-household games

establishes that greater unconditional cooperation between spouses in love marriages close to the city cannot be attributed to the selection of unconditionally cooperative people into love marriages.

We next investigate our conjecture that there is less tolerance for love matched couples in more remote communities. In the fourth chapter of this thesis we examine the content and strength of social norms and personal normative beliefs relating to marriage arrangement by conducting norm elicitation experiments and individual surveys. We also explore the second-order social norms and personal normative beliefs about how people should behave towards those who violate the arranged marriage norm.

Our experimental design is based on recently developed behavioural and experimental techniques that we have especially adapted to measure social norms on marriage, and second-order norms guiding behaviour towards individuals who violate the marriage norm. We implement incentivised coordination games (Krupka and Weber, 2013) to identify the presence of the first and second-order norms on marriage,

We find that there is indeed a social norm against love matched marriages. Given that the vast majority of marriages in Pakistan are arranged (Zaidi and Shuraydi, 2002), this result was expected. We also find that this norm is stronger in more remote villages — confirming our conjecture motivating this study. However, the subjects' personal normative beliefs often diverged from the social norm, suggesting that individuals are more broadminded privately. Our results also confirm that deviations from the arranged marriage norm are more tolerated from men than women. Moreover, women appear to be cognizant of this and demonstrate greater support for the arranged marriage norm in their personal beliefs.

Turning to the second-order norms and personal normative beliefs guiding the enforcement of the marriage norm, we find: no substantive evidence supporting the existence of a second-order social norm; that, individually, the majority think that love matched couples should be accepted and supported by their families and neighbours; that accepting and supporting love matched couples meets with marginally, but not significantly less approval

in more remote villages; and that women rate family members and neighbours as equally legitimate enforcers of the arranged marriage norm, while men only consider family members as legitimate enforcers.

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CHAPTER 2

MARITAL ARRANGEMENT AND SPOUSAL COOPERATION*

ABSTRACT

In this chapter, we investigate systematic heterogeneity in cooperative decision-making across spouses in arranged and love matched marriages in Pakistan, where the former is the traditional practice and the latter is associated with modernization. Specifically, we test the hypothesis that unconditional cooperation is more prevalent between spouses within love matched marriages. We engaged married couples in a variant of a one-shot, two-person, sequential public goods game, in which we applied the strategy method to the second mover. Then, we applied hierarchical clustering analysis to the strategy data in order to categorize spouses into cooperative types. We find that spouses in love matched marriages are significantly more likely to be unconditionally cooperative. About 55 percent of the spouses in love matched marriages were unconditionally cooperative, while fewer than 20 percent were token-givers. In contrast, under 22 percent of spouses in arranged marriages were unconditionally cooperative and over 33 percent were token-givers. The investigation also reveals a type of cooperation strategy that has not been observed when similar public goods games have been played by stranger pairs — 23 percent of the second-mover spouses chose U-shaped strategies.

* This chapter is based on joint work with Abigail Barr and Daniele Nosenzo.

1. Motivation

Are spouses in self-selected or love matched marriages more cooperative, one with another, than those in arranged marriages? Do spouses in love matched marriages differ from those in arranged marriages with respect to how they condition their own cooperation on the cooperation of their spouses? In this study, we investigate systematic heterogeneity in decision-making across married couples by looking at the difference in the cooperation between spouses across different types of marriage arrangements.

In most societies marriage is an event of great significance — it often represents not only the union of two individuals but also of two families. In the past, for this reason, the nuptial decisions were often made by individuals not party to the marriage itself. With the advent of industrialization and modernization, western societies shifted to a nuclear and less extended family structure. This also gave way for mate selection by choice (Goode, 1963). However, the institution of marriage, although universal, has evolved differently across societies. In many developing countries, kinship, caste, cultural norms and religious beliefs still govern the institution of marriage. This implies that individuals have a limited choice in selecting their life partner, and in many cases this decision is still made for them by others. With so much variation in the institution of marriage, household decisions cannot be fully understood without accounting for the nature of marriage shared by the decision-makers. The two commonly recognised forms of a marital union are arranged marriages — often considered to be a traditional practice, and love marriages — associated with modernization.

Our study takes place in the district of Faisalabad, which lies in the heart of Punjab, Pakistan. To our knowledge, ours is the first study to examine differences in cooperation between spouses across different marital arrangements — self-selected or arranged, not just in Pakistan, but anywhere. We chose Faisalabad district because we expected to find a good mix of the two marital arrangements in the region. In much of South Asia, Asia, Middle East and large parts of Africa, the practice of arranged marriages is predominant. The theory of modernization predicts that as societies advance, the range of eligible

partners widens and with increased social interactions the practice of arranged marriages declines (Givens and Hirschman, 1994). In Pakistan, even though men and women were granted the right to court marriage in the Family Laws Ordinance of 1961, it was not until 2003, when a high-profile ruling of a case by the Supreme Court of Pakistan reserved its verdict of permitting women to marry without a legal guardian's permission, that the rights of women to enter a marriage of their choosing using the courts were established. With love matched marriages becoming more commonplace, it is important to understand if this change is going to improve cooperation in household decision-making or is there cause for concern here? Should societies such as Pakistan be "putting on the brakes", encouraging adherence to the tradition of marriage arrangement, or should they be embracing the change?

In this study, we conduct a variant of a one-shot, two-person sequential public goods game. A strategic form public goods game has the advantage that it can provide the perfect instrument to classify individual behaviour ranging from 'selfish' to 'fully cooperative'. We assume that marriages founded on love have the advantage of a stronger emotional bond between spouses and therefore, hypothesize that couples in love matched marriages engage in relatively more cooperative decision-making compared to those in arranged marriages. In the public goods literature, participants who contribute their entire endowment to the common pool consistently irrespective of others' contribution are called unconditional cooperators. Our second hypothesis is that couples in love matched marriages are more likely to be unconditionally cooperative and less likely to condition their own contributions on the amounts contributed by their spouses.

We find significant differences in the decisions made by spouses within different marriage arrangements. Participants in love matched marriages cooperate significantly more, one with another, compared to spouses in arranged marriages. In our study more than half of the love matched spouses behave as unconditional cooperators and about 19 percent are token-givers, i.e., participants whose strategy is to contribute zero or the minimum possible amount. On the other hand, a much smaller proportion of arranged matches are unconditionally cooperative, and almost 33 percent are token-givers.

The rest of the paper is organised in the following way. Section 2 provides a background of the study sample and Section 3 presents the theoretical framework and literature on household models and decisions. Section 4 describes the experimental design, the sampling framework and experimental procedures. It also explains the hierarchical clustering technique applied to study the heterogeneity in decision-making. The descriptive statistics and main experimental results are discussed in Section 5 and we conclude in Section 6.

2. Context

To motivate the focus of our study it is important to provide an ethnographic background about the region where it is set. Pakistan, a predominately Muslim state is a federation of five provinces where each province is distinct from the other. This study is set in the region of Punjab, which is the largest province in terms of population and the biggest contributor to the country's GDP. Punjab, with its five rivers and fertile plains has a largely agricultural economy. It also has a large immigrant population, from the massive internal migration in the colonial era with the opening up of canal colonies, to the millions of Muslims arriving from India at the time of the partition in 1947.

However, social organisation, especially in rural Punjab still remains largely determined by the kinship system – locally known as *biraderi*, which literally means brotherhood (Alavi, 1972; Eglar 1960). According to Wakil (1970), *biraderi* is an endogamous group with unidentified and hazy boundaries as the size of this group depends on how far one can recognize and remember their relatives across geographical distances and time. However, it is important to note that there are layers to kinship, comprising of familial ties based on blood or marriage, and a wide social network of shared ancestors. In much of Punjab and rural Pakistan, marriages within kin or *biraderi* are preferred to those outside the familial network. Given that marriages often serve as an important mechanism of maintaining and strengthening kinship ties, the decisions and negotiations on matchmaking are mainly carried out by the elders from both families (Fricke et al., 1986).

According to Latif (2017), marriage within kinship is not only about maintaining the bloodline but also creating social capital and cultivating reciprocity. Where women marrying their cousins, or into the same *biraderi* enjoy the same status as other women in the family – compared to women from outside the kinship network. It also means that in case of any problems within the marriage, the wider kinship group can be relied upon to intervene and maintain peace (Latif, 2017). Land is often considered the most important source of wealth in agrarian economies, so another strong incentive to marry within family and kinship is to maintain control over land that may otherwise be passed on outside the kinship network through inheritance laws (Fricke et al., 1986; Lyon, 2013). Consanguineous marriages are very common in Pakistan, with almost half (49 percent) of all marriages taking place between first and second cousins (National Institute of Population Studies (Pakistan), 2012-13).¹ Makino (2019) finds a negative effect of cousin marriages on women's decision-making index in rural Punjab, whereas Dyson and Moore (1983) find the opposite result in some parts of India. In another study on Pakistan and Bangladesh, the authors' find mixed evidence of the impact of consanguinity on marital quality and no robust effects on children's health outcomes – however, they do find some evidence of increased domestic violence in these marriages (Mobarak et al., 2019).

The exchange of gifts at the time of marriage is a common custom observed in South Asian countries. Dowry comprises of transfers of gifts or wealth from the bride's family at the time of marriage. A study on rural Punjab finds a positive association between tangible, non-transferrable dowry items such as electronics and furniture and women's bargaining status in the household compared to dowry items such as cash or jewellery that can be controlled by the groom and his family (Makino, 2019). Transfers from the groom to the bride's family – commonly known as bride price and locally called *bari*, may have varying effects on women's welfare. For instance, bride price may have large positive effects on investments in women's education in countries such as Indonesia (Ashraf et al., 2020), on

¹ Exchange marriages or *Watta Satta* (meaning give-take) are found more commonly in rural areas than cities, where a male-female pair, often a brother-sister pair from two households are married to each other (Jacoby and Mansuri, 2010). However, these marriages are different from 'conventional' arranged marriages as they entail mutual threat of reciprocity – where marital discord between one couple can directly affect the other couple's welfare. Therefore, we do not discuss exchange marriages in more detail beyond this footnote.

the other hand, it may increase female child marriages in the case of income shocks (Corno et al., 2016), and is also found to be strongly correlated with increased domestic violence (Kaye et al., 2005).

Early marriages are prevalent, and easy to practice in rural areas of Pakistan as young men are not required to be financially independent nor sufficiently educated to be eligible for marriage as the expectation is for the groom to bring the bride home to his parent's house (Korson, 1965). While multigeneration households are common in Pakistan, and a function of mutual dependence of parents and children on each other given limited resources – the effect of such households on the division of resources and decision-making, marital relationships, and household outcomes will be an interesting topic for future research on Pakistan.

3. Theoretical background and literature

Since Becker's (1973) seminal work on the theory of marriage, a vast body of theoretical literature on households has emerged and considerable developments have been made in understanding the decision to marry, decisions within the household, and their outcomes. However, the work has mainly been focused on modern, western-style marriages (Batabyal, 2001).

Early theoretical models assumed that households were unitary, i.e., that they acted as single production or consumption units. The unitary models explained household decisions regarding the quantities of goods consumed and the allocation of those goods amongst household members. Pareto efficiency was achieved due to centralized decision-making (Samuelson, 1956) or pure altruism and identical preferences among household members or a benevolent dictator (Alderman et al., 1995; Becker, 1991). However, both qualitative and quantitative research have challenged the unitary model and draw attention to the importance of bargaining and information asymmetries within households and their impact

on resource allocation and efficiency (Chiappori, 1992; Haddad, Hoddinott and Pena, 1992; Munro, 2018).

More recent theoretical work on household decision-making falls under the collective models, which take into account the individuality of household members (Alderman et al., 1993). There are two broad types of collective models: cooperative bargaining models and non-cooperative bargaining models. The cooperative bargaining models use a game theoretic model of the household where individuals' bargaining power is a function of outside options — the welfare an individual can receive if not a member of the household. The cooperative models assume that Pareto efficiency can be achieved in household decisions and predict that bargaining between agents can lead to binding commitments made under the assumptions of full information and communication (Ashraf, 2009; Doss, 2013). Non-cooperative models do not assume that households reach Pareto efficient allocations in production or consumption and impose few *a priori* restrictions on the nature of equilibrium outcomes (Doss, 2013; Lundberd and Pollak, 1994).

Despite the advancement in these theoretical models, few studies have looked at the nature of marital arrangement. Batabyal and Beladi (2002) construct a theoretical framework to study the desirability of arranged versus love matched marriages by creating a simple decision-making model in a dynamic and stochastic setting and conclude that the choice between arranged and love marriages depends on the expected time it takes the agent to find a spouse herself in the love option compared to the time it takes the agent's well-wishers to find a spouse. According to Rosenzweig and Stark (1989) marriages of daughters to distant relatives or kinship-related households results in an implicit inter-household contractual arrangement which protects households against income shocks and facilitates consumption smoothing in a risky environment. Taking this argument forward, Rubio (2014) constructs and empirically tests a model of marital choices which assumes that arranged marriages provide a form of informal insurance for parents and children, as parents can find a match whose income shocks can assuage their child's income shocks, whereas other forms of marriage do not offer this kind of informal insurance. The study finds that with increased returns to schooling and greater stability in agricultural income,

arranged marriages decline; and divorce rates among couples with arranged marriages rise as their insurance gains vanish.

Recent literature on feminist geography informs that the negative portrayal of the practice of arranged marriages is owing to the ethnocentric stance taken by feminists and western societies of ‘patriarchal societies’ conflating arranged marriages with the practice of forced marriage (Pande, 2015). This may explain partly why theoretical models on households are not inclusive of this marital arrangement. In her research, Pande (2015, 2016) describes how the practice of arranged marriage has evolved such that women in South Asia can navigate around strict cultural expectations to negotiate with their family members the choice of match they prefer. Given how arranged marriages are evolving, it is important to develop a definition of an arranged match which captures the different degrees of involvement by ‘well-wishers’ in setting up the match. We do this in our study by designing a unique survey instrument that allows us to determine the nature of match, Section 3.1.2 elaborates on this instrument further.

In the empirical literature, in the presence of non-cooperative behaviour, the assumption of Pareto efficient outcomes can be challenged. Recent studies have looked at married couples to understand behaviour in economically relevant tasks (Ashraf, 2009; Cochard et al., 2016; Munro et al., 2014). Kebede et al. (2013) collect data on 1200 married couples in Ethiopia using treatments that varied in initial endowments of spouses, the power to allocate pooled household resources and information of initial endowment of the other spouse. They find that efficiency is rejected in all treatments. Iversen et al. (2011) provide quantitative tests of household efficiency using incentivised lab-in-the-field experiments with couples in rural Uganda. They implement a variant of a public goods game and find that efficiency in household decisions improves when spouses have similar attributes such as education and occupation. This makes a case for assortative matching in achieving household efficiency. Another study on polygynous and monogamous couples in Nigeria implements a series of two-person public goods games to compare willingness to cooperate to maximise household gains and finds that polygynous spouses and co-wives are less cooperative with each other, than monogamous spouses (Barr et al., 2019).

Given that the formulation of arranged and love matched marriages are quite distinct from one another, we investigate if this can be a source of systematic heterogeneity in the decisions made by spouses in the two marriage types. Methodologically, this paper extends the existing literature on household studies carried out by Barr et al. (2019), Iversen et al. (2006, 2011), Kebede et al. (2013) which investigate intra-household decision-making and cooperation by implementing the strategy-method approach developed by Fallucchi et al. (2017), Fischbacher et al. (2001), Gächter et al. (2012) and Rustagi et al. (2010) and in order to examine heterogeneity in decisions and cooperative types within the context of inter-spousal cooperation. Furthermore, we extend the dialogue on households by not only studying cooperation within married couples but understanding how the emotional foundation of their marriage is related to their cooperative behaviour. No other study, to our knowledge, has looked at cooperation between spouses using a framework such as ours.

4. Experimental Design and Methods

In this section we present the experimental design and the instruments that we use to answer the following research questions:

- i. Are spouses in self-selected or love matched marriages more cooperative, one with another, than those in arranged marriages?
- ii. Do spouses in love matched marriages differ from those in arranged marriages with respect to how they condition their own cooperation on the cooperation of their spouses?

We also discuss the methods we use to analyse the data, giving greatest attention to the hierarchical clustering technique that we implement to categorise participants into types depending on their decisions to cooperate with their spouses.

4.1.1 Experiment Design

This study implements a specially designed one-shot two-player sequential public goods game. Husbands and wives are paired together in the experiment and are randomly assigned to the roles of Player 1 and Player 2. Player 1 receives an initial endowment of Pakistani Rupees (Rs.) 400, approximately 4 United States Dollars, in the form of four 100 Rupee notes, and this is openly communicated to both participants.² Player 2 receives either Rs. 100, 200, 300 or 400, again in the form of 100 Rupee notes and this range of amounts is also openly communicated to both participants. The probability of a Player 2 receiving Rs. 400 was 0.92 and the probability of him or her receiving each of the lesser amounts was approximately 0.025. However, these probabilities are not communicated to the participants and Player 2's actual endowment is never revealed to Player 1 or any other participant in the experiment. This asymmetry in information offers the Player 2s credible deniability, i.e., it ensures that they can, if they wish, keep their contribution decisions private. In the experiment, each player decides how much to contribute to the household pool between zero and their total initial endowment, in multiples of Rs. 100. We use real Pakistani currency notes for the experiments, to allow participants to directly pocket the money they do not wish to contribute to the household pool. The total amount that goes into the pool is multiplied by 1.5 and then split equally between partners.

Thus, the pecuniary payoff function for participant i can be represented as follows:

$$\pi_i = E_i - d_i + 0.75 \sum_{j=1}^2 d_j \quad (1)$$

where E_i is the endowment received by player i and d_i is contribution by player i to the household pool. The marginal payoff from the common pool is 0.75 unit for every unit contributed. The subgame perfect equilibrium of the game is to maximise the sum of payoffs to the pair by contributing their entire endowments.

² In August 2016, the exchange rate for USD 1 = Rs. 103.4. The combined endowment received by the couple, i.e., Rs. 800 is about 20 percent of an average household's weekly income.

Player 1s move first, and decide how much to contribute to the household pool and how much to keep for themselves as in a standard public goods game. At the end of their interview, Player 1s are asked to state their beliefs about their spouse's contribution assuming their spouse receives a full endowment of Rs. 400.

To elicit Player 2s contribution preferences, we implemented a variant of the strategy method (Fischbacher et al., 2001; Gächter et al., 2012; Selten, 1967). Once Player 2s' endowment is revealed to them, they are asked to make a decision regarding their contribution to the common pool for each possible contribution by their spouse. Player 2 is asked "Suppose that Player 1 decided to put all Rs. 400 of his money in the common pool, would you put any of your money in? If you would, how much?" Then, the same question is repeated but with the spouse's contribution at Rs. 300, then Rs. 200, and so on until the spouse's contribution is stated to be zero (five questions in total). Player 2s are then asked to state their belief about their spouse's actual contribution. Finally, their spouse's actual contribution is disclosed and Player 2s are required to hand over the pledged (according to their strategy) amount corresponding that contribution. This concludes the interview for Player 2s. Eliciting the complete strategy of a player allows us to identify different types of players.

4.1.2 Survey Instruments

In order to ascertain the marital arrangement, we designed a survey instrument which required respondents to select an option that described how their marriage came about.

The following options were read out to the respondent:

- 1) I really liked him/her and I had to force my parents to accept my decision*
- 2) I really liked him/her and my parents gave in without a fight*
- 3) Partly arranged, partly our own liking for each other*
- 4) My parents/elders made the decision, and I was forced to accept it*

- 5) *Completely arranged by my parents/elders in the family and I had no issues with it*
6) *Other (specify)* _____

The first three options in the survey instrument are meant to capture the extent to which the partnership was brought about by the couple's own liking for each other and ascertain whether the individuals' played any active role in the decision that brought about their marriage. The fourth and fifth options suggest of situations where the participants were either forced or played a dormant role in their marital decision. Option 6 was left open-ended to allow for situations not covered by the other options. However, in the field, it was never used, indicating that options 1 to 5 were sufficient, from the perspective of the subjects, with regard to describing the process by which their marriage match occurred.

If either spouse selected any of the first three options, the couple was coded as a love match. Given that cultural norms are prohibitive of love matched marriages, it was not surprising to observe spouses giving different responses from one another regarding how their marriage came about. It could be that some respondents were hesitant to admit to a love matched marriage to the enumerator and selected the arranged match option.³ Keeping this possibility in mind, and with the intention to maximise our sample of love matched couples, we chose to allow for singly acknowledged couples — where one spouse stated a self-selected match and the other stated an arranged match to be included in our sample of love match marriage. This gave us a total of 31 love matched couples, of which 9 couples were mutually acknowledged love matched marriages, and 22 were singly acknowledged, see Table A1 in the Appendix. However, our definition also allows for couples who genuinely do not agree with each other on their martial arrangement to also be included in our sample love matched couples – diluting our sample of true love matched marriages. Moreover, there may still be some cases of love matched couples in which both spouses do not signal a love match. This under-reporting implies that our results underestimate the effect of love matches, and are therefore, conservative. We also test for differences across husbands and

³ On the flip side, there could be instances where subjects chose to select the love match options (first three) in order to appear more progressive or liberal. However, this would still imply that our sample of love matched couples is diluted and we need larger effect sizes to obtain significant results.

wives in reporting their marriage type and do not find them to be significantly different from one another.

To investigate relationship closeness, we implement the ‘inclusion of other in the self (IOS) scale’ in which the respondents select a picture that best describes their relationship from Venn-like diagrams presenting different degrees of closeness (Aron et al., 1992). This scale ranges from 1 to 7 with a higher number representing more closeness. However, based on our experience on the field, there appeared to be a social desirability bias when answering this question. Participants were inclined to select a higher value on the scale, even on the occasions when they verbally expressed dissatisfaction in their relationship. Therefore, we do not include the relationship closeness variable in our analyses.

We measured the spouses’ social preferences towards members of wider society by including three questions from the ‘Global Preference Survey’ by Falk et al., (2018). The first question elicits positive reciprocity by looking at the propensity to act in a positively reciprocal manner by providing a self-assessment about how willing the respondent is to return a favour on an 11–point Likert scale. The second question captures negative reciprocity by inquiring about willingness to punish someone for unfair behaviour. The last question measures altruism by asking people about their willingness to give to good causes without expecting anything in return. We use these measures to establish whether there are any systematic differences in social preferences across individuals who choose to enter an arranged or love marriage.

4.2 Study sample and experimental procedures

We conducted lab-in-the-field experiments with 118 married couples in the district of Faisalabad, Punjab. Faisalabad is a middle-income district, situated in the centre of the Punjab province.⁴ It is considered to be an industrial district; however, rural areas have

⁴ Total 120 couples participated in the experiments. However, we dropped 2 couples because of a sampling error. See footnote 6 for details.

remained agrarian. The mean monthly income for a household in Faisalabad is approximately Rs. 16,000 (MICS Punjab, 2014) which is about Rs, 533 as the mean daily income.⁵

A total of nine experimental sessions were conducted in six villages in the Faisalabad district. Each session lasted from 2.5 to 3 hours. In three larger villages, where there was a naturally occurring division in the village settlements, we conducted two sessions in different locations which were a short drive away from each other. These sessions were conducted back-to-back to minimise information spillovers and the morning and afternoon samples were selected from different settlements within the village.⁶ The sessions were conducted in venues such as primary schools which were situated in central locations within the villages. The entire fieldwork, including the sample selection, was completed in approximately two weeks.

To select our sample, a household listing of 200 – 250 households was carried out in each of the six selected villages. The protocol for the listing exercise is included in Appendix B. During the listing exercise, we obtained information about the number of couples in a household who were able to take time out for a session, the name and age of the husband, and number of years of marriage. From the household listing data, we first randomly dropped multiple entries per household, since some households nominated more than one couple for participation.⁷ The resulting data was then arranged according to marriage lengths, and a stratified random sample was drawn, with the strata based on marriage lengths: 0-4 years, 5-9 years, 10-20 years and more than 21 years. In our pilot session, we learned that that younger couples have a lower show-up rate owing to their work commitments, so we over-sampled for younger couples — 60 percent of the invitations were sent out to couples with marriage lengths between 0 to 9 years. In our final sample, 45 percent of the couples were married for 9 years or less, reflecting a show-up rate of 30

⁵ In Pakistani Rupees, the exact district average monthly income is Rs. 16,110, with a breakdown of Rs. 19,584 for Urban areas and Rs. 12,878 for rural areas.

⁶ That is, to prevent participants from the morning sessions to communicate and share the experiment features with prospective participants of the next session.

⁷ On two instances, 2 couples from the same household were invited to participate by mistake. The older couple from each duplicate household was dropped from the dataset.

percent. The show-up rate for older couples married 10 years or more was about 55 percent. The overall show-up rate for our experiments was about 40 percent.

After sample selection, invitations were sent out 3 – 4 days before the experiment session. An independent two-person team was responsible for the invitations process. Participants were recruited according to their arrival time at the venue, individuals coming in first were given precedence in recruitment. A maximum of 15 couples were allowed per session and any extra show-ups were paid the participation fee of Rs. 300 per couple and sent away.

Our experimental design is not complicated. However, due to low literacy levels, care was taken to ensure that participants clearly understood the exercise. The general instructions and scripts for the one-on-one interviews were translated into Urdu. The general instructions were given to all the participants in an open setting at the same time and the experiment was explained mainly with the help of visual aids. In the subsequent one-on-one interviews, the instructions were summarised, control questions were asked to test understanding, and the participants' decisions followed by their were elicited. After completing their one-on-one interviews, participants were seated in a separate room from those awaiting their interviews (see Appendix B for the general training instructions).

The general instructions did not specify who would be playing the game with whom. Participants were informed that they were playing with their spouse only in their one-on-one interview just before making their decisions. This information was withheld in the general instructions to preclude any attempts by spouses to collude or coerce prior to the one-on-one interviews. One-on-one interviews and final payments were carried out in private.

4.3 Heterogeneity in contributions — The hierarchical clustering technique

To address the second research question, we classify Player 2s with reference to their five-point strategies. Fischbacher et al. (2001) proposed a typology of behaviours observed in the voluntary contribution games (VCGs) involving four distinct categories: conditional

cooperators; free riders; humped shaped; and ‘others’. The conditional cooperators consist of individuals who are willing to contribute more to a public good the more others contribute. This behaviour can be explained by fairness preferences such as inequity aversion or reciprocity. Rustagi et al. (2010) in their study on forest user groups in Ethiopia provide external validity to the laboratory experiments on social dilemma. They implement the Fischbacher et al. (2001) experimental framework and identify a fifth classification of weak conditional cooperators in their sample. Participants in this fifth classification respond to higher contributions by their partners by increasing their contributions, but at a rate less than one-for-one.

However, according to Fallucchi et al. (2017), not all heterogeneity can be summarised well by a discrete typology. For the data to be accurately represented, it is important for the behaviour of two participants classified as different types to be adequately distinct, and there should be clarity on where to draw boundaries between different types. Fallucchi et al. (2017) re-analyse the data from six previous studies on voluntary contribution games applying hierarchical clustering analysis and, thereby, identify four distinct behavioural types which account for about 90 percent of the pooled sample. The four types that they identify are own-maximisers, strong conditional cooperators, weak conditional cooperators and unconditional cooperators. The majority of the typologies generated by the Fischbacher et al. (2001) methodology map onto the typologies generated from cluster analysis.⁸ Cluster analysis provides a parsimonious and tractable economics methodology to capture similarities in behaviour (Fallucchi et al., 2017) — therefore, we implement this technique to understand heterogeneity in contributions in our data.

For cluster analysis, we first measure (dis-)similarity between pairs of Player 2 strategies. Assuming that $\mathbf{c}_i$ and $\mathbf{c}_j$ are vectors of contribution strategies by participants i and j . The dissimilarity in contribution strategies is operationalised as the Euclidean distance between

the vectors, $d(\mathbf{c}_i, \mathbf{c}_j) = \sqrt{\sum_{s=0}^5 (\mathbf{c}_{si} - \mathbf{c}_{sj})^2}$ where $\mathbf{c}_{si}$ is individual i 's contribution at strategy

⁸ Fallucchi et al. (2017) do not find humped-shaped strategies in the data when cluster analysis is applied.

point s for each Player 2. Contribution strategies that differ by a smaller distance are considered to be more similar (Fallucchi et al., 2017).

An agglomerative method, then, produces a series of partitions in the data starting from n (where n is the total sample population) single member clusters and ending with a single cluster containing all n individuals (Everitt et al., 2011). The method groups strategies lying closest to one another as per the distance measure and the fusion process is repeated until all groups eventually form one big cluster (Chiang, 2009). To select the number of clusters, i.e., the point where the agglomeration is stopped, we refer to both the Calinski and Harabasz index (Calinski and Harabasz, 1974) and the Duda and Hart index (Duda and Hart, 1973). However, according to Fallucchi et al. (2017) the rules for determining the number of clusters are heuristic.⁹

Six behavioural types are suggested when we follow the rules: Unconditional cooperators; conditional co-operators; U-shaped; token-givers high; token-givers low; and others (see Table A2a and Figure A1 in Appendix A). However, stopping at 6 rather than 5 clusters is only marginally preferred and, when we stop at 5 clusters, the two ‘token-giver’ types are grouped together. As token-givers are of no more interest to us than each of the other types, we select the 5-cluster stopping point where each cluster represents a distinct behavioural type. In Tables A2b and A2c, we present the distribution of responses by the two marriage types based on their responses to the survey question on marriage type and behavioural types. For subjects who stated their marriage was ‘completely arranged by their parents’, a much larger proportion of participants belonging to arranged marriage behave as token-givers and U-shaped compared to those in love matched marriages.

⁹ The Calinski and Harabasz (1974) pseudo-F has no specified acceptable cut-off value and large values indicate distinct clustering. The Duda-Hart stopping rule, $Je(2)/Je(1)$ is simply a ratio of dissimilarity within clusters and dissimilarity across clusters (Fallucchi et al., 2017) and it corresponds to a second criteria (pseudo-T-squared value). The maximisation of $Je(2)/Je(1)$ index and minimisation of the pseudo T-squared value are indicative of distinct clustering.

5. **Results**

5.1 **Sample description**

Table 1 presents descriptive statistics for participants in arranged and love matched marriages. We restrict our analysis to couples within which the Player 2 received the full endowment of Rs. 400, giving us a total working sample of 108 couples or 216 participants. Ages ranged from 16 to 70 years. Sixty percent of sample reported receiving some formal education. About 30 percent of the sample were categorised as being in love matched marriages.

The variables' means for those in arranged and love matched marriages are presented in columns 1 and 2, respectively. Column 3 presents t-test results for differences in means across the marriage types. On average, couples in arranged marriages are older, have been married for a longer period of time, and have larger families. Cousin marriages are higher among love matched marriages, but the difference is not statistically significant. The greater prevalence of cousin marriages in love matched marriages goes against the general perception that when granted the freedom to select a spouse, individuals will pick someone from outside the family circle or kinship. Given that in rural areas young people drop out of school after the primary level and most of their socialisation is restricted to their extended family on social events such as weddings and funerals. It is not surprising that young individuals are more likely to form an attachment to a cousin who they more likely to interact with.

The relationship closeness variable (IOS scale) presents no significant differences in the mean levels of closeness across love and arranged matches. Social preferences do not significantly vary across the two marriage types which indicates that individuals in one type of marriage are not more sociable, or less so, compared to individuals in the other marriage type.

Table 1: Descriptive statistics

Variable	Arranged matches	Love matches	Diff.	Arranged matches		Love matches	
				Men	Women	Men	Women
Age (years)	38.74	31.56	7.18***	40.38	37.10	33.52	29.61
Highest completed level of education	4.50	4.48	0.02	5.00	4.00	5.29	3.68
Number of years of being married	15.49	9.74	5.75***	15.72	15.27	9.97	9.52
Monthly income (Rs. 000s)	12.446	10.364	20.8**	11.892	13.000	11.103	9.600
Number of children	3.50	2.89	0.61*	3.44	3.56	2.90	2.87
Spouse are first cousins	0.49	0.61	0.12	0.55	0.44	0.52	0.73
IOS scale (1 to 7)	5.48	5.87	-0.39	5.45	5.51	5.97	5.77
On a scale from 0 - 10: When someone does me a favour, I am willing to return it?	8.67	8.73	-0.06	8.91	8.43	8.45	9.00
On a scale from 0 - 10: If I am treated very unjustly, take revenge even if its cost?	1.78	1.35	0.42	2.13	1.43	1.77	0.94
Wealth score	-0.03	-0.21	-0.18	-0.07	0.01	-0.08	-0.33
Observations	154	62		77	77	31	31

Notes: USD 1 = Rs. 1 approximately. *** p<0.01, ** p<0.05, * p<0.1. Six participants did not know the household monthly income, so there are 148 observations for the arranged matches and 61 observations for love matches

5.2 Understanding of the experiment

Given the unfamiliar nature of the experimental exercise, we include five control questions to test for participants' understanding. The questions are based on an example which covers all the steps involved in the exercise by Player 1 and Player 2, the confidentiality in Player 2 earnings, as well as computation of the final payoffs. The responses are ranked from 1 to

4 — where 1 ‘confusion’, 2 ‘needed help’, 3 ‘correct but slow’, and 4 ‘correct and quick’. Table A3 in Appendix A presents the results for the control questions, and the difference in means (t-test) across the two marriage types. We find no difference in performance across the two marriage types when answering the test questions. A rank higher than 2 implies perfect or near perfect response to the control question, and from the table we can see that the average ranks for all control questions by the participants are either 3 or higher. About 65 percent of the sample responded correctly (rank 3 or above) to all five questions, and only 5 percent of sample had a confused response. In addition to relatively good performance in the control questions, we gave additional explanations to participants who did not answer correctly or asked for more explanations. Therefore, Table A3 represents a lower limit of understanding by the sample.

5.3 Cooperation between spouses across marriage types

Table 2 presents the average contributions made by Player 1s and Player 2s. For Player 2s we observe the mean contribution levels for every possible contribution by their Player 1. Given that an efficient or cooperative outcome requires the household pool to be maximised and spouses to contribute their entire endowments, our sample clearly deviates from the socially optimal behaviour.

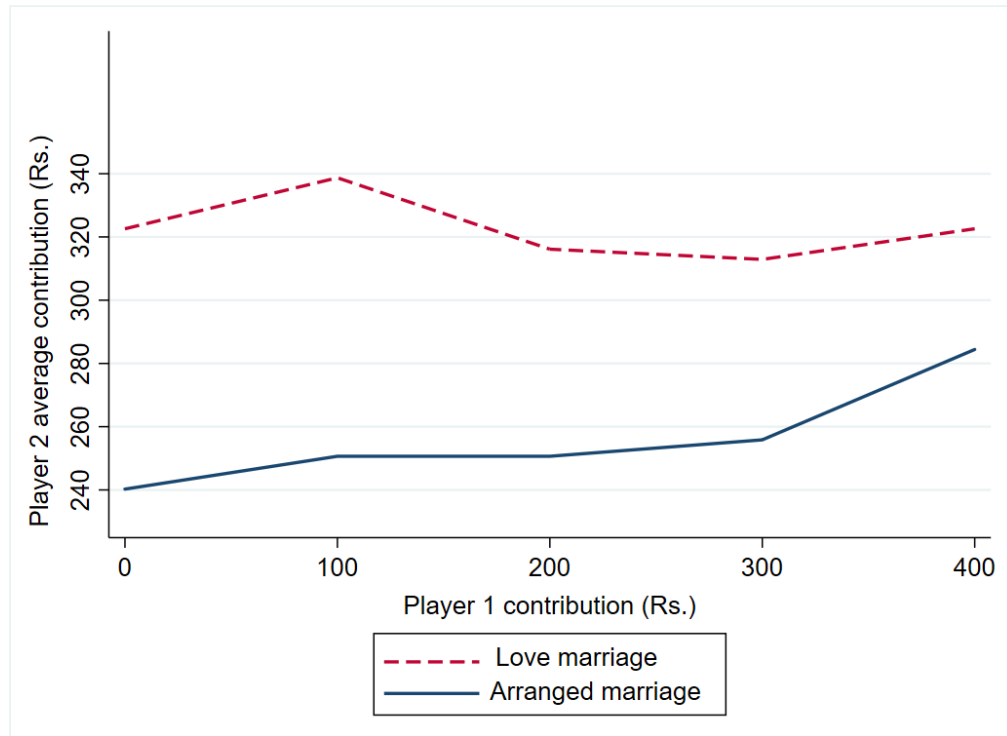
With regard to our first research question, we find that love matched spouses consistently contribute more than spouses in arranged marriages and this pattern remains consistent regardless of whether a spouse participated as a Player 1 or a Player 2. The average contributions made by love matched Player 1s are significantly higher than those by Player 1s in arranged marriages. For Player 2s in arranged marriages, as the contribution by their spouses decrease, their own contribution also decreases. For Player 2s in love matched marriages, there is no such decrease. Hence, the gap in Player 2s contributions across the marriage types widens as Player 1’s contribution falls.

Table 2: Average contributions by Player 1s and Player 2s

Variable	Arranged	Love	t-test	Arranged		Love	
	matches	matches		matches		matches	
	<i>All</i>	<i>All</i>	<i>Diff</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
Player 1 average contribution (Rs.)	264.9	329.0	-64.1**	266.7	263.2	300.0	356.3
Observations	77	31		39	38	15	16
Player 2 average contribution							
if Player 1 contributed Rs. 400	284.4	322.6	-38.2	286.8	282.1	362.5	280.0
Player 2 average contribution							
if Player 1 contributed Rs. 300	255.8	312.9	-57.1**	255.3	256.4	350.0	273.3
Player 2 average contribution							
if Player 1 contributed Rs. 200	250.6	316.1	-65.5**	244.7	256.4	337.5	293.3
Player 2 average contribution							
if Player 1 contributed Rs. 100	250.6	338.7	-88.1***	236.8	264.1	350.0	326.7
Player 2 average contribution							
if Player 1 contributed zero	240.3	322.6	-88.3**	234.2	246.2	318.8	326.7
Observations	77	31		38	39	16	15

To address our second research question, we must focus on Player 2s' strategies. The average contribution strategies for Player 2s in the two types of marriage are presented in Figure 1. Love matched couples contribute, on average, more than Rs. 300 for all possible contributions by their spouses. The relative flatness of the line is suggestive of unconditional cooperation. In contrast, the behaviour of spouses in arranged marriages is much less cooperative and appears to be conditional, specifically reciprocal; as the contributions by their spouses increase, Player 2s' contributions also trend slightly upwards.

Figure1: Average contributions across marriage types



To investigate whether there is a significant difference in cooperative strategy between spouses in arranged and love matched marriages, we run OLS regressions of Player 2 contributions on marriage types and report p-values in parenthesis accounting for non-independence within sessions using a wild bootstrap (Cameron et al., 2008). In Table 3, an observation is a single contribution decision made by a Player 2 and the dependent variable is the amount contributed. Each Player 2 made five contribution decisions, one for each possible contribution by their spouse, so there are five observations per Player 2 and 540 observations in all.

The coefficient on the 'love match' dummy is positive and significant for all estimation specifications. In columns 1 and 2, the coefficient on love match represents the mean difference in contribution between the two marriage types. To be precise, the coefficient indicates that participants in love matched marriages contribute, on average, 66 Rupees more than those in arranged marriages (column 1), and this difference in the contributions increases to 83 Rupees when we include individual and household characteristics as controls (column 2).

Having established that there is a difference in average contributions between arranged and love matched marriages, we next investigate whether the difference in slopes observed in Figure 1 is statistically significant. In column 3, we include an interaction term for couples in love matched marriages and Player 1s contributions. This term captures the difference in slopes between the average contribution strategies of Player 2s in the two marriage types. The coefficient on the interaction term in column 3 is negative and significant at the 10 percent level, and indicates that as Player 1's contribution increases, the change in Player 2's contributions is smaller for participants in a love matched marriage compared to those in arranged marriages. In other words, contributions by Player 2s from arranged marriages are relatively more responsive to decreases in contributions by Player 1s compared to Player 2s in love matched marriages.

In Column 4, including individual and household controls does not affect the results. Similarly, if instead of including our finite list of individual and household controls, we include individual fixed effects (column 5), the results remain consistent — spouses in arranged marriages are more conditional, specifically reciprocal, in their cooperation compared to spouses in love matched marriages.¹⁰ We carry out an F-test to determine if the slope of contribution strategies of Player 2s in love matched marriages is significantly different from zero.¹¹ The null cannot be rejected in any of the estimations, suggesting that contributions by Player 2s in love matched marriages are not sensitive to contributions by their spouses — meaning they are more unconditional in nature. However, we also cannot reject the null that contributions of those in arranged marriages are unresponsive to spouse's contributions — suggesting that there is too much variation across strategies which manifests as too much noise in these regressions. Therefore, in the next section, we investigate behavioural types in more detail.

Including the relationship closeness indicator measured by the IOS scale does not affect our results. See Table A4 in the Appendix. We also report the estimation from the linear

¹⁰ Individual fixed effects control for within-subject interdependences.

¹¹ The Null Hypothesis for the F-test: β_1 (Player 1 contribution) + β_2 (Love match x Player 1 contribution) = 0

models with standard errors clustered at the session level without bootstrapping (Table A5 in Appendix A) and the results remain consistent. In column 5 of Table A5, we control for session effects with standard errors clustered at household level and do not find any session-level effects. Moreover, since a large number of participants (46 percent of Player 2s) contributed their entire endowment, we use a Tobit model to estimate if results are significantly affected by censoring. The average marginal effect of marriage type on the unconditional expected values from Tobit estimations are presented in Table A6, in Appendix A. We continue to observe consistent results in the Tobit estimations – the average marginal effect of being in a love matched marriage has a significantly positive effect on Player 2 contributions.

Table 3: Linear regression of Player 2 contributions on marriage types and socioeconomic characteristics

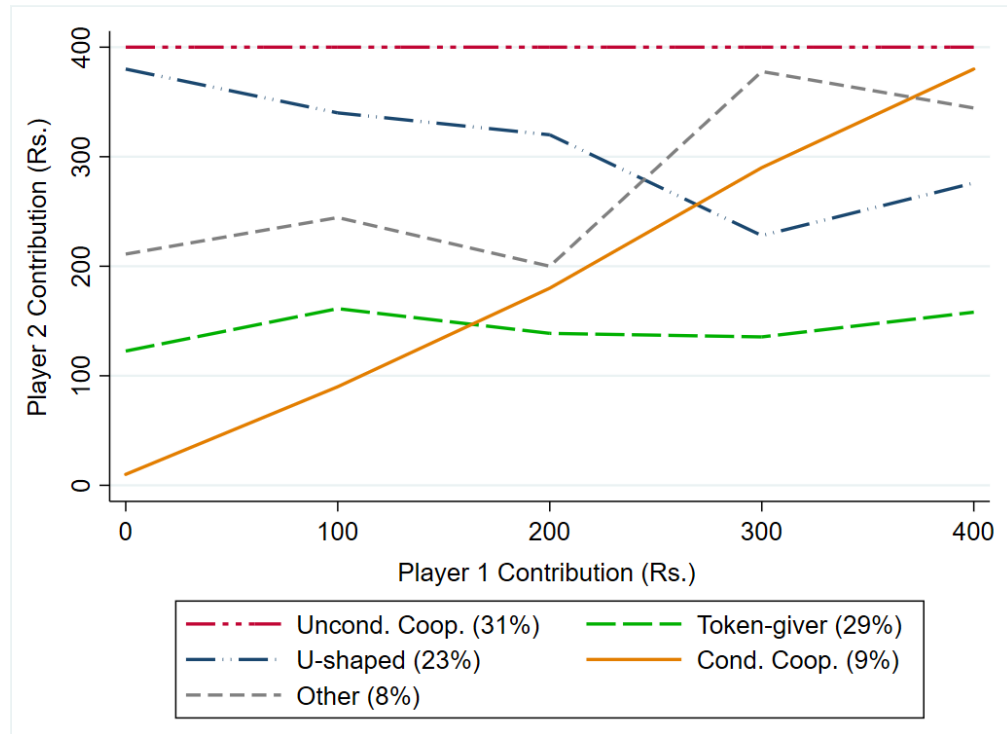
Variables	Dependent: Player 2 contributions (Rs.)				
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	FE (5)
Love match	66.217*** (0.000)	83.420*** (0.000)	90.080*** (0.000)	107.283*** (0.000)	
P1 contribution (Rs. 0 to 400)	0.059 (0.214)	0.059 (0.214)	0.094 (0.128)	0.094 (0.128)	0.09 (0.052)
Love match x Player 1 contribution			-0.119* (0.067)	-0.119* (0.067)	-0.12* (0.056)
Age		6.258*** (0.000)		6.258*** (0.000)	
Female		-6.669 (0.839)		-6.669 (0.839)	
No education		50.703* (0.062)		50.703* (0.062)	
Number of children		-1.459 (0.764)		-1.459 (0.764)	
Spouses are first cousins		16.443 (0.366)		16.443 (0.366)	
Number of years of being married		-4.775 (0.156)		-4.775 (0.156)	
Participant is household head		-34.989 (0.263)		-34.989 (0.263)	
On scale 0 - 10: When someone does me a favour, I am willing to return it?		13.376*** (0.007)		13.376*** (0.007)	
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		4.284 (0.316)		4.284 (0.316)	
Wealth score		11.117* (0.066)		11.117* (0.066)	
Constant	244.512*** (0.000)	-62.107 (0.406)	237.662*** (0.000)	-68.956 (0.350)	263.52*** (8.255)
P-value for F-test ¹			0.77	0.77	0.50
Observations	540	540	540	540	540
R-squared	0.054	0.163	0.057	0.166	0.009
Controls	No	Yes	No	Yes	No

Notes: For columns 1-4: standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008), p-values in parenthesis. Column 5: Fixed effects estimation, standard errors clustered at session level in parentheses and 108 unique groups. ¹F-test Ho: β_1 (Player 1 contribution) + β_2 (Love match x Player 1 contribution) = 0. *** p<0.01, ** p<0.05, * p<0.1.

5.4 Types of behaviour

Using hierarchical cluster analysis, we identify five clusters in our sample of Player 2 strategies. The mean strategy of the Player 2s in each of the five clusters are presented in Figure 2 below. The largest cluster, about 31 percent, are unconditional cooperators. These participants contributed all of their initial endowment to the household, regardless of the amount contributed by their spouses. The conditional cooperators, represented by a diagonal line in our figure, are fewer in number, about 9 percent, but distinct enough to emerge as a separate cluster in our analysis. As previously stated, these subjects match or nearly match the contribution by their spouses. Token-givers or own-maximisers, who contribute rarely half, most often less than half of their endowment, account for about 29 percent. We also identify a new type, which we label ‘U-shaped’, which has not been identified in previous studies, but accounts for about 23 percent of our sample. Player 2s in the U-shaped cluster initially reciprocate a decline in contribution by their spouse (recall that the strategies were elicited starting with Player 1 contributes everything). However, possibly upon realising that reciprocity will be harmful to the household, these participants start to compensate further declines in their spouse’s contributions by contributing more. This type has not been seen in previous studies, possibly because previous studies have never engaged spouses. Finally, the ‘other’ group comprises the 8 percent of subjects whose contribution patterns are not readily interpretable; they appear to be a mix of high variance token-givers and very weak conditional cooperators. The mean contribution by this group is approximately Rs. 276.

Figure 2: Behavioural types generated from hierarchical clustering technique



Cross-tabulating behavioural and marriage types provides interesting insights (see Table 4). A Pearson chi-squared test on the behavioural types across the arranged and love matched sample confirms that the two distributions are distinct. Note over half of love matched spouses are unconditionally cooperative — almost 55 percent of them, whereas only 3 percent of them are conditional cooperators. On the other hand, only 20 percent of the arranged marriage spouses are unconditionally cooperative, and almost 12 percent of them are conditional cooperators. Furthermore, a large proportion of arranged marriage spouses behave as token-givers (33 percent) and U-shaped (26 percent) contributors. Of the 19 percent token-givers observed in love matched couples, about two-thirds of them contribute close to half of their endowment. These results are critical in understanding the emotional foundation of cooperation across different married couples —while the love matched couples demonstrate selflessness and cooperation towards one another, couples in arranged marriages show more restraint.

Table 4: Behavioural types across marriage types

Behavioural Type	Arranged match (1)	Love match (2)	Total Sample (3)
Unconditional Cooperator	20.8%	54.8%	30.6%
Conditional Cooperator	11.7%	3.2%	9.3%
Token-giver	32.5%	19.4%	28.7%
U-shaped	25.9%	16.1%	23.2%
Other	9.1%	6.5%	8.3%
Observations	77	31	108
Pearson $\chi^2(5) = 12.53$ and $Pr = 0.014$ (Columns 1 & 2)			

To further explore whether couples in love matched marriages are more likely to be unconditionally cooperative towards one another, compared to being any other behavioural type, we conduct a multinomial logit analysis (Table 5). From Table 5, we observe that for a participant in a love matched marriage instead of an arranged marriage, the likelihood of him or her being an Unconditional Cooperator is significantly higher than being any other type such as U-shaped, CC, other or token-giver. For instance, the odds of being a token-giver relative to an Unconditional Cooperator decrease by a factor of 0.226 (Panel 1), and by a factor of 0.131 when controls are included (Panel 2).

Table 5: Multinomial Logit Estimation: Relative Risk Ratios

Dependent variable: behavioural types with UC=base category				
Panel 1				
No controls	U-shaped	CC	Other	Token
Love match	0.235*** (0.467)	0.105** (0.999)	0.269 (0.972)	0.226*** (0.390)
Constant	1.250 (0.429)	0.562 (0.242)	0.437** (0.150)	1.562* (0.367)
Observations	108	108	108	108
Panel 2				
With controls	U-shaped	CC	Mid/Other	Token
Love match	0.199*** (0.076)	0.070*** (0.069)	0.270 (0.321)	0.131*** (0.086)
Age	1.068 (0.085)	0.847 (0.088)	0.891 (0.121)	0.901 (0.064)
Female	2.132 (1.049)	0.580 (0.720)	0.727 (0.633)	1.466 (0.764)
No education	1.712 (1.221)	0.399 (0.381)	0.252 (0.230)	0.291** (0.165)
Number of children	1.249 (0.201)	1.138 (0.222)	0.795** (0.093)	1.025 (0.133)
Spouses are first cousins	0.703 (0.575)	0.258*** (0.109)	0.277 (0.321)	0.619 (0.266)
Number of years of being married	0.876* (0.060)	1.139 (0.162)	1.164 (0.114)	1.079 (0.082)
Wealth score	0.976 (0.237)	0.754* (0.109)	0.955 (0.302)	0.626*** (0.113)
Constant	0.197 (0.458)	118.487* (306.260)	30.127 (125.883)	49.429** (90.022)
Observations	108	108	108	108

Notes: Robust standard errors clustered at session level in parentheses. Owing to a small sample size, we restrict the number of We include fewer controls than the rest of the estimations here because

We also estimate a linear probability model with p-values in parentheses accounting for non-independence within sessions using a wild bootstrap (Cameron et al., 2008). The dependent variable takes the value of 1 for Unconditional Cooperators and the explanatory variable of specific interest is the dummy for love matched marriage.¹² Table 6 confirms our results from Tables 4 and 5. Being in a love matched marriage increases the likelihood of being an Unconditional Cooperator by 34 percent compared to those in arranged marriages (column 1). The results hold when further controls are included in the estimation (column 2). We also report the estimations from linear probability model with standard errors clustered at the session level without bootstrapping (Table A7 in Appendix A), and Logit estimations (A8 in Appendix A) – both return similar results.

¹² Note that each Player 2 has one observation in these estimations.

Table 6: Linear probability model: Effect of marriage type on Unconditional Cooperators

Dummy Dependent = 1 if Unconditional Cooperator		
Variables	(1)	(2)
Love match	0.341*** (0.000)	0.360*** (0.009)
Age		0.009 (0.490)
Female		-0.067 (0.566)
No education		0.082 (0.416)
Number of children		-0.010 (0.588)
Spouses are first cousins		0.115 (0.158)
Number of years of being married		-0.004 (0.738)
Participant is household head		-0.019 (0.844)
On scale 0 - 10: When someone does me a favour, I am willing to return it?		0.037 (0.160)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		-0.006 (0.798)
Wealth score		0.029 (0.368)
Constant	0.208*** (0.000)	-0.420 (0.313)
Observations	108	108
R-squared	0.112	0.175
Controls	No	Yes

Note: Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008), p-values in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

5.5 Player 1 contributions and Player 2 behavioural types

According to some studies, unconditional altruism or other regarding behaviour can attenuate punishment capacity and weaken full cooperation (Hwang and Bowles, 2012). This implies that full cooperation is undermined when love is not fully reciprocal. Simple free riding by an individual who expects unconditional cooperation from her spouse is plausible, known as the Samaritan's dilemma (Coate, 1995). However, love or altruism also espouses efficiency in some situations. In a prisoner's dilemma game, altruism can eliminate the inferior outcomes when subjects internalize each other's payoffs such that both spouses give equal weight to the other's payoff, moving to pareto efficiency (Durlauf and Fafchamps, 2005).

For this study, even though Player 1s do not enjoy credible deniability in their decisions, their decisions are still informative and can give some insights into how cooperative they are towards their spouses (see Table 6 below). Just under half of Player 1s, 50 out of 108 contribute their entire endowment and among these 50, 40 percent have spouses who are unconditionally cooperative. Correspondingly, for Players 2 who are unconditional cooperators, 65 percent, 20 out of 33, have spouses who as Player 1s contributed their entire endowment. This shows that when one spouse is cooperative, the other spouse is also likely to be cooperative — cooperation is more likely to be mutual.

Table 6: Distribution of Player 1 contributions and corresponding Player 2 behavioural types

Player 1 (Rs.)	Player 2 behavioural types					<i>N</i>
	Unconditional Cooperator	Conditional Cooperator	Token- giver	U-shaped	Other	
0	1 (100%)	0	0	0	0	1
100	4 (20%)	4 (20%)	10 (50%)	1 (5%)	1 (5%)	20
200	6 (24%)	2 (8%)	8 (32%)	6 (24%)	3 (12%)	25
300	2 (17%)	1 (8%)	4 (33%)	5 (42%)	0	12
400	20 (40%)	3 (6%)	9 (18%)	13 (26%)	5 (10%)	50
<i>N</i>	33 (31%)	10 (9%)	31 (29%)	25 (23%)	9 (8%)	108

Notes: Each cell presents the number of participants, respectively. The numbers in brackets are percentages that add up to 100% for each row.

6. Conclusion

This study highlights an important gap in the existing theoretical and empirical literature on households and household decisions. As the majority of the world population resides in developing countries, it is imperative that the theoretical models take into account the household arrangements that prevail in these countries.

In this paper, we presented results from a unique study looking at the differences in cooperation across married couples from different marital arrangements. Despite the rural setting, we found a substantial number of love matched spouses and they exhibit considerably different behaviour compared to those in arranged marriages.

To study cooperation between spouses, we set out to answer the following questions: Are spouses in self-selected or love matched marriages more cooperative, one with another, than those in arranged marriages? Do spouses in love matched marriages differ from those in arranged marriages with respect to how they condition their own cooperation on the

cooperation of their spouses? From our analysis, we found significantly different levels of cooperation across love matched and arranged marriages. Love matched couples consistently contributed more than participants in arranged marriages regardless of the role played in the experiment. To answer the second question, we carried out empirical estimations and hierarchical clustering analysis to construct a typology of behaviour. A large majority of the couples in love matched marriages contributed their entire endowment to the household irrespective of the amount contributed by their spouses. Couples in arranged marriages showed more restraint.

The generosity displayed by the majority of the love matched spouses raises some important questions — is this cooperative behaviour a representation of their love, or strong bond with their spouse? Or are people who select into love matched marriages inherently more inclined to be unconditionally cooperative? Including survey measures of other-regarding preferences in our analysis suggests the former. However, this finding is far from conclusive. We endeavour to answer this question directly in our follow-up study, which builds on these results by adding more treatments to the experimental design and including more controls for individual characteristics and preferences.

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Appendix A

Table A1: Distribution of responses to question on ‘marriage type’ across spouses

Husband	Wife					
Marriage type options (A-E)	A	B	C	D	E	Total
I really liked him/her and I had to force my parents to accept my decision (A)	2 (66.7%)	0	0	0	1 (1.1%)	3 (2.8%)
I really liked him/her and my parents gave in without a fight (B)	1 (33.3%)	2 (25%)	1 (12.5%)	0	5 (5.7%)	9 (8.3%)
Partly arranged, partly our own liking for each other (C)	0	2 (25%)	1 (12.5%)	0	6 (6.8%)	9 (8.3%)
My parents/elders made the decision, and I was forced to accept it (D)	0	0	0	0	2 (2.3%)	2 (1.9%)
Completely arranged by my parents/elders in the family and I had no issues with it (E)	0	4 (50%)	6 (75%)	1 (100%)	74 (84.1%)	85 (78.7%)
Total	3 (100%)	8 (100%)	8 (100%)	1 (100%)	88 (100%)	108 (100%)

Note: This table presents a matrix of absolute distribution of the responses to the question on marriage type across spouses. Values in brackets are column-wise percentages.

Table A2a: Number of clusters and behavioural types

Five clusters		Six clusters	
Behavioural type	N	Behavioural type	N
UC	33	UC	33
CC	10	CC	10
U-shaped	25	U-shaped	25
Other	9	Other	9
Token-giver	31	Token-giver (High)	19
Total	108	Token-giver (Low)	12
		Total	108

Table A2b: Distribution of responses to question on ‘marriage type’ and ‘behavioural types’ for participants in love matched marriages

Marriage type options	Behavioural Type					Total
	UC	CC	Token-giver	U-shaped	Other	
I really liked him/her and I had to force my parents to accept my decision	2 (100%)	0	0	0	0	2 (100%)
I really liked him/her and my parents gave in without a fight	3 (30%)	0	4 (40%)	3 (30%)	0	10 (100%)
Partly arranged, partly our own liking for each other	9 (75%)	1 (8.3%)	0	1 (8.3%)	1 (8.3%)	12 (100%)
Completely arranged by my parents/elders in the family and I had no issues with it	3 (42.9%)	0	2 (28.6%)	1 (14.3%)	1 (14.3%)	7 (100%)
Total	17 (54.8%)	1 (3.2%)	6 (19.4%)	5 (16.1%)	2 (6.5%)	31 (100%)

Note: This table presents a matrix of absolute distribution of the responses to the question on marriage type and behavioural types for subjects in love matched marriages. Values in brackets are row-wise percentages.

Table A2c: Distribution of responses to question on ‘marriage type’ and ‘behavioural types’ for participants in arranged marriages

Marriage type options	Behavioural Type					Total
	UC	CC	Token-giver	U-shaped	Other	
My parents/elders made the decision, and I was forced to accept it	1 (100%)	0	0	0	0	1 (100%)
Completely arranged by my parents/elders in the family and I had no issues with it	15 (19.7%)	9 (11.8%)	25 (32.9%)	20 (26.3%)	7 (46%)	76 (100%)
Total	16 (20.8%)	9 (11.7%)	25 (32.5%)	20 (25.9%)	7 (9.1%)	77 (100%)

Note: This table presents a matrix of absolute distribution of the responses to the question on marriage type and behavioural types for subjects in arranged marriages. Values in brackets are row-wise percentages.

Table A3: Performance in test questions

Control question number	Arranged matches	Love matches	t-test	Arranged matches		Love matches	
			<i>Diff.</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
1	3.88	3.94	0.05	3.91	3.86	3.87	4.00
2	3.84	3.90	0.07	3.87	3.81	3.81	4.00
3	3.73	3.82	0.09	3.77	3.70	3.81	3.84
4	3.62	3.58	0.04	3.69	3.55	3.68	3.48
5	3.09	3.10	0.01	3.10	3.08	3.06	3.13
Observations	154	62		77	77	31	31

Notes: Ranked from 1 to 4 where: 1-Confused; 2-Needed help; 3-Correct slow; 4-Correct fast.

Figure A1: Behavioural types generated from hierarchical clustering technique (6 clusters)

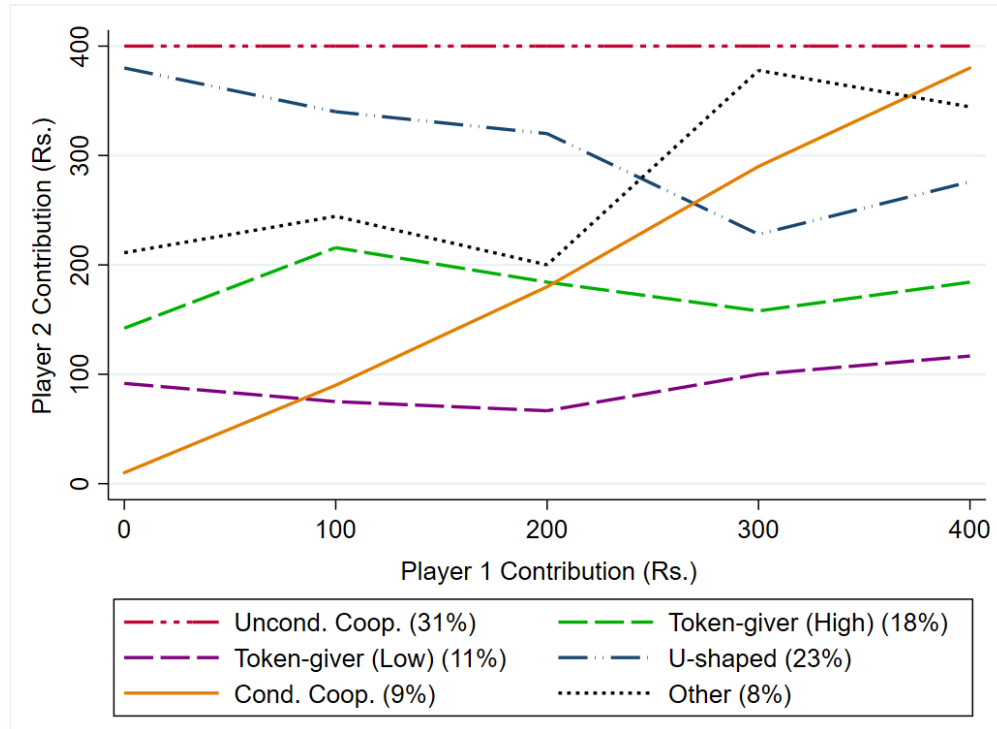


Table A4: Linear regression of Player 2 contributions on marriage types and socioeconomic characteristics – including IOS scale

Variables	Dependent: Player 2 contributions (Rs.)			
	OLS (1)	OLS (2)	OLS (3)	OLS (4)
Love match	66.217*** (0.000)	87.506*** (0.000)	90.080*** (0.000)	111.368*** (0.000)
P1 contribution (Rs. 0 to 400)	0.059 (0.214)	0.059 (0.214)	0.094 (0.128)	0.094 (0.128)
Love match x Player 1 contribution		-0.119* (0.067)	-0.119* (0.067)	-0.119 0.056*
Age		5.530*** (0.004)		5.530*** (0.004)
Female		-7.083 (0.853)		-7.083 (0.853)
No education		51.334* (0.063)		51.334* (0.063)
Number of children		-1.163 (0.815)		-1.163 (0.815)
Spouses are first cousins		20.754 (0.251)		20.754 (0.251)
Number of years of being married		-3.791 (0.206)		-3.791 (0.206)
Participant is household head		-34.989 (0.263)		-34.989 (0.263)
IOS score		-12.508 (0.199)		-12.508 (0.199)
On scale 0 - 10: When someone does me a favour, I am willing to return it?		15.561*** (0.009)		15.561*** (0.009)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		5.532 (0.228)		5.532 (0.228)
Wealth score		12.840** (0.025)		12.840** (0.025)
Constant	244.512*** (0.000)	-4.016 (0.977)	237.662*** (0.000)	-10.865 (0.868)
P-value for F-test ¹			0.77	0.77
Observations	540	540	540	540
R-squared	0.054	0.184	0.057	0.187

Controls	No	Yes	No	Yes
Notes: For columns 1-4: standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008), p-values in parenthesis. Column 5: Fixed effects estimation, standard errors clustered at session level in parentheses and 108 unique groups. ¹ F-test Ho: β_1 (Player 1 contribution) + β_2 (Love match x Player 1 contribution) = 0. *** p<0.01, ** p<0.05, * p<0.1				

Table A5: Linear regression of Player 2 contributions on marriage types and socioeconomic characteristics (No Bootstrap)

Variables	Dependent: Player 2 contributions (Rs.)				
	OLS (1)	OLS (2)	OLS (3)	OLS (4)	OLS (5)
Love match	66.217*** (16.580)	83.420*** (15.514)	90.080*** (23.525)	107.283*** (19.843)	100.374*** (28.236)
P1 contribution (Rs. 0 to 400)	0.059 (0.042)	0.059 (0.043)	0.094 (0.053)	0.094 (0.053)	0.094* (0.048)
Love match x Player 1 contribution			-0.119* (0.056)	-0.119* (0.057)	-0.119 (0.072)
Age		6.258*** (1.820)		6.258*** (1.821)	5.650** (2.444)
Female		-6.669 (29.337)		-6.669 (29.364)	-5.532 (27.619)
No education		50.703** (19.074)		50.703** (19.092)	50.293** (23.605)
Number of children		-1.459 (3.987)		-1.459 (3.991)	-2.373 (5.241)
Spouses are first cousins		16.443 (17.358)		16.443 (17.375)	23.454 (22.137)
Number of years of being married		-4.775 (2.998)		-4.775 (3.001)	-4.020 (2.654)
Participant is household head		-31.108 (27.955)		-31.108 (27.981)	-31.355 (31.426)
On scale 0 - 10: When someone does me a favour, I am willing to return it?		13.376** (4.841)		13.376** (4.845)	13.524** (5.463)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		4.284 (3.958)		4.284 (3.962)	4.432 (4.135)
Wealth score		11.117*		11.117*	11.157*

		(5.375)		(5.380)	(6.648)
Session 2					4.760
					(21.572)
Session 3					-2.382
					(15.898)
Session 4					9.113
					(9.961)
Session 5					1.041
					(7.980)
Session 6					3.013
					(6.930)
Session 7					2.255
					(6.787)
Session 8					1.853
					(5.344)
Session 9					-1.072
					(5.031)
Constant	244.512***	-62.107	237.662***	-68.956	-67.471
	(10.947)	(71.581)	(13.282)	(73.725)	(91.958)
P-value for F-test ¹			0.504	0.508	0.636
Observations	540	540	540	540	540
R-squared	0.054	0.163	0.057	0.166	0.174
Controls	No	Yes	No	Yes	Yes

Notes: Robust standard errors clustered at session level in parentheses. Column 5: Controls for session effects and standard errors are clustered at individual level. ¹F-test Ho: β_1 (Player 1 contribution) + β_2 (Arranged match x Player 1 contribution) = 0. *** p<0.01, ** p<0.05, * p<0.1.

Table A6: Tobit estimation of Player 2 contributions on marriage type and socioeconomic characteristics (Average marginal effects)

Variables	Dependent: Player 2 contributions (Rs.)			
	(1)	(2)	(3)	(4)
Love match	79.265*** (22.109)	93.257*** (23.077)	98.679*** (30.581)	112.367*** (28.405)
P1 contribution (Rs. 0 to 400)	0.037 (0.039)	0.035 (0.039)	0.061 (0.050)	0.058 (0.049)
Love match x Player 1 contribution			-0.097 (0.064)	-0.095 (0.062)
Age		5.824*** (2.069)		5.824*** (2.062)
Female		-3.841 (30.035)		-3.843 (30.003)
No education		52.597** (23.734)		52.509** (23.737)
Number of children		-1.718 (3.171)		-1.723 (3.170)
Spouses are first cousins		16.243 (16.258)		16.205 (16.240)
Number of years of being married		-4.392 (3.226)		-4.391 (3.221)
Participant is household head		-25.871 (28.833)		-25.910 (28.798)
On scale 0 - 10: When someone does me a favour I am willing to return it?		13.914*** (5.066)		13.912*** (5.062)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		3.319 (5.284)		3.337 (5.275)
Wealth score		11.361* (6.519)		11.327* (6.507)
P-value for F-test1			0.50	0.51
Observations	540	540	540	540
Controls	No	Yes	No	Yes

Notes: Robust standard errors clustered at session level in parentheses. 1F-test $H_0: \beta_1$ (Player 1 contribution) + β_2 (Arranged match x Player 1 contribution) = 0. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A7: Linear probability model: Effect of marriage type on Unconditional Cooperators (No Wild Bootstrap)

Dummy Dependent = 1 if Unconditional Cooperator		
Variables	(1)	(2)
Love match	0.341*** (0.098)	0.360** (0.117)
Age		0.009 (0.012)
Female		-0.067 (0.114)
No education		0.082 (0.104)
Number of children		-0.010 (0.019)
Spouses are first cousins		0.115 (0.078)
Number of years of being married?		-0.004 (0.012)
Participant is household head		-0.019 (0.113)
On scale 0 - 10: When someone does me a favour, I am willing to return it?		0.037 (0.026)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		-0.006 (0.021)
Wealth score		0.029 (0.032)
Constant	0.208*** (0.036)	-0.420 (0.404)
Observations	108	108
R-squared	0.112	0.175
Controls	No	Yes

Note: Standard errors clustered at the session level in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table A8: Logit Results: Average marginal effect of marriage type on Unconditional Cooperators

Dummy Dependent = 1 if Unconditional Cooperator		
Variables	(1)	(2)
Love match	0.289*** (0.066)	0.317*** (0.083)
Age		0.010 (0.012)
Female		-0.077 (0.108)
No education		0.094 (0.100)
Number of children		-0.015 (0.023)
Spouses are first cousins		0.123 (0.079)
Number of years of being married?		-0.004 (0.011)
Participant is household head		-0.026 (0.105)
On scale 0 - 10: When someone does me a favour, I am willing to return it?		0.041 (0.032)
On scale 0 - 10: If I am treated very unjustly, take revenge even if its cost?		-0.004 (0.018)
Wealth score		0.033 (0.033)
Observations	108	108
Controls	No	Yes

Notes: Standard errors clustered at session level in parentheses.

*** p<0.01, ** p<0.05, * p<0.1.

Appendix B

Protocol for Household Listing in Faisalabad Villages

Once someone answers the door the enumerator has to ask the following questions:

[Enumerator: Introduce yourself and ask the following]

1) How many married couples are currently residing in this household?

2) Can any two of these couples take 2-2.5 hours out of the day to participate in a survey with us, at a nearby location in this village? This can be any day of the week and there will be a chance to earn money up to Rs. 1000 in this survey!

[Enumerator: for all the couples that can participate ask the following questions]

Couple No# _____

Question 1: Name and age (in years) of husband _____

Question 2: Number of years he has been married to his wife _____

SCRIPT FOR GENERAL TRAINING

[ONCE REGISTRATION IS COMPLETE AND ALL PARTICIPANTS ARE SEATED, MS. AFZAL STARTS THE SESSION]

Welcome. Thank you for taking the time to come today. We are researchers from the Lahore School of Economics [*Introduce the research team members.*]

We have invited you here because we want to learn about how people in this area make decisions. You are going to engage in a task that involves making decisions about money.

We will provide the money and whatever money you get because of the decisions that you and others in the task make will be yours to keep. In addition to the money you get from the task, we are going to pay each of you Rs.150 as a small thank you for coming to this meeting.

The decisions you will make are not difficult and there are no correct or wrong answers.

All you need to think about is making the decisions that you WANT to make. It is important to think seriously about your decisions because they will affect how much money you and others will take home.

Before we ask you to make any decisions, we will tell you everything you need to know about the task. But first we want to say a few other things.

- First of all, the money you are going to use to engage in the task is not our own. We belong to a research organization that has given us the money to use for research.
- Second, this study is about how each of you makes decisions on your own. Therefore, it is important that you do not talk or communicate in any other way amongst yourselves once we start explaining the task. This is very important. Please be sure to obey this rule. If just one person communicates with another it could spoil the research. I'm afraid that if we find you talking or trying to signal to each other, we will have to send you home, and you will not collect money here today. Later you will have an opportunity to ask us any questions you have before you make any decisions.
- Third, we would like to kindly request all of you to put your phones/handsets on silent because you cannot take phone calls now, until after you have made your decisions. [*Wait for a minute.*]
- Finally, make sure that you listen carefully to us. As I have already mentioned, the amount of money that you each take home today will depend on the decisions you make. So, it is important that you understand those decisions. The way to make sure

that you understand the decisions is to listen to the instructions and ask us your questions when the opportunity arises.

After the decision-making task, one of us will ask each of you some questions about you and your household. This will only take a few minutes, but it is an important part of the research.

Your decisions and responses to our questions will be used for educational research purposes only. The researchers will not reveal your name, or any other identifying information, to anyone.

If at any point during the workshop you feel uncomfortable about what we are asking of you, you can stop.

Okay. Now I am going to explain the task. It is not complicated, but it will be new to you. So, listen carefully. After I have described the task, I am going to go through some examples of what can happen in the task. If you find the description of the task confusing, the examples will help.

Here is the description of the task.

You will engage in the task in pairs. Each of you will engage in the task with someone else who is here today. Each of you will be given some information about who you are engaging in the task with before you make your decisions. However, you will not get a chance to discuss the task with that person before you make your decisions.

[PAUSE]

In each pair of people engaging in the task, there is a “PLAYER 11” and a “PLAYER 22”. Please note that we are calling them player 1 and player 2 only to differentiate between the roles that the two players will be performing –neither type of player has a superior or an inferior role to play in this game.

The task starts when we give PLAYER 1 an envelope like this [*HOLD UP BROWN ENVELOPE*] containing Rs.400 [*TAKE THE FOUR Rs.100 NOTES OUT AND SHOW THEM TO THE PARTICIPANTS*]. This Rs.400 belongs to PLAYER 1. If you are a PLAYER 1, you will receive Rs.400, like this, and it is up to you to decide what to do with it. A PLAYER 1:

- can put all of the Rs.400 in their pocket (or bag, or wrapper) straight away [*PUT ALL THE NOTES IN POCKET*]; or

- they can put some in their pocket [*PUT A FEW NOTES IN POCKET*] and some back in the envelope [*PUT THE REST OF THE NOTES BACK IN ENVELOPE*]; or
- they can put all of the Rs.400 back in the envelope.

Any money that PLAYER 1 puts back in the envelope goes into a bundle that belongs jointly to PLAYER 1 and PLAYER 2 and is divided equally between them at the end of today's meeting. Also, later on in the task, after PLAYER 2 has made their decision also, for every Rs.100 that PLAYER 1 puts back in the envelope to go into the joint bundle, we add Rs.50 to the joint bundle. So,

- if PLAYER 1 decides to put all Rs.400 in the joint bundle, later on we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle;
- if PLAYER 1 decides to put Rs.100 in their pocket and Rs.300 in the joint bundle, later on we add $3 \times \text{Rs.}50 = \text{Rs.}150$ to the joint bundle
- if PLAYER 1 decides to put Rs.200 in their pocket and Rs.200 in the joint bundle, later on we add $2 \times \text{Rs.}50 = \text{Rs.}100$ to the joint bundle
- if PLAYER 1 decides to put Rs.300 in their pocket and Rs.100 in the joint bundle, later on we add $1 \times \text{Rs.}50 = \text{Rs.}50$ to the joint bundle; and
- if PLAYER 1 decides to put all Rs.400 in their pocket and nothing/zero in the joint bundle, later on we add nothing/zero to the joint bundle.

Everyone clear so far? [*NO PAUSE*] If you are not, don't worry, we will go through some examples in a minute or two, but keep on listening...

Once PLAYER 1 has made their decision, it is the turn of PLAYER 2. We also give PLAYER 2 an envelope like this [*HOLD UP BROWN ENVELOPE*]. However, PLAYER 2's envelope could contain Rs.100, Rs.200, Rs.300, or Rs.400. Only PLAYER 2 knows how much money is in their envelope. PLAYER 1 does not know. Notice the difference; if you are a PLAYER 2, you know that the PLAYER 1 you are playing with received Rs.400 in their envelope. However, if you are a PLAYER 1, you don't know whether the PLAYER 2 you are playing with received Rs.400 or Rs.300, or Rs.200, or Rs.100 in their envelope.

The money in PLAYER 2's envelope belongs to PLAYER 2. If you are a PLAYER 2, it is up to you to decide what to do with the money in your envelope. A PLAYER 2 can:

- put all of the money they receive in their pocket (or bag, or wrapper) straight away; or
- they can put some in their pocket and some back in the envelope; or
- they can put all of the money back in the envelope.

As for PLAYER 1, any money that PLAYER 2 puts back in the envelope goes into the bundle that belongs jointly to PLAYER 1 and PLAYER 2 and is divided equally between them at the end of today's meeting. And, as for PLAYER 1, for every Rs.100 that PLAYER 2 puts back in the envelope to go into the joint bundle, we add Rs.50 to the joint bundle. But now notice that there is another difference between PLAYER 1 and PLAYER 2; PLAYER 2 decides how much money they want to put in the joint bundle *after* PLAYER 1 has already made their decision. So, PLAYER 2 can decide:

- to put a certain amount of money in the joint bundle, if PLAYER 1 puts all of their Rs.400 in;
- to put the same or a different amount of money in the joint bundle, if PLAYER 1 puts Rs.300 in the joint bundle and Rs.100 in their pocket;
- to put the same or another different amount of money in the joint bundle, if PLAYER 1 puts Rs.200 in the joint bundle and Rs.200 in their pocket; and so on.

Is everyone clear about this? *[NO PAUSE]* It is as if PLAYER 2 gets to see what PLAYER 1 has decided to do before making his or her own decision.

Finally, once both PLAYER 1 and PLAYER 2 have decided how much money to put in their pockets and how much to put in the joint bundle, and after we have added an extra Rs.50 for each Rs.100 in the joint bundle, we divide the joint bundle equally between PLAYER 1 and PLAYER 2.

That's it. That is the task. Now I am going to go through some examples of what might happen in the task.

[If they look like they are about to start talking, ask them not to. If there are questions, tell them that they have an opportunity to ask questions later]

[Examples]

[show image 1] In this first example a man and a woman are engaging in the task. The woman is PLAYER 1. Here she is with her Rs.400 *[point at woman and Rs.400]*. The man is PLAYER 2. Here he is *[point at man]*. He has not received his money yet.

[show image 2] In this example, PLAYER 1 *[point at woman]* decides to put all of her money in the joint bundle *[point at Rs.400 and arrow]*.

[show image 3 and point at bundle] So, here is that Rs.400 in the joint bundle and now PLAYER 1 has no money to put in her pocket *[point at R0 below woman]*.

[staying on image 3] Now look at PLAYER 2 [point at man]. In this example, he also gets Rs.400 in his envelope [point at 400]. Notice this line here [point at grey line between man's money and the joint bundle]. This is to remind us that only PLAYER 2 [point at man] knows that he has Rs.400. PLAYER 1, who is the other side of the line [point at woman], does not know how much money PLAYER 2 has.

[show image 4] Suppose that PLAYER 2 decides to put all of his money in the joint bundle too [point at Rs.400 and arrow].

[show image 5] So, now PLAYER 2 has no money to put in his pocket [point at Rs.0 below man] and there are Rs.800 in the joint bundle [point at Rs.800 in joint bundle].

[show image 6] Seeing this [point at Rs.800] we add $8 \times \text{Rs.}50 = \text{Rs.}400$ to the joint bundle [point at Rs.400 and arrow].

[show image 7] So, now there is $\text{Rs.}800 + \text{Rs.}400 = \text{Rs.}1,200$ in the joint bundle [point at Rs.1,200 in joint bundle].

[show image 8] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.1,200, which is Rs.600 [point at the Rs.600s below the woman and the man], to take home.

Here is a different example of what might happen in the task.

[show image 9] In this second example a man and a woman are engaging in the task. The man is PLAYER 1. Here he is with his Rs.400 [point at man and Rs.400]. The woman is PLAYER 2. Here she is [point at woman]. She has not received her money yet.

[staying on image 9] In this example, PLAYER 1 [point at man] decides to put all of his money in his pocket [point at Rs.400 below man] and nothing/zero into the joint bundle [point at red lozenge shape, top left, and arrow].

[show image 10] Now look at PLAYER 2 [point at woman]. In this example as in the first, she also gets Rs.400 in her envelope [point at 400]. Remember the line here [point at grey line between woman's money and the joint bundle] is to remind us that only PLAYER 2 [point at woman] knows that she has Rs.400. PLAYER 1 [point at man] does not know how much money PLAYER 2 has.

[staying on image 10] Suppose that PLAYER 2 also decides to put all of her money in her pocket [point at Rs.400 below woman] and nothing/zero in the joint bundle [point at red lozenge shape, top right, and arrow].

[show image 11] So, there is nothing/zero in the joint bundle [point at empty joint bundle]. We add nothing to the joint bundle. There is nothing in the joint bundle for us to divide equally. And both PLAYER 1 and PLAYER 2 each go home with the Rs.400 that they decided to put in their pockets [point at Rs.400s below the man and the woman].

[show image E1vE2] So, if we think about the first and the second example together, what we learn is that the more money PLAYER 1 and PLAYER 2 decide to put back in the envelopes to go into the joint bundle, the more money in total they get to take home. In the first example, both PLAYER 1 and PLAYER 2 put all their money in the joint bundle and they both went home with Rs.600. In the second example, they both put nothing in the joint bundle and they both went home with Rs.400.

There is more to learn about the task though. For example, suppose one person decides to put **all** their money back in the envelope to go in the joint bundle and the other person decides to put all their money in their pocket and nothing back in their envelope. Then, let's see what happens.

[show image 12] In this third example two women are engaging in the task. This woman is PLAYER 1 [point at woman on left]. Here she is with her Rs.400 [point at Rs.400]. PLAYER 2 [point at woman on right] has not received her money yet.

[staying on image 12] In this example, PLAYER 1 [point at woman on left] decides to put all of her money in her pocket [point at Rs.400 below woman on left] and nothing/zero in the joint bundle [point at red lozenge shape, top left, and arrow].

[show image 13] So, here is the joint bundle with nothing in it [point at the empty joint bundle] and here is the Rs.400 that PLAYER 1 has put in her pocket [point at the Rs.400 below and beside the woman on the left]. Now look at PLAYER 2 [point at woman on right]. In this example, she also gets Rs.400 in her envelope [point at Rs.400 by woman on right]. Remember the line here [point at grey line between woman's money and the joint bundle] is to remind us that only PLAYER 2 [point at woman on right] knows that she has Rs.400.

[staying on image 13] Suppose that PLAYER 2 decides to put all of her money in the joint bundle [point at Rs.400 and arrow].

[show image 14] So, now PLAYER 2 has no money to put in her pocket [point at R0 below woman on right] and there is Rs.400 in the joint bundle [point at Rs.400 in joint bundle]. [staying on image 14] Seeing this [point at Rs.400] we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle [point at Rs.200 and arrow].

[show image 15] So, now there is $\text{Rs.}400 + \text{Rs.}200 = \text{Rs.}600$ in the joint bundle [point at Rs.600 in joint bundle].

[show image 16] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.400 she put in her pocket, so a total of Rs.700 [point at the Rs.700 below the woman on the left]. And PLAYER 2 takes home just Rs.300 from the joint bundle because she put nothing in her pocket [point at the Rs.300 below the woman on the right and the Rs.300 in the corresponding red zone].

So, from this example we learn that, if both people in the task start with the same amount of money but put different amounts in the joint bundle, the person who puts less money in the bundle goes home with more money than the person who puts more money in.

This is important, so I am going to go through another example like this.

[show image 17] In this fourth example two men are engaging in the task. Here is PLAYER 1 [point at man on left] with his Rs.400 [point at Rs.400]. PLAYER 2 [point at man on right] has not received his money yet.

[staying on image 17] In this example, PLAYER 1 [point at man on left] decides to put Rs.300 in the joint bundle [point at red lozenge shape around Rs.300 and arrow].

[show image 18 and point at Rs.300 in joint bundle] So, here is the joint bundle with the Rs.300 in it [point at the joint bundle] and here is the remaining Rs.100 that PLAYER 1 has put in his pocket [point at the Rs.100 below and beside the man on the left]. Now look at PLAYER 2 [point at man on right]. In this example, he also gets Rs.400 in his envelope [point at Rs.400 by man on right] but only he knows this [point at grey line between man's money and the joint bundle].

[staying on image 18] And suppose that PLAYER 2 decides to put Rs.100 of his Rs.400 in the joint bundle [point at red lozenge shape around Rs.100 and arrow]...

[show image 19] and Rs.300 in his pocket [point at Rs.300 below and beside man on right] So, now there is $\text{Rs.}300 + \text{Rs.}100 = \text{Rs.}400$ in the joint bundle [point at Rs.400 in joint bundle] and, seeing this, we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle [point at Rs.200 and arrow].

[show image 20] So, now there is $\text{Rs.}400 + \text{Rs.}200 = \text{Rs.}600$ in the joint bundle [point at Rs.600 in joint bundle].

[show image 21] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.100 he put in his pocket, so a total of Rs.400 [point at the Rs.400 below the man on the left]. And PLAYER 2 takes home Rs.300 from the joint bundle plus the Rs.300 he put in his pocket, so a total of Rs.600 [point at the Rs.600 below the man on the right, the Rs.300 in the corresponding red zone, and the Rs.300 next to the man].

So, here once again, we see the two people starting with the same amounts of money, but going home with different amounts because one put more into the joint bundle than the other. However, remember that PLAYER 1 never knows how much money PLAYER 2 gets in their envelope [point at grey line between man's money and the joint bundle]. So, in this example, PLAYER 1 did not know that PLAYER 2 started with Rs.400. From PLAYER 1's point of view, PLAYER 2 could have started with only Rs.100 and put all of that in the joint bundle, or he could have started with Rs.200 and put half in the joint bundle and half in his pocket, or he could have started with Rs.300 and put Rs.100 in the joint bundle and Rs.200 in his pocket, or he could have started with Rs.400, as he in fact did, and put Rs.100 in the joint bundle and Rs.300 in his pocket.

Let's see what would have happened in this example if PLAYER 2 had started with Rs.100 in his envelope.

[show image 22] So, here are the two men and, as before, here is PLAYER 1 [point at man on left] deciding to put Rs.300 in the joint bundle [point at red lozenge shape around Rs.300 and arrow].

[show image 23 and point at Rs.300 in joint bundle] So, here is the joint bundle with the Rs.300 in it [point at the joint bundle] and here is the remaining Rs.100 that PLAYER 1 has put in his pocket [point at the Rs.100 below and beside the man on the left]. But, in this version of the example, PLAYER 2 [point at man on right] gets Rs.100 in his envelope

[point at Rs.100 by man on right] and decides to put that Rs.100 in the joint bundle *[point at red lozenge shape around Rs.100 and arrow]*...

[show image 24] and nothing/zero in his pocket *[point at R0 below and the empty space beside man on right]* As before, there is $\text{Rs.}300 + \text{Rs.}100 = \text{Rs.}400$ in the joint bundle *[point at Rs.400 in joint bundle]* and, seeing this, we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle *[point at Rs.200 and arrow]*.

[show image 25] So, now there is $\text{Rs.}400 + \text{Rs.}200 = \text{Rs.}600$ in the joint bundle *[point at Rs.600 in joint bundle]*.

[show image 26] Then, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 *[use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]*. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.100 he put in his pocket, so a total of Rs.400 *[point at the Rs.400 below the man on the left]*. And PLAYER 2 takes home just Rs.300 from the joint bundle *[point at the Rs.300 below the man on the right, the Rs.300 in the corresponding red zone]*.

So, now we are beginning to see why the differences between PLAYER 1 and PLAYER 2 are important. PLAYER 2 knows PLAYER 1 starts with Rs.400 in his or her envelope and sees how much of that Rs.400 PLAYER 1 puts into the joint fund and can calculate how much PLAYER 1 puts in his or her pocket. However, PLAYER 1 does not know how much PLAYER 2 starts with in his or her envelope. So, even though PLAYER 1 can work out how much PLAYER 2 puts into the joint fund, PLAYER 1 cannot work out whether PLAYER 2 put any money in his or her pocket. And, because of this, PLAYER 1 cannot work out how much money PLAYER 2 is taking home.

Let's go through another couple of examples that demonstrate how important this is.

[show image 27] In this example a man and a woman are engaging in the task. Here is PLAYER 1 *[point at man on left]* with his Rs.400 *[point at Rs.400]*.

[staying on image 27] In this example, PLAYER 1 *[point at man on left]* decides to put Rs.100 in the joint bundle *[point at red lozenge shape around Rs.100 and arrow]*.

[show image 28 and point at Rs.100 in joint bundle] So, here is the joint bundle with the Rs.100 in it *[point at the joint bundle]* and here is the remaining Rs.300 that PLAYER 1 has put in his pocket *[point at the Rs.300 below and beside the man on the left]*. Now look at PLAYER 2 *[point at woman on right]*. In this example, she gets Rs.100 in her envelope

[point at Rs.100 by woman on right] and only she knows this [point at grey line between woman's money and the joint bundle].

[staying on image 28] And suppose that PLAYER 2 decides to put her Rs.100 in the joint bundle [point at red lozenge shape around Rs.100 and arrow]...

[show image 29] and nothing/zero in her pocket [point at R0 below and the empty space beside woman on right] So, now there is $\text{Rs.}100 + \text{Rs.}100 = \text{Rs.}200$ in the joint bundle [point at Rs.200 in joint bundle] and, seeing this, we add $2 \times \text{Rs.}50 = \text{Rs.}100$ to the joint bundle [point at Rs.100 and arrow].

[show image 30] So, now there is $\text{Rs.}200 + \text{Rs.}100 = \text{Rs.}300$ in the joint bundle [point at Rs.300 in joint bundle].

[show image 31] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.300, which is Rs.150, from the joint bundle. So, PLAYER 1 takes home Rs.150 from the joint bundle plus the Rs.300 he put in his pocket, so a total of Rs.450 [point at the Rs.450 below the man on the left]. And PLAYER 2 takes home just Rs.150 from the joint bundle [point at the Rs.150 below the woman on the right and the Rs.150 in the corresponding red zone].

[show image 32] But now let's look at what happens if PLAYER 2 starts with Rs.400 [point at Rs.400 next to woman] and decides to put Rs.100 in the joint bundle and Rs.300 in her pocket [point at red lozenge shape around Rs.100 and arrow].

[show image 33] As before, after both PLAYER 1 and PLAYER 2 have made their decisions, there is $\text{Rs.}100 + \text{Rs.}100 = \text{Rs.}200$ in the joint bundle, so we add $2 \times \text{Rs.}50 = \text{Rs.}100$ to the joint bundle and divide the bundle equally. So, PLAYER 1 gets Rs.150 from the bundle [point at leftmost red zone and arrow] and PLAYER 2 gets Rs.150 from the bundle [point at rightmost red zone and arrow]. And in this case, both PLAYER 1 and PLAYER 2 goes home with Rs.150 from the joint bundle plus the Rs.300 that they put in their pockets earlier.

[If they look like they are about to start talking, ask them not to]

By now you should be beginning to understand how the task works, how the decisions made by each of the two players in the task affect the amount of money they both get from the task. Let's summarise what we have learnt about the task.

1. Each of you will engage in the task with someone else who is here today

2. You will be given some information about who you are engaging in the task with, but you will not get a chance to discuss the task with that person before you make your decisions
3. In each pair of people engaging in the task, there is a “PLAYER 1” and a “PLAYER 2”. Please note that we are calling them player 1 and player 2 only to differentiate between the roles that the two players will be performing –neither type of player has a superior or an inferior role to play in this game.
4. We give PLAYER 1 an envelope containing Rs.400
5. PLAYER 1 can: put all of the Rs.400 in their pocket; or put some in their pocket and some back in the envelope to go in the joint bundle; or they can put all of the Rs.400 back in the envelope to go in the joint bundle
6. We also give PLAYER 2 an envelope. However, PLAYER 2’s envelope could contain Rs.100, Rs.200, Rs.300, or Rs.400
7. Only PLAYER 2 knows how much money is in their envelope, PLAYER 1 does not know
8. PLAYER 2 can: put all of the money they receive in their pocket; or put some in their pocket and some back in the envelope to go in the joint bundle; or put all of the money back in the envelope to go in the joint bundle
9. PLAYER 2 can decide to put the same or a different amount in the joint bundle depending on how much PLAYER 1 has put in
10. Once both PLAYER 1 and PLAYER 2 have decided how much money to put in the joint bundle, we add an extra Rs.50 for each Rs.100 in the joint bundle
11. Then, we divide the joint bundle equally between PLAYER 1 and PLAYER 2.
12. The more money PLAYER 1 and PLAYER 2 decide to put back in the envelopes to go into the joint bundle, the more money in total they get to take home.
13. If both people in the task start with the same amount of money but put different amounts in the joint bundle, the person who puts less money in the bundle goes home with more money than the person who puts more money in.

PLAYER 1 does not know how much money PLAYER 2 gets in his or her envelope and so, unless PLAYER 2 puts Rs.400 into the joint bundle, PLAYER 1 cannot work out how much money PLAYER 2 is taking home at the end of the task. Put another way, only PLAYER 2 knows about any money that he or she puts in his or her pocket. **[How the session is to proceed]**

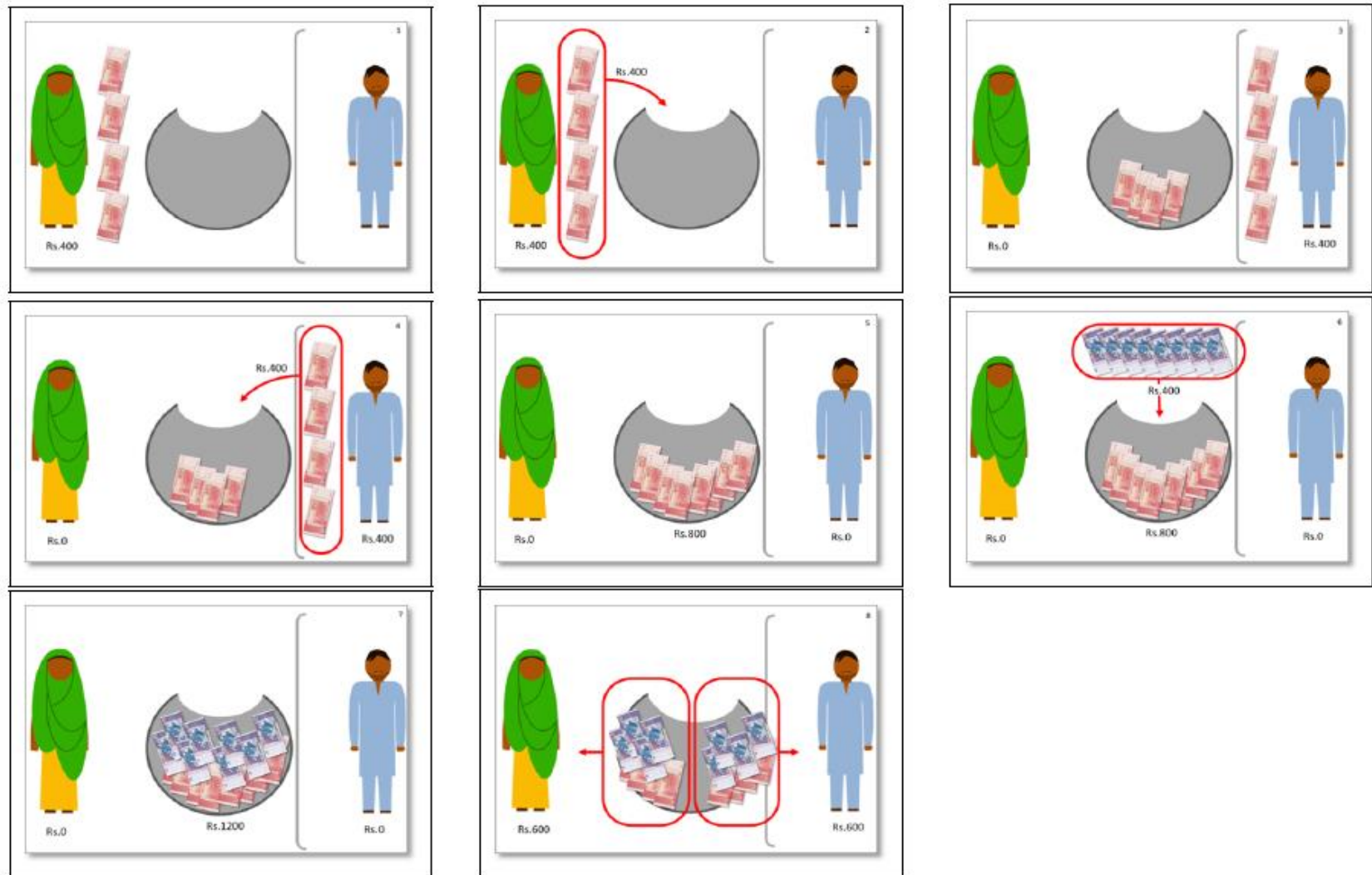
OK. So now I am going to tell you how we are going to proceed.

Ms. Afzal will call you one by one. When called, you will go up to Ms. Afzal’s desk and pick an envelope from this box [*point to box with brown envelopes in, DO NOT at this stage point out that there are two sides, one for PLAYER 1s and one for PLAYER 2s*]. An

enumerator will then escort you to a place where you will make your decisions in private. You will have a chance to ask the enumerator your questions before you make your decisions. The enumerators will write down your decisions on these forms and give them back to Ms. Afzal so that she can work out your payments from your joint bundles. The enumerators will also ask you a few questions about the task. Once each of you has made your decisions and answered these few questions, you will be directed to sit <over there> where you will be asked a few more questions, this time about you and your household. Once this is done, you will be allowed to chat with others <over there> while you wait for everyone to make their decisions and for Ms. Afzal to calculate your payments from your joint bundles. Then you will be invited to come and collect these payments plus the additional Rs.150 each.

Please remember not to talk or communicate with each other while you are waiting to meet your enumerators. This is important. If you have questions about the task, you can ask the enumerators in private.

Selection of images shown in the general training



Survey on household decisions and intra-household cooperation in Faisalabad

July 2016

Sr.#	Questions	Name	Codes	Instructions
1	Enumerator Name and Code			
2	District Name	Faisalabad		

Enumerator Instructions

1. If the respondent **Does not want to answer**, please write -88
2. If the respondent **Does Not Know**, please write -99

Introduction

Welcome. Thank you for taking the time to come today. We are researchers from the Lahore School of Economics [*Introduce the research team members.*]

We have invited you here because we want to learn about how people in this area make decisions. The decisions you will make are not difficult and there are no correct or wrong answers. All you need to think about is making the decisions that you WANT to make. It is important to think seriously about your decisions because they will affect our research.

Participant Consent

Our conversation here is private. Your responses to the questions will be used for educational research purposes only. The researchers will not reveal your name, or any other identifying information, to anyone.

This survey will take about 10-15 minutes. I will write down your responses after I ask each question.

Participation in the survey is voluntary. If you don't know the answer, or do not want to answer, for any question, just let me know, and I will go to the next question. If you need to stop the survey, you can do so at any time. While participation is voluntary, refusal to answer some questions will weaken the study.

Do you agree to participate in the survey?

YES -> Continue reading NO -> Note this, and move to the next respondent on the roster

[Enumerator should make sure that the respondent is sitting in a comfortable place and that the enumerator and respondent are sitting at the same eye level.]

1. INTRODUCTION

1.1 Date: _____(Day/Month/Year) **intro_1**

1.2 Session Number (1-8):_____ **intro_2**

1.3 Session Time (Morning/Afternoon)_____ **intro_3**

1.4 Session ID (individual ID): _____ **intro_4**

1.5 Mobile number: _____ **intro_5**

1.6 Age (years): _____ **intro_6**

1.7 Number of years of being married: _____ **intro_7**

1.8 How would you describe your marriage to your spouse? **(ENUMERATOR:
Please read out the options first and then circle the most appropriate option)**
intro_8

- 1: I really liked him/her and I had to force my parents to accept my decision
- 2: I really liked him/her and my parents gave in without a fight
- 3: Partly arranged, partly our own liking for each other
- 4: My parents made the decision, and I was forced to accept it
- 5: Completely arranged by the elders in the family and I had no issues with it
- 6: Other (specify) _____

1.9 What is your highest completed level of education?

intro_9

- | | |
|------------------------------|--------------------------------------|
| 0: Did not complete class 1. | 7: Class 7 |
| 1: Class 1 | 8: Class 8 |
| 2: Class 2 | 9: Class 9 |
| 3: Class 3 | 10: Matric |
| 4: Class 4 | 12: FA / FSC |
| 5: Class 5 | 16: Bachelor's degree (BA, BSc, etc) |
| 6: Class 6 | 18: MA/MSc/MS |

19: Madrassa (completed
years:_____)
77: Other (specify)

1.10 Can you read and write? (This could be in Urdu or in any other language.)

intro_10

1: Yes

2: No

1.11 Are you and your spouse related to each other or from the same biradari/family ?

1: Yes (mark the appropriate option)

a: We are first cousins

b: We are distant relatives

c: We are from the same community/biradari

d: other: _____

2: No (unrelated)

2. THE RESPONDENT'S HOUSEHOLD

2.1 What is the total monthly income of your household? Rs._____ **household_1**

2.2 How many children do you have?

Boys: _____

household_2a

Girls: _____

household_2b

2.3 How many people are currently living in this household (including you)?

_____adults

household_3a

_____children

household_3b

2.4 What is your relationship to the head of your household?

household_4

- 1: Head
- 2: Spouse of the head
- 3: Daughter/Son of the head
- 4: Daughter in law/Son in Law
- 5: Parent of the head
- 6: Sister/Brother of the head
- 7: Other relative of the head
- 8: Domestic employee of the head
- 9: Spouse of the domestic employee of the head
- 10: Unrelated (describe)_____

2.5 I will now list a set of different assets. For each asset, I will ask about ownership.

Stove / gas cooker _____assest s_1	Refrigerator _____assest s_2	Freezer _____assest s_3	Air conditioner _____assest s_4	Fan _____assest s_5	Radio _____assest s_6
CD player _____assest s_7	DVD or video player _____assest s_8	Television _____assest s_9	Satellite dish _____assest s_10	Computer _____assest s_11	Motorcycle or scooter _____assest s_12
Bicycle _____assest s_13	Car, van or truck _____assest s_14	Sewing machine _____assest s_15	Mobile phone _____assest s_16		

2.6 What is the main source of drinking water for members of your household?

household_6

<u>Piped water</u> Piped into dwelling 11 Piped into compound, yard or plot 12	<u>Underground Water</u> Tube Well, ... 21 Hand pump 22 Motorized Pump(Dunky/turbine) 23
--	--

Piped to neighbour 13 Public tap / standpipe 14	
<u>Well</u> Protected well 31 Unprotected well 32 Water from spring Protected spring 41 Unprotected spring 42	<u>Other Sources</u> Pond 51 Water Tanker-truck 61 Drum/cane (on the cart) Cart with small 71 Tank, River, stream, dam, lake, pond, canal water 81 Other (specify)_____ 96

2.7 How many rooms in the household are used for sleeping?

Number of rooms_____

household_7

2.8 Main material of the dwelling floor (Record observation and circle any one.)

household_8

<u>Natural floor</u> Earth / Sand 11 Dung plastered 12	<u>Finished floor</u> Ceramic tiles/Marble 33 Cement 34 Carpets 35 Brick paved 36 Chips..... 37
Other (specify) _____ 96	

2.9 Main material of the roof (Record observation and circle any one)

household_9

<u>Simple roofing</u> No Roof 11 Thatch / Palm leaf 12 Sod 13	<u>Rudimentary Roofing</u> Rustic mat 21 Palm / Bamboo 22 Wood planks 23
<u>Finished roofing</u>	

Metal (Girder & Steel plates) 31	Other (specify) 96
Wooden roof 32	
Ceramic tiles 34	
Cement / Lintel 35	

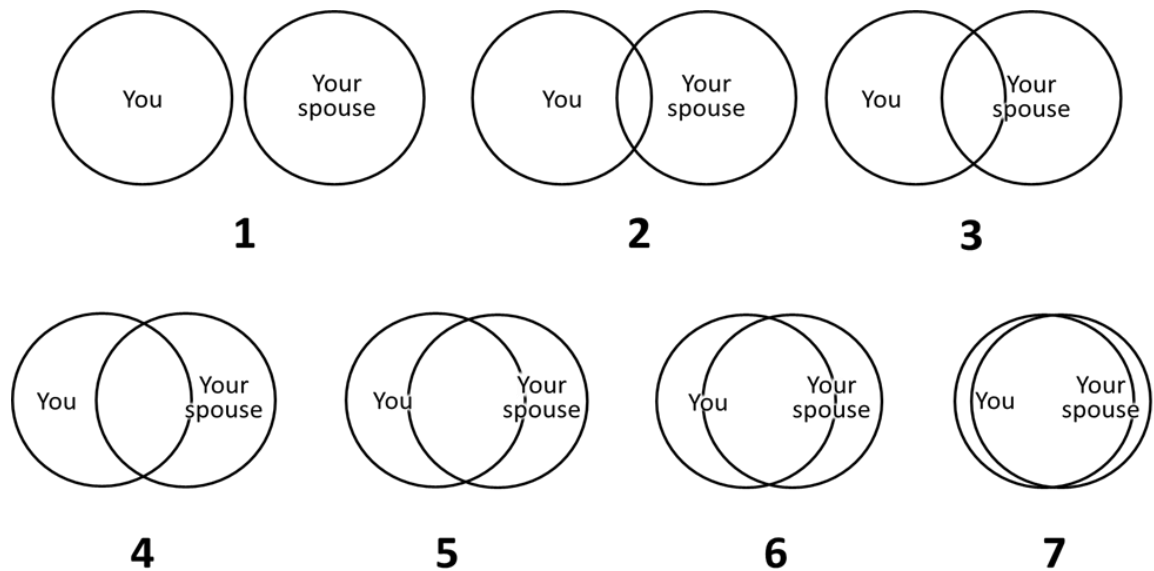
2.10 Main material of the exterior walls. Record observation and circle any one
household_10

<u>Simple walls</u>	<u>Rudimentary walls</u>
No walls 11	Bamboo with mud 21
Cane / Palm / Trunks 12	Stone with mud 22
Dirt 13	Uncovered adobe 23
	Plywood 24
	Cardboard / Crate 25
	Reused wood 26
<u>Finished walls</u>	
Cement 31	Other (specify) 96
Stone with lime / cement 32	
Bricks 33	
Cement blocks 34	
Covered adobe 35	

3. INDIVIDUAL CHARACTERISTICS

3.1 In the following figure we ask you to consider which of these pairs of circles best describes your relationship with your spouse. By selecting the appropriate image please indicate to what extent you and your spouse are connected.

[Enumerator: Please pick the appropriate number that represents the extent of understanding between you and your spouse.]



- a. 1
- b. 2
- c. 3
- d. 4
- e. 5
- f. 6
- g. 7
- h. prefer not to answer

individual_1

3.2 How well do the following statements describe you as a person? Please indicate your answer on a scale from 0 to 10. A 0 means “does not describe me at all” and a 10 means “describes me perfectly”. You can also use any numbers between 0 and 10 to indicate where you fall on the scale, like **0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10**.

- a. When someone does me a favour I am willing to return it. _____ **individual_2a**
- b. If I am treated very unjustly, I will take revenge at the first occasion, even if there is a cost to do so. _____ **individual_2b**

3.3 We now ask for your willingness to act in a certain way in four different areas. Please again indicate your answer on a scale from 0 to 10, where 0 means you are “completely unwilling to do so” and a 10 means you are “very willing to do so”. You can also use any numbers between 0 and 10 to indicate where you fall on the scale, like **0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10**.

- a. How willing are you to give to good causes without expecting anything in return?
_____ **individual_3**

CHAPTER 3

COOPERATION BETWEEN SPOUSES: DO UNCONDITIONALLY COOPERATIVE PEOPLE SELECT INTO LOVE MATCHED MARRIAGES?*

ABSTRACT

In the previous chapter, we studied cooperation between husbands and wives living in villages close to the city of Faisalabad and observed a significantly greater likelihood of unconditional cooperation between spouses in love matched marriages compared to those in arranged marriages. In a second series of experiments presented here, we investigate (1) whether this finding replicates, (2) whether it generalizes to couples living in more remote villages and (3) whether the observed difference in unconditional cooperativeness between spouses in love versus arranged marriages can be explained by the selection of unconditionally cooperative people into love marriages. As in the previous chapter, we find that in villages close to the city love matched spouses are significantly more likely to be unconditionally cooperative. However, as distance from the city increases, the love matched effect declines. We conjecture that this is owing to less tolerance for love marriages in more remote areas. The behaviour of husbands and wives in a corresponding series of *inter*-household games establishes that greater unconditional cooperation between spouses in love marriages close to the city cannot be attributed to a selection effect.

* This chapter is based on joint work with Abigail Barr and Daniele Nosenzo.

1. Introduction

In Chapter 2 we observed a significantly greater likelihood of unconditional cooperation between spouses in love matched marriages compared to those in arranged marriages. In the context of our study, being unconditionally cooperative implies that these subjects contribute their entire endowment to the household pool in a Public Goods experiment regardless of the contribution made by their spouse. Within the context of the game, unconditional cooperation maximises the household's earnings.

In this chapter, Chapter 3, we aim to answer the following three questions. First, can we replicate our results from Chapter 2? Recall, that in Chapter 2 we studied a small sample of 108 married couples. Therefore, in this chapter we investigate if our results replicate as we increase the sample size.

Second, are individuals in love matched marriages more unconditionally cooperative towards one another compared to those in arranged marriages as we expand the extent of our study sample by including villages that are near as well as further away from the city centre? The sample investigated in Chapter 2 comprised of spouses in villages lying relatively close to the city of Faisalabad, the furthest village being approximately 38 kilometres from the city centre. So, to examine if our results hold further away from the city, for this chapter, we conducted a second round of lab-in-the-field experiments in a new sample of villages — some of which were similarly close to the city centre and some of which were much further away; the remotest village being 79 km from the centre.

Third, we examine whether the observed difference in unconditional cooperativeness between spouses in love versus arranged marriages can be explained by the selection of unconditionally cooperative people into love marriages. We investigate this by adapting the methodology followed by Barr et al. (2019) and implement a within-subject design by engaging the same spouses in interactions with unidentified members of other households of the same gender as their spouse.

Drawing on the work of Kalpagam (2008) and Pimentel (2000), communities in urban and peri-urban areas are often less conservative compared to those in rural settings. In the context of our study, nearness to the city may translate into lesser interference and negativity from the families and surrounding community against couples in love matched marriages. If this conjecture holds, we expect love matched couples from villages closer to the city to suffer from lesser interference, allowing their marital relationships to flourish and them to be more cooperative towards one another — compared to couples in arranged marriages residing in the city. On the flip side, love matched couples from remote villages with more traditional norms in place are more likely to suffer from negative treatment by the family and community members that could strain their marital relationships and erode cooperation. In such an environment, spouses in arranged marriages benefiting from community support could be expected to display greater cooperation compared to love matched couples.

The results presented in Chapter 2 replicate when we work with a new sample of married couples residing in villages close to the city in the second round of our experiments, which we report as series 2 in the rest of the paper. However, as distance from the city increases, the marriage type and unconditional cooperativeness declines. Indeed, our results indicate that context is important — the association between love matched marriage and unconditional cooperation is stronger in couples residing closer to the city, and this effect weakens for couples living in villages further away from the city where there may be lesser tolerance for love matched marriages.

Turning to the possible selection effect, if there is such an effect, individuals in love matched marriages should demonstrate the same likelihood of unconditional cooperation irrespective of partner type. This is not what we observe in our data. We find no marriage type effect on unconditional cooperation when participants engage with members of the opposite sex to whom they are not married.

The rest of the paper is organized as follows. Section 2 explains the experimental design and procedures followed by the analytical framework and methods in section 3. We present our results in section 4 and conclude in section 5

2. Experimental Design and Procedures

2.1 Experimental Design

Similar to Chapter 2, the experiment involves a one-shot two-player sequential public goods game with the strategy method applied to second movers (Player 2s) (Fischbacher et al., 2001; Gächter et al., 2012; Selten, 1967). Participants are randomly assigned to the role of Player 1 or Player 2. Player 1 receives an initial endowment of Pakistani Rupee (Rs.) 400, received in the form of four 100 Rupee notes, and this is openly communicated to both participants.¹³ Player 2 receives either Rs.100, 200, 300 or 400, again in the form of 100 Rupee notes and this range of amounts is also openly communicated to both participants. The probability of a Player 2 receiving Rs. 400 is 0.93 and the probability of him or her receiving each of the lesser amounts is approximately 0.023. However, these probabilities are not communicated to the participants and each Player 2's actual endowment is never revealed to Player 1 or any other participant in the experiment. Once the endowments are received, each player decides how much to contribute to the common pool.

The contribution amount can vary between zero and their total initial endowment, in multiples of Rs. 100. The total amount that goes into the pool is multiplied by a factor of 1.5, then, split equally between Players 1 and 2. The pecuniary payoff function for participant i can be represented as follows:

$$\pi_i = E_i - d_i + 0.75 \sum_{j=1}^2 d_j \quad (1)$$

¹³ In April 2018, the exchange rate for United States Dollar 1 = Rs. 115.4

where $0 \leq d_i \leq E_i$ and E_i is the endowment received by player i and d_i is contribution by player i to the common pool. The marginal payoff from the common pool is 0.75 unit for every unit contributed. In the context of our experiment, it is in the interest of both players to maximise the common pool by contributing their entire endowments.

Player 1s move first and decide how much to contribute to the common pool and how much to keep for themselves as in a standard public goods game. After making their contribution decisions, Player 1s are asked to state their beliefs about their partner's contribution, assuming their partner receives an endowment of Rs. 400.

To elicit Player 2s contribution preferences, we implemented the strategy method. Once Player 2s' endowment is revealed to them, they are asked to make a decision regarding their contribution to the common pool given each possible contribution by their partner. Player 2 is asked "Suppose that Player 1 decided to put all Rs. 400 of his/her money in the common pool, would you put any of your money in? If you would, how much?" Then, the same question is repeated but with the partner's contribution at Rs. 300, then Rs. 200, and so on until the partner's contribution is stated to be zero (five questions in total). Player 2s are then asked to state their belief about their partner's actual contribution. The actual contribution by Player 1 is disclosed and Player 2s corresponding pledged amount is deducted from their initial endowment.

The motivation for such a design is to elicit Player 2s' preferences for cooperation, i.e., to what degree are they willing to cooperate given their playing partners' degrees of cooperation. Eliciting the complete strategy of a player allows us to identify their behavioural type.

2.2 Procedures

Each participant played the game twice in the same role, once with his or her spouse and once with a random unidentified neighbour, who was present in the session and of the same gender as the participant's spouse. The gender of the neighbour partner was kept the same

as the spouse so that *ceteris paribus* comparisons with spousal interactions could be made. The order in which participants were paired with their spouse and with a neighbour was randomized at the session-level which allowed us to investigate and control for order effects in the experiment.¹⁴

To determine their initial endowments, participants picked two envelopes, one for each game, from two separate baskets. We used fake currency notes for the experiment since payoffs were based on only one of the two tasks. After completing both games, a random draw decided which game was used to determine a participant's pay. Both tasks had an equal probability of being selected as the paid activity and participants were made aware of the odds.

After the general instructions (more on this in Section 3.3), Player 1s were called one at a time. They selected their envelopes and were interviewed individually. Once all the Player 1s had been interviewed, one envelope containing a smaller endowment (of which the smaller amounts was randomly determined and unknown to the team running the session) was randomly placed in one of the two baskets and Player 2s were invited to play. So, in most sessions we had one small endowment (less than Rs. 400) per session in either the inter- or intra-household game at random.¹⁵

Our experiment was designed to keep the Player 2s' endowments concealed from their partners so that Player 1s could not make inferences about the generosity of Player 2's decisions. This asymmetry in information offered the Player 2s credible deniability, i.e., it ensured that they could, if they wished, keep any amount that they withhold from the common pool private. This was important to prevent Player 2s' choices from being affected by concerns about other players, particularly their playing partner, finding out their contribution strategies (Andreoni and Petrie, 2004; Rege and Telle, 2004). Our design

¹⁴ We randomized the order for the first village for our fieldwork, and then alternated the order for the following sessions. See table A1 in the Appendix A for the randomisation of sessions according to time and partner type.

¹⁵ Out of a total of 18 sessions, we had 21 small endowments (across spouse and stranger treatments combined). In three sessions, there were two small endowments, the rest had only one. We had a total sample of 310 couples, so $21/310 = 6.7$ percent of the sample received the smaller endowment.

minimised any concerns of retaliation from their spouses for Player 2s — hence allowing them to make decisions that reveal their preference for cooperation in the behavioural strategies they adopted.

3. Analytical Framework and methods

3.1.1 Intra-household decisions: Hierarchical Clustering

To address our first two research questions, as in Chapter 2, we implement the hierarchical clustering technique based on the work of Fallucchi et al. (2017) to determine distinct behavioural types when participants are paired with their spouses. Hierarchical clustering, in simple terms implies organizing the data into a hierarchy.

For cluster analysis, we first measure the (dis-)similarity between pairs of Player 2 strategies. Given that c_i and c_j are the contribution strategies chosen by participants i and j , the dissimilarity between them can be operationalised using the Euclidean distance $d(c_i, c_j) = \sqrt{\sum_{s=0}^5 (c_{si} - c_{sj})^2}$ where c_{si} is individual i 's contribution at strategy point s for each Player 2. Contribution strategies that differ by a smaller distance are considered to be more similar (Fallucchi et al., 2017).

An agglomerative method, then, produces a series of partitions in the data starting from n (where n is the total sample population) single member clusters and ending with a single cluster containing all n individuals (Everitt et al., 2011). The method groups strategies lying closest to one another as per the distance measure and the fusion process is repeated until all groups eventually form one big cluster (Chiang, 2009).

To select the number of clusters, i.e., the point at which the agglomeration is stopped, we refer to the Calinski-Harabasz index (Calinski and Harabasz, 1974) and the Duda-Hart $Je(2)/Je(1)$ index (Duda and Hart, 1973). In the current case, the Duda-Hart $Je(2)/Je(1)$

index indicated that 5, 6 or 7 clusters are strongly preferred to 3, 4 or 8.¹⁶ In five clusters, the five groups display choice patterns that indicate the existence of 5 distinct behavioural types: Unconditional cooperators, conditional cooperators, U-shaped behaviour, mid-ranged contributors and token-givers. When we allow for 6 clusters, the U-shaped group is split into two groups, both of which remain U-shaped but one is steeper than the other (see Table A2, and Figure A1 in Appendix A). In 7 clusters, apart from the split of the U-shaped group, the mid-rangers are also divided into two groups (Figure A2 in Appendix A). As we are mostly interested in the UC than any of the other types, we select the 5-cluster stopping point where each cluster represents a distinct behavioural type.

3.1.2 Inter-household decisions and behavioural types

Next, we investigate whether the difference in unconditional cooperation between couples in love and arranged marriage is causal — being in a love marriage causes people to be more cooperative, or owing to selection — more cooperative people select in to love matched marriages.

If couples in love matched marriages are more unconditionally cooperative as a result of selection, we would expect them to be more unconditionally cooperative also when playing with members of other households, i.e., when playing inter-household games. A selection effect predicts no shifts in behavioural strategies for couples in love matched marriages when engaging in intra- versus inter-household decisions. In other words, the inter-household interactions serve as a sophisticated balance test of the unconditionally cooperative types whose behavioural strategies should remain stable across different partners.

An absence of a selection effect predicts no effect of marriage type on cooperative behaviour in the inter-household interactions. Meaning that the contribution strategies of

¹⁶ The Calinski-Harabasz index does not provide us with a clear indication of the preferred number of clusters.

participants in love matched and arranged marriages should not be significantly different from one another when engaging with members of other households. A non-selection effect also reinforces that any systematic differences in the contribution strategies of participants from the two marriage types when engaging in intra-household interactions represent conscious decisions made in acknowledgment of their partner type – not because these were the only strategies the participants knew how to make.

To determine the behavioural strategies across inter-household interactions, we start by identifying the modal strategy in each observed behavioural type from the clustering of intra-household decision strategies. For instance, we find that the most frequent contribution strategy of conditional cooperators is one-for-one matching of their partner's contribution to the common pool.

The Euclidean distance of each participant's strategy in the inter-household decisions from the modal strategies observed in all five behavioural types obtained from the clustering of intra-household decisions is calculated. See Appendix B for more detail.

We then classify the inter-household decision strategies by assigning them to the behavioural type they are closest to in Euclidean distance unless the strategy is closest to the unconditional cooperator (UC) type. The group of unconditional cooperators in the intra-household interactions comprises of subjects who contribute their entire endowment across all decision points. So, for consistency, we retain this criterion for the UC group in inter-household interactions as well.¹⁷

Following this methodology, we classify 86 percent of our inter-household strategy sample to behavioural types. The unclassified sample (14 percent) comprises of individuals whose strategies are either equidistant from two modal strategies (7 percent), or closest to UC but not a pure strategy type (7 percent).

¹⁷ If we do not make this exception for the unconditional cooperators, our results are qualitatively the same as those presented below in the results section, see Table A13a, A13b and A13c.

3.2 Survey Instruments

We classified couples into love matched and arranged marriages by implementing the same methodology as described in Chapter 2. To reiterate, we designed a survey instrument which required respondents to select an option that described their decision to marry their spouse. The following options were read out to the respondent:

- 1) *I really liked him/her and I had to force my parents to accept my decision*
- 2) *I really liked him/her and my parents gave in without a fight*
- 3) *Partly arranged, partly our own liking for each other*
- 4) *My parents/elders made the decision, and I was forced to accept it*
- 5) *Completely arranged by my parents/elders in the family and I had no issues with it*
- 6) *Other (specify) _____*

Option 6 was left open-ended to allow for situations not covered by the other options; however, in the field, it was never used, indicating that options 1 to 5 were sufficient, from the perspective of the participants, with regard to describing the process by which their marriage match occurred. If either spouse selected any of the first three options, the couple was coded as a love matched marriage.

Similar to Chapter 2, couples did not always give the same responses to this question. Out of a total of 71 (25 percent) love matched couples, 27 were mutually acknowledge by both the spouses.¹⁸ There were 44 singly acknowledged couples – where one spouse stated a self-selected match and the other stated an arranged match to be included in our sample of love match marriage. Moreover, in our sample of love matched couples, we observe more men (84.5 percent) than women (53.5 percent) admit to a love matched marriage, however, this gender gap in acknowledgement of a love matched marriage is significant only in

¹⁸ Recall that 310 couples participated in the study, and not everyone received the full endowment of Rs. 400. After dropping the Player 2s receiving a lower initial endowment, we are left with a working sample of 289 couples.

Samundari tehsil and not in Faisalabad tehsil.¹⁹ Likewise, for study 1, we find no significant difference in gender when responding to the marriage type question where the sample comprised of villages closer to the city. This observation is important, and consistent with the foundation of our conjecture that social norms in more remote rural areas do not favour love matched marriages. Moreover, women face greater pressure to abide by social norms than men (Talbani and Hasanali, 2000). See Table A3 in Appendix A for a distribution of the responses to the survey instrument across spouses.

To control for relationship closeness, in Chapter 2 we included the ‘inclusion of other in the self (IOS) scale (Aron et al., 1992). However, due to biased responses observed in the field during first round of experiments, in study 2, we replaced the IOS scale with the Locke-Wallace Marital Adjustment (LWMA) test (Locke and Wallace, 1959).²⁰ The LWMA is one of the most frequently used instruments to measure the quality and stability of marriages (Freeston and Plechaty, 1997; Jiang et. al, 2013). The instrument is comprised of 15 questions assessing attitudes towards various aspects of the relationship such as general satisfaction in marriage, sexual relations, consensus and information sharing and disclosure. An aggregate score is then calculated based on the responses to all questions.

We also measured social preferences towards members of the wider society by including three questions from the ‘Global Preference Survey’ by Falk et. al (2018). The first question elicited positive reciprocity by looking at the propensity to act in a positively reciprocal manner by providing a self-assessment about how willing the respondent was to return a favour on an 11–point Likert scale. The second question captured negative reciprocity by inquiring about willingness to punish someone for unfair behaviour. The last question measured altruism by asking people about their willingness to give to good causes without expecting anything in return. These questions serve as a simple litmus test to reveal

¹⁹ In the final sample of Chapter 2, we had 29 percent love matched couples (31 out of 108 couples), of which 41 percent (9 couples) were mutually acknowledged love matched couples and 59 percent (22 couples) were single acknowledged love matched couples.

²⁰ Based on our experience on the field during Chapter 2, there appeared to be a social desirability bias when answering this question. Participants were inclined to select a higher value on the scale, even on the occasions when they verbally expressed dissatisfaction in their relationship.

if there are any systematic differences in social preferences across individuals from the two marriage types, and were also included in the Chapter 2 survey.

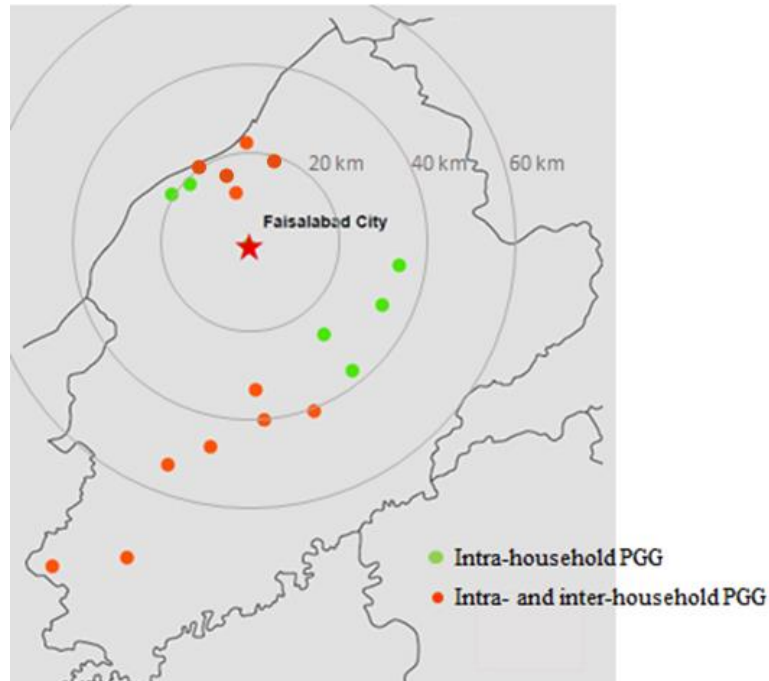
3.3 Sampling and Experimental Procedures

The villages included in Chapter 2 were situated close to the city of Faisalabad, the closest being approximately 20 km from the city centre and the furthest about 38 km. For this chapter, our sample includes 12 villages that span a much wider range of distances from the city's centre — from 12 to 79 km.²¹ This sample of villages is located across two tehsils of Faisalabad district — Faisalabad tehsil and Samundari tehsil. A tehsil is a sub-division within a district. Figure 1 maps the location of villages in series 1 from Chapter 2 (green dots) and series 2 (orange dots). The orange dots in the North Western part of the district indicate the sampled villages in Faisalabad tehsil where the closest village has a distance of 12 km from the city's centre and farthest lies about 23 km from the city's centre. The orange dots in the Southern part of the district indicate the sampled villages in Samundari Tehsil. The distances from the city for villages in Samundari tehsil range from approximately 37 to 79 km.²²

²¹ 9 villages were visited in 2018 and 3 villages in 2019.

²² For series 1, the villages came from two tehsils: Faisalabad tehsil and Jaranwala tehsil. The green dots on the East are villages from Jaranwala tehsil, and those on the West belong to Faisalabad tehsil.

Figure 1: Map of Faisalabad district



Notes: The green dots represent the villages visited in 2016 for the series 1 field experiments. Orange dots represent villages visited in 2018 and 2019 for series 2 field experiments

We conducted 24 sessions, two sessions per village. In total, 310 married couples participated. In each village, we conducted a morning and an afternoon session. Each session lasted between 2.5 and 3 hours. We carried out back-to-back sessions to minimise information spillovers.²³ The sessions were conducted in venues such as primary schools or under especially erected shade-cloths in open spaces situated in central locations within the villages.

To select our sample of couples in each village, we followed the same protocol as described in Chapter 2. A household listing of 200-250 households was carried out in each of the twelve selected villages. The protocol for the listing exercise is included in Appendix B. During the listing exercise, we obtained information about the number of couples in a household who were able to take time out for a session, the name and age of the husband,

²³ We did this to prevent participants in the morning sessions from communicating and sharing details of the experiments with prospective participants of the afternoon session.

and number of years of marriage. In the household listing data, some households had reported more than one couple who could participate in the experiments, so for the households with multiple entries we first dropped older couples in favour of younger couples, keeping one couple per household. The resulting data was then arranged according to marriage lengths, and a stratified random sample was drawn, with the strata based on marriage lengths: 0-4 years, 5-9 years, 10-20 years and more than 21 years. When conducting the experiments described in Chapter 2 in 2016, we learned that more recently married couples had a lower show-up rate owing to their work commitments during the day, so we over-sampled them; about 60 percent of the invitations went to couples with marriage lengths between 0 to 9 years. In our series 2 sample, 44 percent of the couples were married for 9 years or less, indicating a show-up rate of 23 percent for such couples. The show-up rate for older couples, married 10 years or more was 46 percent. Our target sample per village was 32 couples and we randomly selected a stratified sample of approximately 70 to 90 couples from each village — half of which were invited to the morning session and the other half to the afternoon session. The overall show-up rate was about 32 percent.

After sample selection, a two-person team was sent out to invite couples one or two days before the session. An invitation, in Urdu, was handed to a couple inviting them to participate in a study about everyday decision-making being conducted by a university student. The invitation had the name of the husband, date, time and duration of the session along with the venue details. It also explained that if the couple actually participated in the session, they could earn up to Rs. 1000. However, if the couple, turned up for the session but did not actually participate (in case of extra couples showing up), then a fee of Rs. 300 would be given to the couple to thank them for their time and cover for transportation costs. Only couples were eligible for the compensation, i.e., individuals showing up without spouses would neither be allowed to participate nor receive a show-up fee. The invitations were also read out and explained by the enumerators in case the participants were illiterate. Couples were recruited according to their arrival time at the venue, couples arriving earlier were given precedence in recruitment. A maximum of 16 couples were allowed per session and any extra show-ups were paid the participation fee and sent away.

Due to low literacy levels in the research area, care was taken to ensure that participants clearly understood the exercise. The experimental instructions and scripts were translated into Urdu. The general instructions were given to all the participants in an open setting at the same time and the experiment was explained mainly with the help of visual aids. Following this, participants were sent one-by-one for their individual interviews. In the individual interviews, the experimental instructions were summarised, control questions were asked to test understanding and participants' decisions followed by their beliefs were elicited. After completing their individual interviews, participants were seated in an area separate from those who had yet to make their choices (See Appendix B for the general training instructions).

The general instructions for the experiment stated that each participant would play the game twice, each time with a different person. However, the participants were given no indication that they would be playing one of their games with their spouse until just before they engaged in that game during the individual interview. Thus, we precluded any attempts by spouses to collude with or coerce each other to make a particular contribution decision. Individual interviews and final payments were carried out in private.

4. Results

4.1 Descriptive statistics

Table 1 presents the descriptive statistics for the sample of Player 2s who received an initial endowment of Rs. 400 in series 2. The working sample consists of 289 spouses of which 218 (75 percent) are in arranged marriages and 71 (25 percent) are in love matched marriages.²⁴ At the tehsil level, we find no significant difference in the ratio of arranged and love matched couples — Samundari tehsil sample has 26 percent love matched couples

²⁴ Recall that 310 couples participated in the study, and not everyone received the full endowment of Rs. 400. After dropping the Player 2s receiving a lower initial endowment, we are left with a working sample of 289 couples.

and Faisalabad tehsil has about 22 percent. For details about the entire sample, see Table A4 in Appendix A.

Similar to our sample in Chapter 2, couples in arranged marriages are older than those in love matched marriages, have been married for longer and have more children. Love matched marriages are also more likely to be consanguineous marriages. The differences in means are tested with a t-test and Wilcoxon rank-sum (Mann-Whitney) test.

According to a t-test and the Wilcoxon rank-sum test, there is no difference in LWMA score between love matched marriages and arranged marriages.²⁵ One key element of the LWMA test is to gauge the degree of overall satisfaction from one's marriage — the question asks each subject to identify their own degree of happiness on a seven point weighted scale ranging from 0 to 35 where the value of 15 represents the level of happiness experienced from marriage by most couples, and values above 15 represent greater happiness, 35 being extreme happiness, and values below reflect the opposite, 0 indicating a very unhappy marriage. When we look at this specific indicator, we find significant differences in the score for happiness from marriage between the two marriage types. The overall level for happiness from marriage is significantly higher with a score of 26.9 in love matched marriages and 25.2 in arranged marriages. Moreover, the score for happiness from marriage is significantly higher for couples living in Faisalabad tehsil, where the furthest village is less than 25 km away from the city's centre. Lastly, on average, men indicate significantly greater satisfaction compared to their female counterparts across both marriage types. This difference is largely driven by couples in arranged marriages where women report significantly lower levels of happiness from their marriage compared to men — on the other hand men and women in love matched marriages report similar levels of the satisfaction (see Table 1).

²⁵ When we test for differences in means between the sub-sample in mutually acknowledged love matched marriages and rest of the sample, the LWMA score is higher for the former (a score of 131, compared to 126 for the rest) with a t-test significant at the 5 percent level, and the Wilcoxon rank-sum test at the 1 percent level.

The three measures of social preferences adapted from Falk et al. (2018), assessing the willingness to return a favour, seek revenge or give altruistically reflect no differences across the two marriage types. This is important as it contributes towards answering the second research question on the likelihood of more generous or kinder people selecting into love matched marriages. No differences in social preferences is consistent with no selection effect.

Table 1: Descriptive Statistics

	Arranged matches	Love matches	<i>Diff.</i>	Arranged matches		Love matches	
Variable				<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
Individual's Age (years)	36.195	33.373	2.822***	38.028	34.362	35.746	31.000
Highest completed level of education	3.342	4.211	-0.869**	3.889	2.793	4.845	3.577
Number of years of being married	14.295	11.309	2.986***	14.326	14.266	11.38	11.239
Number of children	3.667	2.894	0.773***	3.665	3.669	2.887	2.901
Monthly income (Rs. 000s)	16.216	16.234	-0.073	17.032	15.399	17.056	15.521
Wealth score Index	-0.004	0.06	-0.066	-0.005	-0.005	0.061	0.061
Spouses are first cousins	0.408	0.676	-0.267***	0.408	0.408	0.676	0.676
Locke-Wallace relationship closeness score	125.896	127.688	-1.792	128.167	123.668	131.134	124.437
Happiness from marriage score	25.167	26.88	-1.713**	25.775	24.559	27.352	26.408
On a scale from 0 - 10: when someone does me a favour, I am willing to return it (0: does not describe me at all; 10: perfectly describes me)	8.720	8.845	-0.125	8.739	8.702	8.83	8.859

On a scale from 0 - 10: if I am treated very unjustly, I take revenge even if it is at a cost (0: does not describe me at all; 10: perfectly describes me)	1.771	1.676	0.095	1.986	1.555	1.718	1.633
On a scale from 0 – 10: How willing are you to give to good causes without expecting anything in return? (0: completely unwilling to do so; 10: very willing to do so)	7.791	7.795	-0.004	7.706	7.876	7.662	7.929
Observations	436	142		218	218	71	71

Notes: All differences are means tested with a Wilcoxon rank-sum (Mann-Whitney) test and t-test.
*** p<0.01, ** p<0.05, * p<0.1 for t-test and Wilcoxon rank-sum test.

4.2 Cooperation type in intra-household interactions

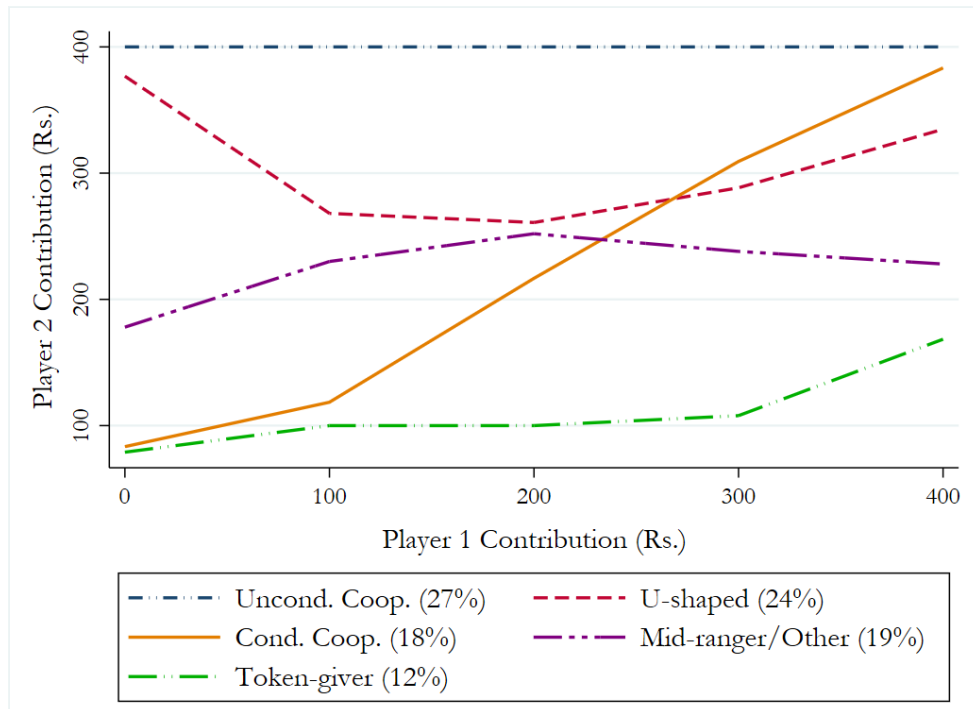
We implement the hierarchical clustering technique to obtain behavioural types in intra-household interactions for the Player 2s sample. Figure 1 below presents the five different behavioural types identified from the intra-household decisions. Unconditional cooperators (UCs), participants who contribute their entire endowment towards the household pool, is the largest group in our sample (27 percent).²⁶ The UCs are closely followed in frequency by a type that is unique to our study, which we have termed as the ‘U-shaped’ contributors (24 percent). These participants initially reciprocate a decline in contribution by their spouse (recall that the strategies were elicited starting with Player 1 contributes everything, and eventually to when Player 1 contributes nothing) but, possibly upon realising that

²⁶ This group of UCs could be constructed by simply eyeballing the data and identifying participants who contribute Rs. 400 in every decision across their strategy set. Here, however, they are identified by hierarchical clustering.

reciprocity will be harmful to the household, switch to compensating further declines in their spouse's contribution by increasing their own contributions. Then come conditional cooperators (CC), who match or nearly match contributions by their spouse, (18 percent) followed by mid-rangers, who contribute close to half of their endowment across all decision points, (19 percent). The smallest group is of token-givers (TGs), who give around Rs. 100 for all possible contributions by their spouse (12 percent).

Although, we have a much bigger sample in this study compared to series 1 — more than twice the number of participants than we had in series 1 — the behavioural types across the two series are mostly comparable. For instance, we observe relatively similar proportions of UCs and U-shaped contributors across both series of experiments — see Table A4 for comparison between behavioural types across series 1 and 2. We do observe some differences, for instance, the proportions of CCs are about 18 percent in series 2 compared to 9 percent in series 1. Also, the contribution pattern of the 'other' group in series 1 was not readily interpretable — possibly because of the small sample sizes. However, in series 2 the mid-rangers/other emerge as a distinct behavioural type.

Figure 1: Behavioural types for intra-household decisions (Series 2)



4.3 Are love matched spouses more unconditionally cooperative towards one another compared to those in arranged marriages as we expand the extent of our study sample by including villages that are near as well as further away from the city centre?

Table 2 presents estimation results from linear probability models with a dummy dependent variable taking the value of one for UCs in intra-household interactions. Given that interaction terms can be more complicated to interpret due to non-linearity in Logit models (Ai and Norton, 2003), we present Linear probability model with p-values in parentheses that account for clustering at the session level derived using the wild bootstrap method (Cameron et al., 2008). Panel A presents parsimonious models. Panel B presents the estimates from similar models but with controls.

Column 1 presents the finding from series 1 (copied from Table 6, Chapter 2). Here, husbands and wives in love matched marriages are significantly more likely to be UCs than those in arranged marriages. Column 2 presents the same model estimated using the series 2 data. Here, we see no average effect of marriage type. Since the geographic location of the villages is one of the differentiating factor between the series 1 and 2, in column 3, we include *distance from the city centre* and the interaction between this and the love match indicator as additional regressors. Thus, we observe that distance from the city significantly mitigates the effect of love matched marriages on the likelihood of being an UC. Being in a love matched marriage significantly increases the chances of being an UC by 27.9 percent when distance from the city is zero (out of sample prediction based on column 3). However, this effect weakens by -0.05 percent with every kilometre as distance from the city increases.

To further investigate this result, in column 4, we replace the distance variable with a Samundari tehsil dummy, which takes the value 1 for villages that lie in this tehsil and are consequently situated further away from the city. The coefficient of love matched marriage is positive and significant and informs us that love matched couples in the Faisalabad tehsil (comprising of villages close to the city) are significantly more likely to be UCs compared to subjects in arranged marriages residing in Faisalabad tehsil. Moreover, the coefficient

on the interaction term *Love match x Samundari tehsil* represents the differential effect of being in a love match in the Samundari tehsil.²⁷ The estimation model with a tehsil dummy (column 4) bears a marginally higher R-squared value indicating that this model explains our series 2 data better than the model with distance (column 3). A possible explanation may be that distance from the city does not have a linear effect on the likelihood of being an UC. To investigate this nonlinearity, in column 5, we replace distance from the city in kilometres with the natural logarithm of distance from the city rather than the tehsil dummy. We find a strong love matched marriage effect on the dependant variable for couples residing in villages close to the city, and this effect diminishes by 0.002 percentage points for every 1 percent increase in distance from the city. The improved R-squared value compared to the model in column 3 suggests that distance from the city indeed has a nonlinear effect such that the likelihood of being an UC initially rises but eventually declines for couples in love matched marriages as the natural logarithm of distance from the city increases.²⁸

Among the controls included, number of children and wealth score of the household have significant positive effects on the probability of being an UC. For details on controls for series 1, see Table 6 in Chapter 2 and Table A7 in Appendix A, Chapter 2 for results without bootstrap. Table A6a in Appendix A presents the coefficients for controls for the estimations presented in Table 2 below for series 2. Estimations from a linear probability model with standard errors clustered at the session level without bootstrapping (Table A6b in Appendix A) give us similar results. We also control for game order effects (column 5, Panel B, Table A6b) and session effects (column 6, Panel B, Table A6b) and find the results to be consistent. Finally, we also estimate Logit estimations (A7 in Appendix A) and observe comparable results.

²⁷ Specifically, it indicates that the difference in the likelihood of being a UC between couples in love matched marriages and arranged marriages in Samundari tehsil is 27.1 percent less compared to this difference from the two marriage types in Faisalabad tehsil. We test the effect of love matched marriages for Samundari ($0.253 - 0.271 = -0.018$, column 4, Table A6b in Appendix A (result available upon request) in LPM estimations with standard errors clusters at session level (no wild bootstrap) and do not find it statistically significant, confirming that there is no marriage type effect on the likelihood of being an UC in Samundari.

²⁸ We plot the estimation in column 5 (panel A) and it appears to be concave — graph available upon request.

Table 2: Effect of Marriage type on probability of being an UC for intra-household interactions

Dummy Dependent = 1 for UC					
Panel A - No controls	Series 1	Series 2	Series 2	Series 2	Series 2
	(1)	(2)	(3)	(4)	(5)
Love match	0.341*** (0.000)	0.090 (0.113)	0.279** (0.025)	0.253** (0.030)	0.828** (0.022)
Distance from the city			0.002 (0.104)		
Love match x distance			-0.005* (0.075)		
Samundari Tehsil				0.099* (0.077)	
Samundari x Love match				-0.271** (0.023)	
Ln (distance from the city)					0.092* (0.065)
Ln (distance) x Love match					-0.211** (0.031)
Constant	0.208*** (0.000)	0.248*** (0.000)	0.158*** (0.005)	0.191*** (0.000)	-0.069 (0.626)
Observations	108	289	289	289	289
R-squared	0.112	0.008	0.021	0.026	0.025
Panel B - With controls	Series 1	Series 2	Series 2	Series 2	Series 2
Love match	0.360*** -0.009	0.098 (0.143)	0.336** (0.020)	0.292** (0.019)	1.009** (0.014)
Distance from the city			0.003** (0.045)		
Love match x distance			-0.006*		

				(0.073)	
Samundari Tehsil				0.109*	
				(0.089)	
Samundari x Love match				-0.316***	
				(0.010)	
Ln (distance from the city)					0.108**
					(0.016)
Ln (distance) x Love match					-0.259**
					(0.021)
Constant	-0.42	0.296**	0.230*	0.287**	-0.025
	-0.313	(0.021)	(0.070)	(0.030)	(0.877)
Observations	108	289	289	289	289
R-squared	0.175	0.049	0.067	0.071	0.073

Notes: Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008). P-values in parenthesis. Panel B presents the same models estimated in Panel A with controls: participant's age, gender, literacy, number of children, years of marriage, spouse is a first cousin and wealth score. For series 1, Panel B, the controls also included: household head, positive reciprocity, negative reciprocity. *** p<0.01, ** p<0.05, * p<0.1

A multinomial logit analysis (Table A8 in Appendix) indicates that, given a participant in a love matched marriage instead of arranged, the likelihood of the participant being an UC is significantly higher than any other behavioural type. From Table A8, we observe that for a participant belonging to a love matched marriage instead of an arranged marriage, the odds of being a U-shaped contributor or a Mid-ranger instead of a UC are very low, and those of being a Token giver are even lower (Panel 3). This holds true for almost all the different models specified in Table A8. However, with the small sample sizes in each behavioural type and further inclusion of interaction terms in the multinomial logit analysis, we report these results with caution.

Finally, we carry out a pooled analysis by combining the intra-household interactions for series 1 and 2 to test if our results remain consistent. Table A9 in Appendix A shows there is indeed a significant and positive effect of love matched marriages on the likelihood of being an UC for couples in villages closer to the city (Faisalabad and Jaranwala tehsil) compared to couples in arranged marriages in the same villages. The effect of distance from the city, as well as its logarithmic transformation is stronger (at 5 percent significance level) compared to the estimated coefficients in Table 2. We observe a mitigating effect of love matched marriages on the probability of being an UC as distance from the city increases. Overall, the results remain robust in the pooled analysis.

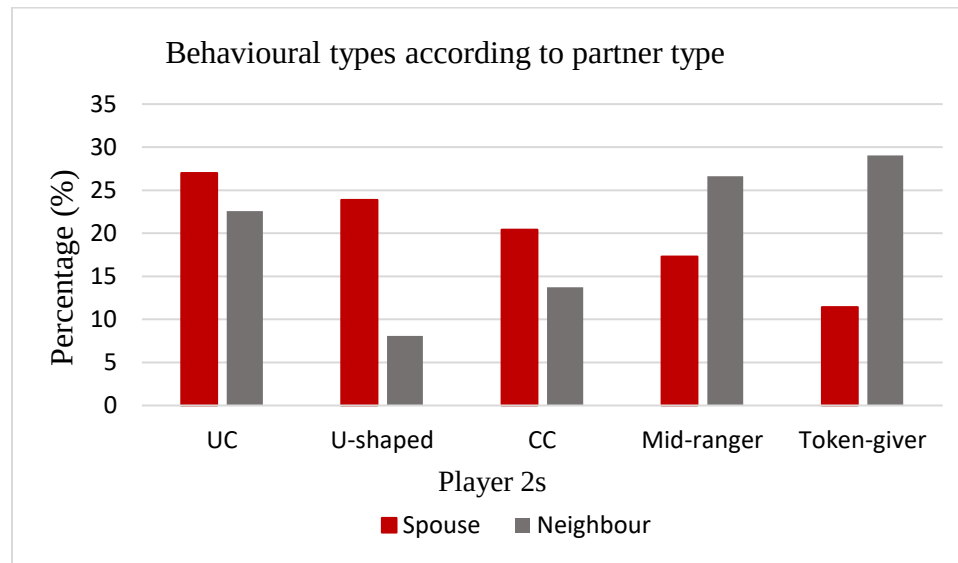
4.4 Cooperation type and inter-household interactions

Figure 2 gives an overview of the distributions of behavioural types in the intra- and inter-household interactions. As we move from intra- to inter-household strategies, we observe a shift away from UC, U-shaped and CCs and towards mid-rangers and Token-givers. U-shaped strategies constitute 24 percent of the intra-household interactions, but less than 9 percent for inter-household games (see Table A10, Appendix A, for the corresponding cross-tab). That the bulk of the U-shaped contributors are observed in the spousal interactions supports our conjecture that participants of this behavioural type reveal a preference to maximise the returns from the common pool. Note that the sample size is smaller for the neighbour interactions owing to the classification strategy based on the methodology described in section 3.1.2.²⁹ The Pearson chi-squared test with a null hypothesis that the distribution of behavioural types is the same irrespective of partner type, is rejected at the 5 percent and 1 percent level of significance when we test for the love matched marriage sample and the arranged marriage sample distributions separately (Table A10). We also look at shifts in contribution within subjects by comparing their strategies across the two games. Table A11a and A11b in Appendix A present the distribution of strategies across games for couples in love matched and arrange marriages separately. We observe that of those who behave as UC, about 59 percent of participants in love matched

²⁹14% of the working sample cannot be assigned a distinct behavioural type in the neighbour interactions.

marriages compared to 81 percent in arranged marriages do not change their strategies when playing with different partners. Similarly, 67 percent of token-givers in love matched marriages and 88 percent of those in arranged marriages behave as token-givers strategy irrespective of partner type. For the other three strategies, there are some shifts in contribution behaviour across partner types for both marriage types.

Figure 2: Percentage distribution of behavioural types across partners



4.5 Can the greater unconditional cooperation between spouses in love matched marriages close to the city be explained as a selection effect?

Now, to ascertain if the unconditional cooperativeness of subjects in love matched marriages is driven by a selection effect where more unconditionally cooperative individuals opt into love matched marriages, we exploit the inter-household decisions. If UC is more common between love matched spouses as a result of selection, we would expect these participants to also be more likely to be UC when playing with neighbours.

Table 3 presents the results from linear probability models with a dummy dependent variable taking the value of one for UCs — see Table A12a in Appendix A for details about

the controls. Columns 1 and 2 present the analysis focused on intra-household interactions (copied from Table 2, column 5). Columns 3 and 4 present the same analysis but focusing on inter-household interactions. In the case of a selection where more unconditionally cooperative individuals were opting to enter love matched marriages, the coefficient on marriage type should have been statistically significant and positive. Here, we observe no effect of marriage type; the coefficients on *Love match* and its interaction with the natural log of distance from the city are both not significant and close to zero.

Finally, in Columns 5 and 6, we pool the intra- and inter-household decisions samples and introduce an indicator of partner type and interactions between partner type, marriage type and log of distance from the city as additional regressors. These estimations indicate that the coefficient estimates for the intra-household sample (columns 1 and 2) are significantly different from those for the inter-household sample (columns 3 and 4) and that the null findings for the latter are not owing to greater imprecision in the estimates. These findings are inconsistent with a selection effect driving our results in the intra-household interactions.

Linear probability models with standard errors clustered at the session level without bootstrapping (Table A12b in Appendix A) and Logit estimations of the above models (Table A12c in Appendix A) return qualitatively similar results. We also present the results for Table 3 inter-household decisions, by allowing the dependent variable of UCs to include participants who do not always contribute their entire endowment at every strategy point — but have a strategy set that is closest to that of UCs than any other behavioural type (Table A13a, A13b and A13c in Appendix A). The results remain consistent.

Table 3: Effect of Marriage type on the probability of being an UC for intra and inter-household interactions in Series 2

Dummy Dependent=1 for UC						
Variables	Intra-household		Inter-household		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.828** (0.022)	1.009** (0.014)	0.195 (0.449)	0.344 (0.215)	0.828** (0.022)	0.993** (0.013)
Ln (distance from the city)	0.092* (0.065)	0.108** (0.016)	0.062 (0.317)	0.084 (0.183)	0.092* (0.065)	0.112** (0.014)
Ln (distance) x Love match	-0.211** (0.031)	-0.259** (0.021)	-0.056 (0.435)	-0.092 (0.224)	-0.211** (0.031)	-0.253** (0.023)
Partner is Neighbour					0.050 (0.644)	0.050 (0.644)
Love match x Partner is neighbour					-0.633** (0.029)	-0.633** (0.029)
Ln (distance from city) x Neighbour					-0.031 (0.357)	-0.031 (0.357)
Love match x Partner is neighbour x Ln (distance from the city)					0.155** (0.042)	0.155** (0.042)
Constant	-0.069 (0.626)	-0.025 (0.877)	-0.019 (0.921)	-0.026 (0.902)	-0.069 (0.626)	-0.050 (0.733)
Controls	No	Yes	No	Yes	No	Yes
Observations	289	289	289	289	578	578
R-squared	0.025	0.073	0.006	0.041	0.025	0.064

Notes: Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008). P-values in parenthesis. Controls: participant's age, gender, literacy, number of children, years of marriage, spouse is a first cousin and wealth score. *** p<0.01, ** p<0.05, * p<0.1.

4.6 Player 1 contributions and Player 2 behavioural types in intra-household decisions

We also look at the Player 1s contributions when playing with their spouses and observe that about 43 percent of the Player 1s, 125 out of 289 contribute their entire endowment and among these 125, 35 percent have spouses who are unconditionally cooperative. Correspondingly, for Player 2s who are unconditional cooperators, 56 percent, 44 out of 78 have spouses who as Player 1s contributed their entire endowment.

For inter-household decisions, fewer Player 1s contribute their entire endowment 34 percent, 96 out of 280 and among these, 34 percent, 33 out of 96 have partners who are unconditionally cooperative. Of the Player 2s who contribute their entire endowment in inter-household decisions, about 42 percent, 33 out of 79 have partners who make the same decision. See Table A14 in Appendix A for details.

Table 4: Distribution of Player 1 contributions and corresponding Player 2 behavioural types in intra-household decisions

Player 1 (Rs.)	Player 2 behavioural types					N
	UC	U-shaped	CC	Other/Mid-ranger	Token-giver	
0	0 (100%)	0	1 (50%)	0	1 (50%)	2
100	3 (17%)	4 (22%)	4 (22%)	2 (11%)	5 (28%)	18
200	22 (27%)	19 (23%)	15 (18%)	14 (17%)	12 (15%)	82
300	9 (15%)	14 (23%)	12 (19%)	19 (31%)	8 (13%)	62
400	44 (35%)	31 (25%)	21 (17%)	21 (17%)	8 (6%)	125
N	78 (27%)	68 (24%)	53 (18%)	56 (19%)	34 (12%)	289

Notes: Each cell presents the number of participants, respectively. The numbers in brackets are percentages that add up to 100% for each row.

5. Conclusions

Households are one of the most important and commonplace decision-making units of the society. While the literature on household decision-making and bargaining identifies an array of factors that contribute to cooperation between spouses, to our knowledge, this study is the first to identify marriage type, by distinguishing between arranged and love matched marriages as a potential cause. Given that arranged marriages are prevalent in many developing economies, it is imperative to study the differences in the behaviour of spouses belonging to the different marriage types.

By implementing a carefully designed experiment, we measure cooperation between spouses belonging to arranged and love matched marriages. We find that spouses in love matched marriages are more unconditionally cooperative with one another compared to those in arranged marriages. However, the effect of marriage type on cooperation is only observed for couples residing in villages close to the city. Increasing distance from the city's centre has a mitigating effect on the difference in unconditional cooperation between spouses in love matched marriages and arranged marriages.

The within-subject design of our experiment also allows us to confirm that the effect of marriage type on unconditional cooperation is not driven by the selection of more unconditionally cooperative individuals into love matched marriages. Having said that, our experimental design does not preclude other sources of selection that may explain cooperative behaviour in love matched couples. For instance, we cannot establish whether those who select into love matched marriages are a special type of individuals who are cooperative towards everyone that they care about, and not just their spouses. Perhaps, this could be an interesting topic for future research.

Our results suggest that there is a social penalty on love matched couples settled in villages further away from the city where the communities are likely to be more conservative. To substantiate this conjecture, in the next chapter we report the results of a norm elicitation experiment conducted in villages nearby as well as further away from the city's centre.

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Appendix A

Table A1: Schedule of Session timings, partner types and session numbers

Session Time	Order of Games	Session No.
Morning Session	Spouse game first, neighbour game second	1, 7, 9, 15, 19
Morning Session	Neighbour game first, spouse game second	3, 5, 11, 13, 17, 21, 23
Afternoon Session	Spouse game first, neighbour game second	4, 6, 12, 14, 22, 24
Afternoon Session	Neighbour game first, spouse game second	2, 8, 10, 16, 18, 20

Table A2: Number of clusters and behavioural types for intra-household interactions

Five clusters		Six clusters		Seven clusters	
Behavioural type	N	Behavioural type	N	Behavioural type	N
UC	78	UC	78	UC	78
CC	53	CC	53	CC	53
Token-giver	34	Token-giver	12	Token-giver	34
Mid-ranger	56	Mid-ranger	56	Mid-ranger (horizontal)	26
U-shaped	68	U-shape (Steep)	20	Mid-ranger (mildly upward sloping)	30
Total	289	U-shape (moderate)	48	U-shape (Steep)	20
		Total	289	U-shape (moderate)	48
				Total	289

Figure A1: Behavioural types for intra-household decisions (Series 2 – 6 clusters)

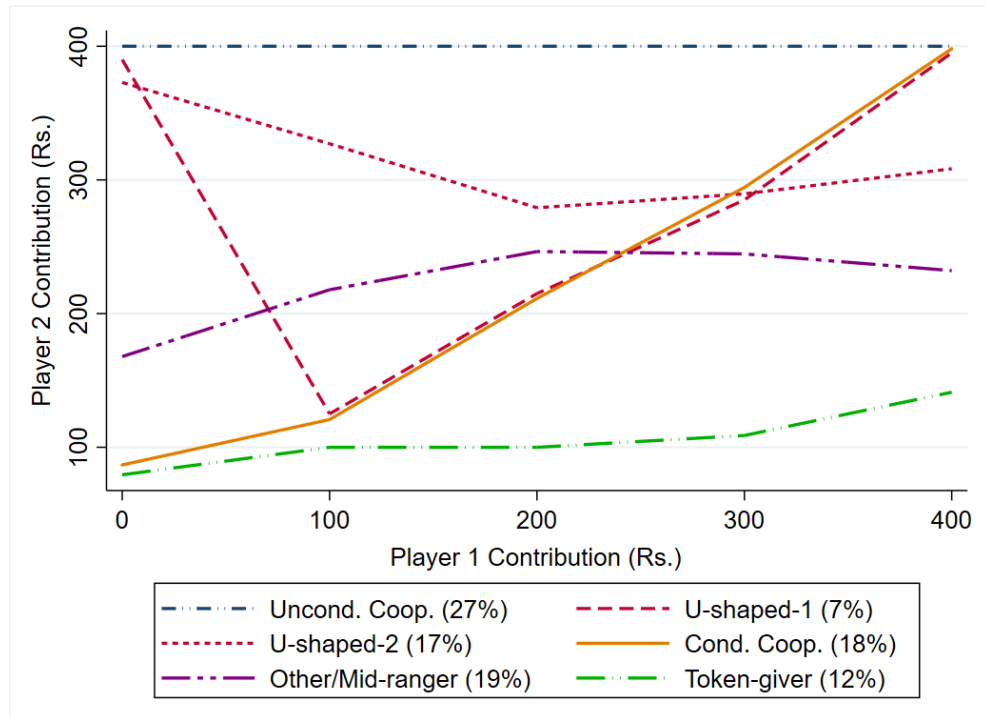


Figure A2: Behavioural types for intra-household decisions (Series 2 – 7 clusters)

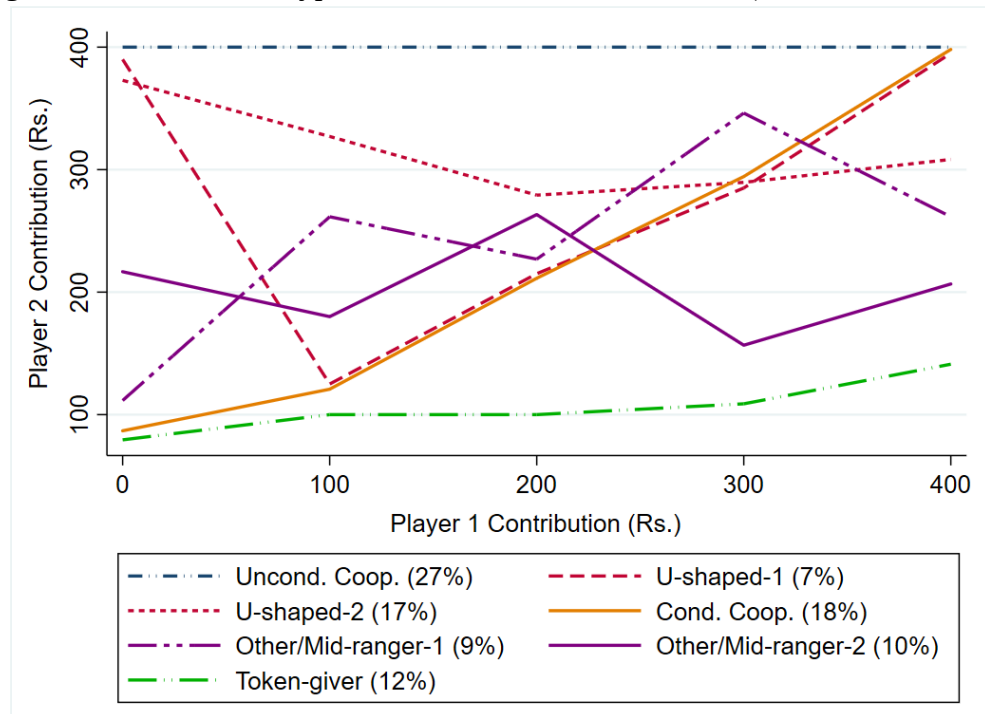


Table A3: Distribution of responses to question on ‘marriage type’ across spouses

Husband	Wife				
Marriage type options (A-E)	A	B	C	E	Total
I really liked him/her and I had to force my parents to accept my decision (A)	1	0	0	0	1
I really liked him/her and my parents gave in without a fight (B)	1	10	8	21	40
Partly arranged, partly our own liking for each other (C)	1	2	4	12	19
My parents/elders made the decision, and I was forced to accept it (D)	0	0	0	3	3
Completely arranged by my parents/elders in the family and I had no issues with it (E)	0	3	8	215	226
Total	3	15	20	251	289

Note: This table presents a matrix of distribution of the responses to the question on marriage type across spouses.

Table A4: Descriptive Statistics for Series 2 – Full sample

Variable	Arranged matches	Love matches	Diff.	Arranged matches		Love matches	
				Men	Women	Men	Women
Age (years)	36.332	33.433	2.898***	38.187	34.477	34.4	32.86
Highest completed level of education	3.359	4.247	-0.887**	3.889	2.829	4.743	3.139
Number of years of being married	14.481	11.427	3.054***	14.519	14.443	8.943	13.139
Number of children	3.6787	2.887	0.792***	3.677	3.681	2.88	2.89
Monthly income (Rs. 000)	16.359	16.44	-0.080	17.043	15.677	17.507	15.373
Wealth score Index	-0.036	0.113	-0.149	-0.359	-0.359	0.113	0.113
Spouses are first cousins	0.4083	0.6761	-0.268***	0.421	0.421	0.667	0.667
Locke-Wallace relationship closeness score	125.882	127.993	-2.111	127.916	123.883	131.183	124.973
Happiness from marriage score	25.177	26.847	-1.67**	25.740	24.613	27.227	26.467
On a scale from 0 - 10: when someone does me a favour, I am willing to return it (0: does not	8.741	8.929	-0.186	8.715	8.698	8.84	8.813

describe me at all; 10: perfectly describes me) On a scale from 0 - 10: if I am treated very unjustly, I take revenge even if it is at a cost (0: does not describe me at all; 10: perfectly describes me)	1.785	1.687	0.0984	1.936	1.634	1.76	1.613
On a scale from 0 – 10: How willing are you to give to good causes without expecting anything in return? (0: completely unwilling to do so; 10: very willing to do so)	7.717	7.787	-0.0696	7.694	7.740	7.653	7.92
Observations	470	150		235	235	75	75

Notes: Total sample comprised of 310 couples. All differences are means tested with a Wilcoxon rank-sum (Mann-Whitney) test and t-test. *** p<0.01, ** p<0.05, * p<0.1 for t-test and Wilcoxon rank-sum test. [†]p<0.10 for Wilcoxon rank-sum test only. [^]p<0.05 for t-test and p<0.01 for Wilcoxon rank-sum test.

Table A5: Behavioural types across series 1 and 2

Behavioural types	Series 1 (1)	Series 2 (2)	N (3)
UC	33 (31%)	78 (27%)	111 (28%)
U-shaped	25 (23%)	68 (24%)	93 (23%)
CC	10 (9%)	53 (18%)	63 (16%)
Other/Mid-ranger	9 (8%)	56 (19%)	65 (16%)
Token-giver	31 (29%)	34 (12%)	65 (16%)
N	108	289	397

Pearson chi(4) = 24.082 and Pr = 0.000 (Columns 1 and 2)

Table A6a: Linear Probability Model: Effect of Marriage type on probability of being an UC for intra-household interactions (with controls)

Dummy Dependent = 1 for UC				
Panel B - With controls	Series 2 (2)	Series 2 (3)	Series 2 (4)	Series 2 (5)
Love match	0.098 (0.143)	0.292** (0.019)	0.336** (0.020)	1.009** (0.014)
Distance from the city		0.109* (0.089)		
Love match x distance		-0.316*** (0.010)		
Samundari Tehsil			0.003** (0.045)	
Samundari x Love match			-0.006* (0.073)	
Ln (distance from the city)				0.108** (0.016)
Ln (distance) x Love match				-0.259** (0.021)
Individual's Age	-0.003 (0.609)	-0.005 (0.364)	-0.005 (0.403)	-0.005 (0.360)
Female	0.031 (0.579)	0.020 (0.725)	0.023 (0.674)	0.022 (0.680)
Participant is illiterate	-0.060 (0.244)	-0.041 (0.384)	-0.038 (0.396)	-0.039 (0.379)
Number of children	0.033* (0.070)	0.033* (0.076)	0.035* (0.059)	0.035* (0.062)
Spouses are first cousins	-0.021 (0.666)	-0.025 (0.588)	-0.027 (0.546)	-0.027 (0.553)
Number of years of marriage	-0.003 (0.586)	-0.001 (0.910)	-0.002 (0.778)	-0.001 (0.856)
Wealth score	0.039* (0.092)	0.045* (0.057)	0.044* (0.071)	0.046* (0.059)
Constant	0.296** (0.021)	0.287** (0.030)	0.230* (0.070)	-0.025 (0.877)
Observations	289	289	289	289
R-squared	0.049	0.071	0.067	0.073

Notes: P-values in parenthesis, account for clustering at the session level using a wild bootstrap (Cameron et al., 2008). *** p<0.01, ** p<0.05, * p<0.1

Table A6b: Linear Probability Model: Effect of marriage type on probability of being an UC for intra-household interactions (No wild bootstrap)

Dummy Dependent = 1 for UC						
Panel A - No controls		<u>Series 2</u>				
	(1)	(2)	(3)	(4)		
Love match	0.090 (0.055)	0.279** (0.106)	0.253*** (0.082)	0.828** (0.299)		
Distance from the city		0.002* (0.001)				
Love match x distance		-0.005* (0.002)				
Samundari Tehsil			0.099* (0.054)			
Samundari x Love match			-0.271** (0.104)			
Ln (distance from the city)				0.092** (0.044)		
Ln (distance) x Love match				-0.211** (0.084)		
Constant	0.248*** (0.029)	0.158*** (0.046)	0.191*** (0.034)	-0.069 (0.141)		
Observations	289	289	289	289		
R-squared	0.008	0.021	0.026	0.025		

Panel B - With controls		<u>Series 2</u>				
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.098 (0.065)	0.336** (0.120)	0.292*** (0.087)	1.009*** (0.322)	1.010*** (0.325)	1.246** (0.546)
Distance from the city		0.003** (0.001)				
Love match x distance		-0.006** (0.003)				
Samundari Tehsil			0.109* (0.060)			
Samundari x Love match			-0.316*** (0.105)			
Ln (distance from the city)				0.108** (0.043)	0.109** (0.042)	0.087 (0.069)
Ln (distance) x Love match				-0.259*** (0.091)	-0.259*** (0.092)	-0.319** (0.144)
Individual's Age	-0.003	-0.005	-0.005	-0.005	-0.005	0.004

	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)
Female	0.031	0.023	0.020	0.022	0.023	0.059
	(0.053)	(0.052)	(0.054)	(0.052)	(0.051)	(0.065)
Participant is illiterate	-0.060	-0.038	-0.041	-0.039	-0.039	-0.019
	(0.050)	(0.045)	(0.047)	(0.044)	(0.042)	(0.069)
Number of children	0.033*	0.035**	0.033*	0.035**	0.035**	0.042**
	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)
Spouses are first cousins	-0.021	-0.027	-0.025	-0.027	-0.027	-0.010
	(0.045)	(0.043)	(0.043)	(0.043)	(0.042)	(0.061)
Number of years of marriage	-0.003	-0.002	-0.001	-0.001	-0.001	-0.010
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Wealth score	0.039*	0.044**	0.045**	0.046**	0.046**	0.043*
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.023)
Spouse game played first					-0.008	
					(0.055)	
Session 2						0.105
						(0.070)
Session 3						-0.009
						(0.054)
Session 4						0.068*
						(0.037)
Session 5						0.047*
						(0.027)
Session 6						0.016
						(0.022)
Session 7						0.006
						(0.025)
Session 8						-0.003
						(0.026)
Session 9						-0.020**
						(0.010)
Constant	0.296**	0.230*	0.287**	-0.025	-0.026	-0.236
	(0.113)	(0.111)	(0.115)	(0.142)	(0.143)	(0.272)
Observations	289	289	289	289	289	224
R-squared	0.049	0.067	0.071	0.073	0.073	0.141

Notes: Standard errors clustered at the session level in parenthesis; Panel B presents the same models estimated in Panel A with controls. Column 5 in Panel B reports game order effects with standard errors clustered at the session level. Column 6, Panel B controls for session effects and standard errors are clustered at individual level. *** p<0.01, ** p<0.05, * p<0.1

Table A7: Logistic Estimation: Average marginal effect of marriage type on UC for intra-household interactions (No wild bootstrap)

Dummy Dependent = 1 for UC				
Panel A - No controls	<u>Series 2</u>			
	(2)	(3)	(4)	(5)
Love match	0.086* (0.050)	0.264*** (0.093)	0.234*** (0.063)	0.783*** (0.260)
Distance from the city		0.002** (0.001)		
Love match x distance		-0.005** (0.002)		
Samundari Tehsil			0.105* (0.058)	
Samundari x Love match			- 0.250*** (0.085)	
Ln (distance from the city)				0.097** (0.046)
Ln (distance) x Love match				- 0.200*** (0.075)
Observations	289	289	289	289
Panel B - With controls	<u>Series 2</u>			
	(2)	(3)	(4)	(5)
Love match	0.093 (0.060)	0.325*** (0.108)	0.273*** (0.070)	0.971*** (0.278)
Distance from the city		0.003** (0.001)		
Love match x distance		-0.006** (0.003)		
Samundari Tehsil			0.114* (0.063)	
Samundari x Love match			- 0.297*** (0.087)	
Ln (distance from the city)				0.111*** (0.043)
Ln (distance) x Love match				- 0.250*** (0.081)
Individual's Age	-0.003	-0.005	-0.005	-0.005

	(0.005)	(0.005)	(0.005)	(0.005)
Female	0.029	0.023	0.021	0.023
	(0.052)	(0.051)	(0.053)	(0.050)
Participant is illiterate	-0.061	-0.040	-0.042	-0.040
	(0.050)	(0.045)	(0.048)	(0.044)
Number of children	0.034**	0.036**	0.034**	0.036**
	(0.016)	(0.016)	(0.016)	(0.016)
Spouses are first cousins	-0.019	-0.024	-0.022	-0.024
	(0.044)	(0.043)	(0.042)	(0.043)
Number of years of marriage	-0.004	-0.002	-0.001	-0.001
	(0.006)	(0.006)	(0.006)	(0.006)
Wealth score	0.038**	0.044**	0.045**	0.045**
	(0.019)	(0.020)	(0.019)	(0.019)
Observations	289	289	289	289

Notes: Standard errors clustered at the session level in parenthesis; Panel B presents the same models estimated in Panel A with controls. *** p<0.01, ** p<0.05, * p<0.1***

Table A8: Multinomial Logit estimations on behavioural types: Relative risk ratios

Dependent variable: behavioural types with UC=base category				
Panel 1				
Estimation Model 1 - No Controls	U-shaped	CC	Mid/Other	Token
Love match	0.532*	0.731	0.614	0.810
	(0.201)	(0.252)	(0.201)	(0.448)
Constant	1.019	0.741	0.815	0.463***
	(0.206)	(0.158)	(0.176)	(0.123)
Panel 2				
Estimation Model 1 - With Controls	U-shaped	CC	Mid/Other	Token
Love match	0.522*	0.599	0.574	0.917
	(0.200)	(0.248)	(0.228)	(0.660)
Age	1.022	1.032	1.037	0.932
	(0.040)	(0.029)	(0.041)	(0.052)
Female	1.021	0.740	1.092	0.503
	(0.302)	(0.278)	(0.394)	(0.307)
No education	0.839	1.318	2.185**	2.032
	(0.296)	(0.403)	(0.865)	(1.129)
Number of children	0.840	0.854	0.794**	0.864
	(0.094)	(0.092)	(0.077)	(0.124)
Spouses are first cousins	0.898	1.477	1.061	1.159
	(0.265)	(0.515)	(0.262)	(0.578)
Number of years of being married	1.012	0.983	1.007	1.122*
	(0.045)	(0.030)	(0.048)	(0.069)
Wealthscore	0.832	0.770*	0.775*	0.922
	(0.099)	(0.107)	(0.107)	(0.159)
Constant	0.885	0.475	0.279	1.624
	(0.789)	(0.343)	(0.275)	(2.309)
Panel 3				
Estimation Model 2 - No Controls	U-shaped	CC	Mid/Other	Token
Love match	0.375*	0.500	0.250***	0.094**
	(0.217)	(0.324)	(0.102)	(0.106)
Samundari tehsil	0.646	1.167	0.417**	0.281**
	(0.263)	(0.526)	(0.171)	(0.141)
Love match x Samundari	1.806	1.929	4.800***	28.444**
	(1.369)	(1.488)	(2.846)	(37.248)
Constant	1.333	0.667	1.333	0.889
	(0.420)	(0.245)	(0.374)	(0.246)
Panel 4				

Estimation Model 2 - With Controls				
	U-shaped	CC	Mid/Other	Token
Love match	0.294** (0.166)	0.330 (0.250)	0.171*** (0.093)	0.094** (0.106)
Samundari tehsil	0.492 (0.221)	1.116 (0.537)	0.385** (0.168)	0.368 (0.228)
Love match x Samundari	2.544 (1.897)	2.750 (2.245)	7.749*** (5.610)	30.537*** (38.228)
Age	1.035 (0.042)	1.032 (0.031)	1.059 (0.044)	0.949 (0.063)
Female	1.082 (0.350)	0.710 (0.274)	1.193 (0.430)	0.528 (0.329)
No education	0.711 (0.230)	1.465 (0.517)	1.829 (0.736)	1.818 (1.068)
Number of children	0.835 (0.094)	0.848 (0.091)	0.786** (0.080)	0.848 (0.127)
Spouses are first cousins	0.917 (0.268)	1.458 (0.527)	1.090 (0.274)	1.235 (0.616)
Number of years of being married	1.001 (0.043)	0.982 (0.031)	0.989 (0.048)	1.105 (0.081)
Wealthscore	0.801** (0.090)	0.765* (0.107)	0.728** (0.105)	0.865 (0.156)
Constant	1.077 (0.941)	0.441 (0.335)	0.319 (0.320)	1.945 (2.883)
Panel 5				
Estimation Model 3 - No Controls				
	U-shaped	CC	Mid/Other	Token
Love match	0.078 (0.166)	0.079 (0.192)	0.003*** (0.005)	0.002* (0.006)
Ln (Distance from the city)	0.579** (0.150)	1.058 (0.423)	0.507** (0.176)	0.352* (0.191)
Love Match x Ln (Distance from the city)	1.739 (1.051)	1.874 (1.240)	4.559*** (2.107)	5.958* (5.949)
Constant	6.799** (5.951)	0.605 (0.883)	8.464* (10.312)	15.899* (26.407)
Panel 6				
Estimation Model 3 - With Controls				
	U-shaped	CC	Mid/Other	Token
Love match	0.026* (0.055)	0.015 (0.042)	0.001*** (0.001)	0.001** (0.004)
Ln (Distance from the city)	0.434*** (0.125)	1.027 (0.444)	0.470** (0.171)	0.417 (0.236)

Love Match x Ln (Distance from the city)	2.356 (1.436)	2.817 (2.057)	7.152*** (4.052)	6.860* (6.971)
Age	1.041 (0.042)	1.033 (0.031)	1.056 (0.045)	0.951 (0.061)
Female	1.119 (0.358)	0.694 (0.266)	1.131 (0.395)	0.522 (0.322)
No education	0.659 (0.213)	1.490 (0.516)	1.961* (0.733)	1.764 (1.005)
Number of children	0.820* (0.095)	0.855 (0.091)	0.780** (0.080)	0.844 (0.124)
Spouses are first cousins	0.932 (0.282)	1.461 (0.534)	1.090 (0.275)	1.221 (0.598)
Number of years of being married	1.000 (0.042)	0.979 (0.031)	0.993 (0.050)	1.105 (0.077)
Wealthscore	0.800* (0.092)	0.754** (0.107)	0.732** (0.105)	0.865 (0.162)
Constant	11.140** (11.507)	0.429 (0.680)	2.681 (4.088)	22.350* (35.497)

Notes: Standard errors clustered at session level. *** p<0.01, ** p<0.05, * p<0.1.

Table A9: Linear Probability Model: Effect of Marriage type on probability of being an UC for intra-household interactions on pooled sample (Series 1 and 2)

Dummy Dependent = 1 for UC				
Panel A - No controls	Pooled data: Series 1 and 2			
	(1)	(2)	(3)	(4)
Love match	0.157*** (0.005)	0.385*** (0.001)	0.291*** (0.000)	1.007*** (0.002)
Distance from the city		0.003** (0.028)		
Love match x distance		-0.006** (0.010)		
Samundari Tehsil			0.096* (0.064)	
Samundari x Love match			-0.234** (0.015)	
Ln (distance from the city)				0.111** (0.018)
Ln (distance) x Love match				- 0.248*** (0.005)
Constant	0.241*** (0.000)	0.139*** (0.004)	0.186*** (0.000)	-0.135 (0.328)
Observations	406	406	406	406
R-squared	0.023	0.040	0.037	0.043
Panel B - With controls	(1)	(2)	(3)	(4)
Love match	0.156** (0.010)	0.407*** (0.000)	0.301*** (0.000)	1.093*** (0.002)
Distance from the city		0.003** (0.015)		
Love match x distance		-0.007*** (0.010)		
Samundari Tehsil			0.103* (0.074)	
Samundari x Love match			-0.252** (0.013)	
Ln (distance from the city)				0.127*** (0.008)
Ln (distance) x Love match				- 0.273*** (0.003)
Individual's Age	-0.004	-0.005	-0.005	-0.005

	(0.436)	(0.311)	(0.272)	(0.256)
Female	-0.010	-0.013	-0.014	-0.015
	(0.765)	(0.696)	(0.668)	(0.646)
Participant is illiterate	-0.016	0.006	0.003	0.008
	(0.727)	(0.881)	(0.945)	(0.832)
Number of children	0.016	0.016	0.015	0.016
	(0.265)	(0.264)	(0.305)	(0.267)
Spouses are first cousins	0.023	0.020	0.020	0.020
	(0.579)	(0.594)	(0.606)	(0.592)
Number of years of marriage	0.001	0.002	0.003	0.003
	(0.762)	(0.600)	(0.500)	(0.510)
Wealth score	0.031**	0.036***	0.033***	0.036***
	(0.012)	(0.005)	(0.007)	(0.003)
Constant	0.297**	0.199*	0.267**	-0.102
	(0.015)	(0.066)	(0.012)	(0.476)
Observations	406	406	406	406
R-squared	0.040	0.061	0.056	0.064
Constant	0.297**	0.199*	0.267**	-0.102
	(0.015)	(0.066)	(0.012)	(0.476)
Observations	406	406	406	406
R-squared	0.040	0.061	0.056	0.064

Notes: Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008). P-values in parenthesis. Panel B presents the same models estimated in Panel A with controls. *** p<0.01, ** p<0.05, * p<0.1

Table A10: Percentage distribution of behavioural types between marriage types across games (Series 2)

Behavioural type (%)	Pooled		Love matches		Arranged matches	
	Spouse	Neighbour	Spouse	Neighbour	Spouse	Neighbour
UC	26.99	22.58	33.8	22.95	24.77	22.46
U-shaped	23.88	8.06	19.72	9.84	25.23	7.49
CC	20.42	13.71	18.31	13.11	21.10	13.90
Mid-ranger	17.3	26.61	16.9	26.23	17.43	26.74
Token-giver	11.42	29.03	11.27	27.87	11.47	29.41
Total	100%	100%	100%	100%	100%	100%
N	289	248	71	61	218	187

Pearson chi2(4) = 51.795 and Pr = 0.000 for columns 1 and 2; Pearson chi2(4) = 10.328 and Pr = 0.035 for columns 3 and 4; Pearson chi2(4) = 42.179 and Pr = 0.000 for columns 5 and 6.

Table 11a: Behavioural types across games for love matched marriage participants

Spouse Game	Neighbour Game					
	UC	U-shaped	CC	Mid-ranger	Token-giver	Total
UC	13	2	0	3	4	22
U-shaped	1	3	1	4	1	10
CC	0	0	4	2	4	10
Mid-ranger	0	1	3	4	2	10
Token-giver	0	0	0	3	6	9
Total	14	6	8	16	17	61

Notes: Absolute values shown in each cell.

Table 11b: Behavioural types across games for arranged marriage participants

Spouse Game	Neighbour Game					
	UC	U-shaped	CC	Mid-ranger	Token-giver	Total
UC	39	0	0	3	6	48
U-shaped	1	5	5	14	12	37
CC	1	4	14	5	13	37
Mid-ranger	1	4	6	22	7	40
Token-giver	0	1	1	6	22	25
Total	42	14	26	50	55	187

Notes: Absolute values shown in each cell.

Table A12a: Linear Probability Model: Effect of Marriage type on the probability of being an UC for intra- and inter-household interactions in Series 2

Dummy Dependent=1 for UC						
Variables	Intra-household		Inter-household		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.828** (0.022)	1.009** (0.014)	0.195 (0.449)	0.344 (0.215)	0.828** (0.022)	0.993** (0.013)
Ln (distance from the city)	0.092* (0.065)	0.108** (0.016)	0.062 (0.317)	0.084 (0.183)	0.092* (0.065)	0.112** (0.014)
Ln (distance) x Love match	-0.211** (0.031)	-0.259** (0.021)	-0.056 (0.435)	-0.092 (0.224)	-0.211** (0.031)	-0.253** (0.023)
Partner is Neighbour					0.050 (0.644)	0.050 (0.644)
Love match x Partner is neighbour					-0.633** (0.029)	-0.633** (0.029)
Ln (distance from city) x Neighbour					-0.031 (0.357)	-0.031 (0.357)
Love match x Partner is neighbour x Ln (distance from the city)					0.155** (0.042)	0.155** (0.042)
Individual's Age		-0.005 (0.360)		-0.004 (0.356)		-0.004 (0.316)
Female		0.022 (0.680)		-0.008 (0.888)		0.007 (0.879)
Participant is illiterate		-0.039 (0.379)		0.005 (0.896)		-0.017 (0.653)
Number of children		0.035* (0.062)		0.028* (0.062)		0.032** (0.046)
Spouses are first cousins		-0.027 (0.553)		-0.060* (0.068)		-0.044 (0.212)
Number of years of marriage		-0.001 (0.856)		-0.001 (0.772)		-0.001 (0.809)
Wealth score		0.046* (0.059)		0.034* (0.063)		0.040** (0.030)
Constant	-0.069 (0.626)	-0.025 (0.877)	-0.019 (0.921)	-0.026 (0.902)	-0.069 (0.626)	-0.050 (0.733)
Observations	289	289	289	289	578	578

R-squared	0.025	0.073	0.006	0.041	0.025	0.064
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Notes: This table presents the results in Table 4 with coefficients for controls. Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008). P-values in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table A12b: Linear Probability Model: Effect of Marriage type on the probability of being an UC for intra and inter-household interactions in Series 2 (No wild bootstrap)

Variables	Dummy Dependent=1 for UC					
	Intra-household		Inter-household		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.828** (0.299)	1.009*** (0.322)	0.195 (0.247)	0.344 (0.257)	0.828** (0.299)	0.993*** (0.318)
Ln (distance from the city)	0.092** (0.044)	0.108** (0.043)	0.062 (0.056)	0.084 (0.056)	0.092** (0.044)	0.112** (0.042)
Ln (distance) x Love match	-0.211** (0.084)	-0.259*** (0.091)	-0.056 (0.068)	-0.092 (0.072)	-0.211** (0.084)	-0.253** (0.091)
Partner is Neighbour					0.050 (0.103)	0.050 (0.103)
Love match x Partner is neighbour					-0.633** (0.273)	-0.633** (0.275)
Ln (distance from city) x Neighbour					-0.031 (0.031)	-0.031 (0.031)
Love match x Partner is neighbour x Ln (distance from the city)					0.155** (0.073)	0.155** (0.073)
Individual's Age		-0.005 (0.005)		-0.004 (0.004)		-0.004 (0.004)
Female		0.022 (0.052)		-0.008 (0.053)		0.007 (0.045)
Participant is illiterate		-0.039 (0.044)		0.005 (0.043)		-0.017 (0.037)
Number of children		0.035** (0.017)		0.028* (0.014)		0.032** (0.014)

Spouses are first cousins		-0.027 (0.043)		-0.060* (0.031)		-0.044 (0.033)
Number of years of marriage		-0.001 (0.006)		-0.001 (0.004)		-0.001 (0.004)
Wealth score		0.046** (0.021)		0.034* (0.017)		0.040** (0.016)
Constant	-0.069 (0.141)	-0.025 (0.142)	-0.019 (0.193)	-0.026 (0.200)	-0.069 (0.141)	-0.050 (0.140)
Observations	289	289	289	289	578	578
R-squared	0.025	0.073	0.006	0.041	0.025	0.064

Notes: Standard errors clustered at the session level in parenthesis. *** p<0.01, ** p<0.05, * p<0.1.

Table A12c: Logistic Estimation: Average Marginal effect of marriage type on probability of being an UC for intra and inter-household interactions (No wild bootstrap)

Dummy Dependent = 1 for UC						
Variables	Series 1- Model 1		Series 2- Model 2		Series 2- Model 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.783*** (0.260)	1.009*** (0.322)	0.201 (0.245)	0.360 (0.258)	0.708*** (0.245)	0.880*** (0.262)
Ln (distance from the city)	0.097** (0.046)	0.108** (0.043)	0.062 (0.057)	0.084 (0.056)	0.088** (0.041)	0.106*** (0.039)
Ln (distance) x Love match	-0.200*** (0.075)	-0.259*** (0.091)	-0.057 (0.067)	-0.096 (0.072)	-0.181** (0.070)	-0.225*** (0.077)
Partner is Neighbour					0.007 (0.132)	0.008 (0.131)
Love match x Partner is neighbour					-0.482* (0.252)	-0.475* (0.248)
Ln (distance from city) x Neighbour					-0.018 (0.038)	-0.018 (0.037)
Love match x Partner is neighbour x Ln (distance from the city)					0.117* (0.066)	0.115* (0.065)
Age		-0.005		-0.004		-0.005

	(0.005)	(0.004)	(0.004)
Female	0.022	-0.008	0.007
	(0.052)	(0.053)	(0.045)
Participant is illiterate	-0.039	0.003	-0.019
	(0.044)	(0.044)	(0.038)
Number of children	0.035**	0.028**	0.032**
	(0.017)	(0.013)	(0.014)
Spouses are first cousins	-0.027	-0.059*	-0.042
	(0.043)	(0.030)	(0.033)
Number of years of marriage	-0.001	-0.001	-0.001
	(0.006)	(0.004)	(0.004)
Wealth score	0.046**	0.033**	0.039**
	(0.021)	(0.016)	(0.015)
Observations	289	289	289
	289	289	289
	578	578	578

Notes: Standard errors clustered at session level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A13a: Linear Probability Model: Effect of marriage type on UC in intra- and inter-household interactions

Variables	Dummy Dependent=1 for UC					
	Intra-household		Inter-household		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.828** (0.022)	1.009** (0.014)	0.342 (0.224)	0.486 (0.156)	0.828** (0.022)	0.991** (0.016)
Ln (distance from the city)	0.092* (0.065)	0.108** (0.016)	0.060 (0.331)	0.076 (0.243)	0.092* (0.065)	0.108** (0.021)
Ln (distance) x Love match	-0.211** (0.031)	-0.259** (0.021)	-0.097 (0.228)	-0.130 (0.188)	-0.211** (0.031)	-0.252** (0.024)
Partner is Neighbour					0.124 (0.296)	0.124 (0.296)
Love match x Partner is neighbour					-0.487 (0.126)	-0.487 (0.126)
Ln (distance from city) x Neighbour					-0.032 (0.309)	-0.032 (0.309)
Love match x Partner is neighbour x Ln (distance from the city)					0.114 (0.138)	0.114 (0.138)
Age		-0.005 (0.360)		-0.002 (0.755)		-0.004 (0.477)
Female		0.022 (0.680)		0.015 (0.811)		0.019 (0.712)
Participant is illiterate		-0.039 (0.379)		-0.017 (0.743)		-0.028 (0.470)
Number of children		0.035* (0.062)		0.034** (0.037)		0.034** (0.035)
Spouses are first cousins		-0.027 (0.553)		-0.082** (0.026)		-0.055 (0.153)
Number of years of marriage		-0.001 (0.856)		-0.004 (0.456)		-0.003 (0.622)
Wealth score		0.046* (0.059)		0.032 (0.143)		0.039* (0.053)
Constant	-0.069 (0.626)	-0.025 (0.877)	0.055 (0.794)	0.036 (0.857)	-0.069 (0.626)	-0.056 (0.717)
Observations	289	289	289	289	578	578
R-squared	0.025	0.073	0.006	0.043	0.016	0.056

Notes: Standard errors clustered at the session level using a wild bootstrap (Cameron et al., 2008). P-values in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. The definition of UC for the inter-household interactions includes pure strategy participants who contributed their entire endowment across all strategy points, as well as participants who do not always contribute their entire endowment in every decision but have a strategy set that is closest in Euclidean distance to UCs, than any other behavioural type.

Table A13b: Linear Probability Model: Effect of marriage type on UC in intra- and inter-household interaction (No wild bootstrap)

Variables	Dummy Dependent=1 for UC					
	Intra-household		Inter-household		Pooled	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.828** (0.299)	1.009*** (0.322)	0.342 (0.254)	0.486 (0.297)	0.828** (0.299)	0.991*** (0.320)
Ln (distance from the city)	0.092** (0.044)	0.108** (0.043)	0.060 (0.056)	0.076 (0.059)	0.092** (0.044)	0.108** (0.043)
Ln (distance) x Love match	-0.211** (0.084)	-0.259*** (0.091)	-0.097 (0.073)	-0.130 (0.085)	-0.211** (0.084)	-0.252** (0.091)
Partner is Neighbour					0.124 (0.108)	0.124 (0.108)
Love match x Partner is neighbour					-0.487* (0.274)	-0.487* (0.276)
Ln (distance from city) x Neighbour					-0.032 (0.029)	-0.032 (0.030)
Love match x Partner is neighbour x Ln (distance from the city)					0.114 (0.068)	0.114 (0.069)
Age		-0.005 (0.005)		-0.002 (0.006)		-0.004 (0.005)
Female		0.022 (0.052)		0.015 (0.059)		0.019 (0.048)
Participant is illiterate		-0.039 (0.044)		-0.017 (0.055)		-0.028 (0.039)
Number of children		0.035**		0.034**		0.034**

		(0.017)		(0.015)		(0.014)
Spouses are first cousins		-0.027		-0.082**		-0.055
		(0.043)		(0.035)		(0.036)
Number of years of marriage		-0.001		-0.004		-0.003
		(0.006)		(0.005)		(0.005)
Wealth score		0.046**		0.032		0.039**
		(0.021)		(0.021)		(0.019)
Constant	-0.069	-0.025	0.055	0.036	-0.069	-0.056
	(0.141)	(0.142)	(0.194)	(0.204)	(0.141)	(0.145)
P-value of F-test ¹					0.174	0.177
Observations	289	289	289	289	578	578
R-squared	0.025	0.073	0.006	0.043	0.016	0.056

Notes: Standard errors clustered at the session level in parenthesis. *** p<0.01, ** p<0.05, * p<0.1. ¹F-test Ho: β_1 (Love match x Partner is neighbour) = β_2 (Love match x Partner is neighbour x distance from the city) = 0. The definition of UC for the inter-household interactions includes pure strategy participants who contributed their entire endowment across all strategy points, as well as participants who do not always contribute their entire endowment in every decision but have a strategy set that is closest in Euclidean distance to UCs, than any other behavioural type.

Table A13c: Logistic Estimation: Average Marginal effect of marriage type on the probability of being an UC for intra and inter-household interactions (No wild bootstrap)

Dummy Dependent = 1 for UC						
Variables	Series 1- Model 1		Series 2- Model 2		Series 2- Model 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Love match	0.783*** (0.260)	1.009*** (0.322)	0.342 (0.247)	0.492* (0.295)	0.784*** (0.260)	0.953*** (0.280)
Ln (distance from the city)	0.097** (0.046)	0.108** (0.043)	0.061 (0.056)	0.075 (0.058)	0.097** (0.045)	0.111** (0.043)
Ln (distance) x Love match	-0.200*** (0.075)	-0.259*** (0.091)	-0.096 (0.072)	-0.132 (0.085)	-0.200*** (0.075)	-0.243*** (0.082)
Partner is Neighbour					0.143 (0.115)	0.142 (0.114)
Love match x Partner is neighbour					-0.443* (0.230)	-0.439* (0.229)
Ln (distance from city) x Neighbour					-0.037 (0.030)	-0.037 (0.030)
Love match x Partner is neighbour x Ln (distance from the city)					0.104* (0.057)	0.103* (0.057)
Age		-0.005 (0.005)		-0.002 (0.006)		-0.004 (0.005)
Female		0.022 (0.052)		0.014 (0.059)		0.018 (0.048)
Participant is illiterate		-0.039 (0.044)		-0.019 (0.055)		-0.030 (0.039)
Number of children		0.035** (0.017)		0.034** (0.014)		0.035** (0.014)
Spouses are first cousins		-0.027 (0.043)		-0.080** (0.035)		-0.052 (0.036)
Number of years of marriage		-0.001 (0.006)		-0.004 (0.005)		-0.003 (0.005)
Wealth score		0.046** (0.021)		0.032 (0.020)		0.038** (0.018)
P-value of F-test ¹					0.111	0.110
Observations	289	289	289	289	578	578

Notes: Standard errors clustered at session level in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. ¹F-test $H_0: \beta_1 (\text{Love match} \times \text{Partner is neighbour}) = \beta_2 (\text{Love match} \times \text{Partner is neighbour} \times \text{distance from the city}) = 0$. The definition of UC for the inter-household interactions includes pure strategy participants who contributed their entire endowment across all strategy points, as well as participants who do not always contribute their entire endowment in every decision but have a strategy set that is closest in Euclidean distance to UCs, than any other behavioural type.

Table A14: Distribution of Player 1 contributions and corresponding Player 2 behavioural types in inter-household decisions

Player 1 (Rs.)	Player 2 behavioural types					N
	UC	U-shaped	CC	Other/Mid-ranger	Token-giver	
0	7 (37%)	1 (5%)	5 (26%)	3 (16%)	3 (16%)	19
100	9 (22%)	4 (10%)	5 (12%)	10 (24%)	13 (32%)	41
200	14 (18%)	7 (9%)	12 (16%)	23 (30%)	21 (27%)	77
300	16 (34%)	3 (6%)	1 (2%)	13 (28%)	14 (30%)	47
400	33 (34%)	7 (7%)	13 (14%)	18 (19%)	25 (26%)	96
N	79 (28%)	22 (8%)	36 (13%)	67 (24%)	76 (27%)	280

Notes: Each cell presents the number of participants, respectively. The numbers in brackets are percentages that add up to 100% for each row.

Appendix B

Calculating Distance Measures to categorise inter-household interactions

Based on the hierarchical clustering of our sample's interactions with spouses (intra-household decisions), we classify five behavioural types: Unconditional cooperators, conditional cooperators, token-givers, U-shaped contributors and mid-rangers. We undertake the following steps to classify the inter-household interactions.

- 1) Identify the modal strategy of each behavioural type for the intra-household games. For instance, amongst the conditional cooperators, 28 percent of the sample follows an exact one-for-one matching for each possible contribution by their partner.
- 2) Calculate the Euclidean distance between all the inter-household decisions strategies and each modal strategy from the intra-household decisions clusters.
- 3) The Euclidean distance $d(d_i, d_j)$ between the strategy set of participants i (at strategy point s and n is the number of strategy points) for inter-household decisions and the modal strategy set j for intra-household decisions is calculated as follows:

Typology of Clusters	Distance measure
Unconditional Cooperators	$d_{UC}(d_i, d_j) = \sqrt{\sum_{s=0}^n (d_{si} - 400)^2}$ where $d_j = 400$
Conditional Cooperators	$d_{CC}(d_i, d_j) = \sqrt{\sum_{s=0}^n (d_{si} - d_{sj})^2}$ where $d_j = 0, 100, 200, 300, 400$
Token-givers	$d_{TK}(d_i, d_j) = \sqrt{\sum_{s=0}^n (d_{si} - d_{sj})^2}$ where $d_j = 150, 100, 100, 100, 100$
U-shaped	$d_{US}(d_i, d_j) = \sqrt{\sum_{s=0}^n (d_{si} - d_{sj})^2}$ where $d_j = 400, 100, 200, 300, 400$
Mid-rangers	$d_{MR}(d_i, d_j) = \sqrt{\sum_{s=0}^n (d_{si} - 200)^2}$ where $d_j = 200$

Note: Recall that Player 2s strategies were elicited with Player 1 contributing in the following order: Rs. 400, Rs. 300, Rs. 200, Rs. 100 and 0.

Protocol for Household Listing in Faisalabad Villages

Once someone answers the door the enumerator has to ask the following questions:

[Enumerator: Introduce yourself and ask the following]

1) How many married couples are currently residing in this household?

2) Can any of these couples take 2.5-3 hours out of the day to participate in a study with us, at a nearby location in this village? This can be any day of the week and there will be a chance for the couple to earn money up to Rs. 1000 in this study!

[Enumerator: for all the couples that can participate ask the following questions]

Couple No# _____

Question 1: Name and age (in years) of husband _____

Question 2: Number of years he has been married to his wife _____

SCRIPT FOR GENERAL TRAINING

[ONCE REGISTRATION IS COMPLETE AND ALL PARTICIPANTS ARE SEATED, MS. AFZAL STARTS THE SESSION]

Welcome. Thank you for taking the time to come today. We are researchers from the Lahore School of Economics [*Introduce the research team members.*]

We have invited you here because we want to learn about how people in this area make decisions. You are going to engage in a task that involves making decisions about money. We will provide the money and whatever money you get because of the decisions that you and others in the task make will be yours to keep. In addition to the money you get from the task, we are going to pay each of you Rs.150 as a small thank you for coming to this meeting.

The decisions you will make are not difficult and there are no correct or wrong answers. All you need to think about is making the decisions that you WANT to make. It is important to think seriously about your decisions because they will affect how much money you and others will take home.

Before we ask you to make any decisions, we will tell you everything you need to know about the task. But first we want to say a few other things.

- First of all, the money you are going to use to engage in the task is not our own. We belong to a research organization that has given us the money to use for research.
- Second, this study is about how each of you makes decisions on your own. Therefore, it is important that you do not talk or communicate in any other way amongst yourselves once we start explaining the task. This is very important. Please be sure to obey this rule. If just one person communicates with another it could spoil the research. I'm afraid that if we find you talking or trying to signal to each other, we will have to send you home, and you will not collect money here today. Later you will have an opportunity to ask us any questions you have before you make any decisions.
- Third, we would like to kindly request all of you to put your phones/handsets on silent because you cannot take phone calls now, until after you have made your decisions. [*Wait for a minute.*]
- Finally, make sure that you listen carefully to us. As I have already mentioned, the amount of money that you each take home today will depend on the decisions you make. So, it is important that you understand those decisions. The way to make sure

that you understand the decisions is to listen to the instructions and ask us your questions when the opportunity arises.

After the decision-making task, one of us will ask each of you some questions about you and your household. This will only take a few minutes, but it is an important part of the research.

Your decisions and responses to our questions will be used for educational research purposes only. From the data that is collected in these sessions, the researchers will not reveal your name, or any other identifying information, to anyone.

If at any point during the workshop you feel uncomfortable about what we are asking of you, you can stop.

Okay. Now I am going to explain the task. It is not complicated, but it will be new to you. So, listen carefully. After I have described the task, I am going to go through some examples of what can happen in the task. If you find the description of the task confusing, the examples will help.

Here is the description of the task.

You will engage in the task in pairs. Each of you will engage in the same task twice, each time with a different other person who is here today. Each time, before you make your decisions, you will be given some information about the person who you are engaging in the task with. However, you will not get a chance to discuss the task with that person before you make your decisions.

[PAUSE]

In each pair of people engaging in the task, there is a “PLAYER 1” and a “PLAYER 2”. Please note that we are calling them player 1 and player 2 only to differentiate between the roles that the two players will be performing –neither type of player has a superior or an inferior role to play in this game.

Note that you will be performing these tasks with fake money for logistical reasons only. The decisions you make with the fake money will be equivalent to real monetary decisions, as the earnings in fake notes will be converted to real money at the end of the session.

[HOLD UP AN ENVELOPE WITH REAL MONEY INSIDE TO DEMONSTRATE THERE IS REAL MONEY FOR PAYMENTS AT THE END]. The task starts when we give PLAYER 1 an envelope like this *[HOLD UP BROWN ENVELOPE]* containing Rs.400

[TAKE THE FOUR Rs.100 NOTES OUT AND SHOW THEM TO THE PARTICIPANTS]. This Rs.400 belongs to PLAYER 1. If you are a PLAYER 1, you will receive Rs.400, like this, and it is up to you to decide what to do with it. A PLAYER 1:

- can put all of the Rs.400 in their pocket (or bag, or wrapper) straight away *[PUT ALL THE NOTES IN POCKET]*; or
- they can put some in their pocket *[PUT A FEW NOTES IN POCKET]* and some back in the envelope *[PUT THE REST OF THE NOTES BACK IN ENVELOPE]*; or
- they can put all of the Rs.400 back in the envelope.

Any money that PLAYER 1 puts back in the envelope goes into a bundle that belongs jointly to PLAYER 1 and PLAYER 2 and is divided equally between them at the end of today's meeting. Also, later on in the task, after PLAYER 2 has made their decision also, for every Rs.100 that PLAYER 1 puts back in the envelope to go into the joint bundle, we add Rs.50 to the joint bundle. So,

- if PLAYER 1 decides to put all Rs.400 in the joint bundle, later on we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle;
- if PLAYER 1 decides to put Rs.100 in their pocket and Rs.300 in the joint bundle, later on we add $3 \times \text{Rs.}50 = \text{Rs.}150$ to the joint bundle
- if PLAYER 1 decides to put Rs.200 in their pocket and Rs.200 in the joint bundle, later on we add $2 \times \text{Rs.}50 = \text{Rs.}100$ to the joint bundle
- if PLAYER 1 decides to put Rs.300 in their pocket and Rs.100 in the joint bundle, later on we add $1 \times \text{Rs.}50 = \text{Rs.}50$ to the joint bundle; and
- if PLAYER 1 decides to put all Rs.400 in their pocket and nothing/zero in the joint bundle, later on we add nothing/zero to the joint bundle.

Everyone clear so far? *[NO PAUSE]* If you are not, don't worry, we will go through some examples in a minute or two, but keep on listening...

Once PLAYER 1 has made their decision, it is the turn of PLAYER 2. We also give PLAYER 2 an envelope like this *[HOLD UP BROWN ENVELOPE]*. However, PLAYER 2's envelope could contain Rs.100, Rs.200, Rs.300, or Rs.400. Only PLAYER 2 knows how much money is in their envelope. PLAYER 1 does not know. Notice the difference; if you are a PLAYER 2, you know that the PLAYER 1 you are playing with received Rs.400 in their envelope. However, if you are a PLAYER 1, you don't know whether the PLAYER 2 you are playing with received Rs.400 or Rs.300, or Rs.200, or Rs.100 in their envelope.

The money in PLAYER 2's envelope belongs to PLAYER 2. If you are a PLAYER 2, it is up to you to decide what to do with the money in your envelope. A PLAYER 2 can:

- put all of the money they receive in their pocket (or bag, or wrapper) straight away;
or
- they can put some in their pocket and some back in the envelope; or
- they can put all of the money back in the envelope.

As for PLAYER 1, any money that PLAYER 2 puts back in the envelope goes into the bundle that belongs jointly to PLAYER 1 and PLAYER 2 and is divided equally between them at the end of today's meeting. And, as for PLAYER 1, for every Rs.100 that PLAYER 2 puts back in the envelope to go into the joint bundle, we add Rs.50 to the joint bundle. But now notice that there is another difference between PLAYER 1 and PLAYER 2; PLAYER 2 decides how much money they want to put in the joint bundle *after* PLAYER 1 has already made their decision. So, PLAYER 2 can decide:

- to put a certain amount of money in the joint bundle, if PLAYER 1 puts all of their Rs.400 in;
- to put the same or a different amount of money in the joint bundle, if PLAYER 1 puts Rs.300 in the joint bundle and Rs.100 in their pocket;
- to put the same or another different amount of money in the joint bundle, if PLAYER 1 puts Rs.200 in the joint bundle and Rs.200 in their pocket; and so on.
-

Is everyone clear about this? *[NO PAUSE]* It is as if PLAYER 2 gets to see what PLAYER 1 has decided to do before making his or her own decision.

Finally, once both PLAYER 1 and PLAYER 2 have decided how much money to put in their pockets and how much to put in the joint bundle, and after we have added an extra Rs.50 for each Rs.100 in the joint bundle, we divide the joint bundle equally between PLAYER 1 and PLAYER 2.

That's it. That is the first task. Now I am going to go through some examples of what might happen in the task.

[If they look like they are about to start talking, ask them not to. If there are questions, tell them that they have an opportunity to ask questions later]

[Examples]

[show image 1] In this first example a man and a woman are engaging in the task. The woman is PLAYER 1. Here she is with her Rs.400 [point at woman and Rs.400]. The man is PLAYER 2. Here he is [point at man]. He has not received his money yet.

[show image 2] In this example, PLAYER 1 [point at woman] decides to put all of her money in the joint bundle [point at Rs.400 and arrow].

[show image 3 and point at bundle] So, here is that Rs.400 in the joint bundle and now PLAYER 1 has no money to put in her pocket [point at R0 below woman].

[staying on image 3] Now look at PLAYER 2 [point at man]. In this example, he also gets Rs.400 in his envelope [point at 400]. Notice this line here [point at grey line between man's money and the joint bundle]. This is to remind us that only PLAYER 2 [point at man] knows that he has Rs.400. PLAYER 1, who is on the other side of the line [point at woman], does not know how much money PLAYER 2 has.

[show image 4] Suppose that PLAYER 2 decides to put all of his money in the joint bundle too [point at Rs.400 and arrow].

[show image 5] So, now PLAYER 2 has no money to put in his pocket [point at Rs.0 below man] and there are Rs.800 in the joint bundle [point at Rs.800 in joint bundle].

[show image 6] Seeing this [point at Rs.800] we add $8 \times \text{Rs.}50 = \text{Rs.}400$ to the joint bundle [point at Rs.400 and arrow].

[show image 7] So, now there is $\text{Rs.}800 + \text{Rs.}400 = \text{Rs.}1,200$ in the joint bundle [point at Rs.1,200 in joint bundle].

[show image 8] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.1,200, which is Rs.600 [point at the Rs.600s below the woman and the man], to take home.

Here is a different example of what might happen in the task.

[show image 9] In this second example a man and a woman are engaging in the task. The man is PLAYER 1. Here he is with his Rs.400 [point at man and Rs.400]. The woman is PLAYER 2. Here she is [point at woman]. She has not received her money yet.

[staying on image 9] In this example, PLAYER 1 [point at man] decides to put all of his money in his pocket [point at Rs.400 below man] and nothing/zero into the joint bundle [point at red lozenge shape, top left, and arrow].

[show image 10] Now look at PLAYER 2 [point at woman]. In this example as in the first, she also gets Rs.400 in her envelope [point at 400]. Remember the line here [point at grey line between woman's money and the joint bundle] is to remind us that only PLAYER 2 [point at woman] knows that she has Rs.400. PLAYER 1 [point at man] does not know how much money PLAYER 2 has.

[staying on image 10] Suppose that PLAYER 2 also decides to put all of her money in her pocket [point at Rs.400 below woman] and nothing/zero in the joint bundle [point at red lozenge shape, top right, and arrow].

[show image 11] So, there is nothing/zero in the joint bundle [point at empty joint bundle]. We add nothing to the joint bundle. There is nothing in the joint bundle for us to divide equally. And both PLAYER 1 and PLAYER 2 each go home with the Rs.400 that they decided to put in their pockets [point at Rs.400s below the man and the woman].

[show image E1vE2] So, if we think about the first and the second example together, what we learn is that the more money PLAYER 1 and PLAYER 2 decide to put back in the envelopes to go into the joint bundle, the more money in total they get to take home. In the first example, both PLAYER 1 and PLAYER 2 put all their money in the joint bundle and they both went home with Rs.600. In the second example, they both put nothing in the joint bundle and they both went home with Rs.400.

There is more to learn about the task though. For example, suppose one person decides to put **all** their money back in the envelope to go in the joint bundle and the other person decides to put all their money in their pocket and nothing back in their envelope. Then, let's see what happens.

[show image 12] In this third example two women are engaging in the task. This woman is PLAYER 1 [point at woman on left]. Here she is with her Rs.400 [point at Rs.400]. PLAYER 2 [point at woman on right] has not received her money yet.

[staying on image 12] In this example, PLAYER 1 [point at woman on left] decides to put all of her money in her pocket [point at Rs.400 below woman on left] and nothing/zero in the joint bundle [point at red lozenge shape, top left, and arrow].

[show image 13] So, here is the joint bundle with nothing in it [point at the empty joint bundle] and here is the Rs.400 that PLAYER 1 has put in her pocket [point at the Rs.400 below and beside the woman on the left]. Now look at PLAYER 2 [point at woman on right]. In this example, she also gets Rs.400 in her envelope [point at Rs.400 by woman on right]. Remember the line here [point at grey line between woman's money and the joint bundle] is to remind us that only PLAYER 2 [point at woman on right] knows that she has Rs.400.

[staying on image 13] Suppose that PLAYER 2 decides to put all of her money in the joint bundle [point at Rs.400 and arrow].

[show image 14] So, now PLAYER 2 has no money to put in her pocket [point at R0 below woman on right] and there is Rs.400 in the joint bundle [point at Rs.400 in joint bundle]. [staying on image 14] Seeing this [point at Rs.400] we add $4 \times \text{Rs.}50 = \text{Rs.}200$ to the joint bundle [point at Rs.200 and arrow].

[show image 15] So, now there is $\text{Rs.}400 + \text{Rs.}200 = \text{Rs.}600$ in the joint bundle [point at Rs.600 in joint bundle].

[show image 16] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.400 she put in her pocket, so a total of Rs.700 [point at the Rs.700 below the woman on the left]. And PLAYER 2 takes home just Rs.300 from the joint bundle because she put nothing in her pocket [point at the Rs.300 below the woman on the right and the Rs.300 in the corresponding red zone].

So, from this example we learn that, if both people in the task start with the same amount of money but put different amounts in the joint bundle, the person who puts less money in the bundle goes home with more money than the person who puts more money in.

This is important, so I am going to go through another example like this.

[show image 17] In this fourth example two men are engaging in the task. Here is PLAYER 1 [point at man on left] with his Rs.400 [point at Rs.400]. PLAYER 2 [point at man on right] has not received his money yet.

[staying on image 17] In this example, PLAYER 1 [point at man on left] decides to put Rs.300 in the joint bundle [point at red lozenge shape around Rs.300 and arrow].

[show image 18 and point at Rs.300 in joint bundle] So, here is the joint bundle with the Rs.300 in it [point at the joint bundle] and here is the remaining Rs.100 that PLAYER 1 has put in his pocket [point at the Rs.100 below and beside the man on the left]. Now look at PLAYER 2 [point at man on right]. In this example, he also gets Rs.400 in his envelope [point at Rs.400 by man on right] but only he knows this [point at grey line between man's money and the joint bundle].

[staying on image 18] And suppose that PLAYER 2 decides to put Rs.100 of his Rs.400 in the joint bundle [point at red lozenge shape around Rs.100 and arrow]...

[show image 19] and Rs.300 in his pocket [point at Rs.300 below and beside man on right] So, now there is $\text{Rs.300} + \text{Rs.100} = \text{Rs.400}$ in the joint bundle [point at Rs.400 in joint bundle] and, seeing this, we add $4 \times \text{Rs.50} = \text{Rs.200}$ to the joint bundle [point at Rs.200 and arrow].

[show image 20] So, now there is $\text{Rs.400} + \text{Rs.200} = \text{Rs.600}$ in the joint bundle [point at Rs.600 in joint bundle].

[show image 21] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.100 he put in his pocket, so a total of Rs.400 [point at the Rs.400 below the man on the left]. And PLAYER 2 takes home Rs.300 from the joint bundle plus the Rs.300 he put in his pocket, so a total of Rs.600 [point at the Rs.600 below the man on the right, the Rs.300 in the corresponding red zone, and the Rs.300 next to the man].

So, here once again, we see the two people starting with the same amounts of money, but going home with different amounts because one put more into the joint bundle than the other. However, remember that PLAYER 1 never knows how much money PLAYER 2 gets in their envelope [point at grey line between man's money and the joint bundle]. So, in this example, PLAYER 1 did not know that PLAYER 2 started with Rs.400. From PLAYER 1's point of view, PLAYER 2 could have started with only Rs.100 and put all of that in the joint bundle, or he could have started with Rs.200 and put half in the joint bundle and half in his pocket, or he could have started with Rs.300 and put Rs.100 in the joint bundle and Rs.200 in his pocket, or he could have started with Rs.400, as he in fact did, and put Rs.100 in the joint bundle and Rs.300 in his pocket.

Let's see what would have happened in this example if PLAYER 2 had started with Rs.100 in his envelope.

[show image 22] So, here are the two men and, as before, here is PLAYER 1 [point at man on left] deciding to put Rs.300 in the joint bundle [point at red lozenge shape around Rs.300 and arrow].

[show image 23 and point at Rs.300 in joint bundle] So, here is the joint bundle with the Rs.300 in it [point at the joint bundle] and here is the remaining Rs.100 that PLAYER 1 has put in his pocket [point at the Rs.100 below and beside the man on the left]. But, in this version of the example, PLAYER 2 [point at man on right] gets Rs.100 in his envelope [point at Rs.100 by man on right] and decides to put that Rs.100 in the joint bundle [point at red lozenge shape around Rs.100 and arrow]...

[show image 24] and nothing/zero in his pocket [point at R0 below and the empty space beside man on right] As before, there is $\text{Rs.300} + \text{Rs.100} = \text{Rs.400}$ in the joint bundle [point at Rs.400 in joint bundle] and, seeing this, we add $4 \times \text{Rs.50} = \text{Rs.200}$ to the joint bundle [point at Rs.200 and arrow].

[show image 25] So, now there is $\text{Rs.400} + \text{Rs.200} = \text{Rs.600}$ in the joint bundle [point at Rs.600 in joint bundle].

[show image 26] Then, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.600, which is Rs.300, from the joint bundle. So, PLAYER 1 takes home Rs.300 from the joint bundle plus the Rs.100 he put in his pocket, so a total of Rs.400 [point at the Rs.400 below the man on the left]. And PLAYER 2 takes home just Rs.300 from the joint bundle [point at the Rs.300 below the man on the right, the Rs.300 in the corresponding red zone].

So, now we are beginning to see why the differences between PLAYER 1 and PLAYER 2 are important. PLAYER 2 knows PLAYER 1 starts with Rs.400 in his or her envelope and sees how much of that Rs.400 PLAYER 1 puts into the joint fund and can calculate how much PLAYER 1 puts in his or her pocket. However, PLAYER 1 does not know how much PLAYER 2 starts with in his or her envelope. So, even though PLAYER 1 can work out how much PLAYER 2 puts into the joint fund, PLAYER 1 cannot work out whether PLAYER 2 puts any money in his or her pocket. And, because of this, PLAYER 1 cannot work out how much money PLAYER 2 is taking home.

Let's go through another couple of examples that demonstrate how important this is.

[show image 27] In this example a man and a woman are engaging in the task. Here is PLAYER 1 [point at man on left] with his Rs.400 [point at Rs.400].

[staying on image 27] In this example, PLAYER 1 [point at man on left] decides to put Rs.100 in the joint bundle [point at red lozenge shape around Rs.100 and arrow].

[show image 28 and point at Rs.100 in joint bundle] So, here is the joint bundle with the Rs.100 in it [point at the joint bundle] and here is the remaining Rs.300 that PLAYER 1 has put in his pocket [point at the Rs.300 below and beside the man on the left]. Now look at PLAYER 2 [point at woman on right]. In this example, she gets Rs.100 in her envelope [point at Rs.100 by woman on right] and only she knows this [point at grey line between woman's money and the joint bundle].

[staying on image 28] And suppose that PLAYER 2 decides to put her Rs.100 in the joint bundle [point at red lozenge shape around Rs.100 and arrow]...

[show image 29] and nothing/zero in her pocket [point at R0 below and the empty space beside woman on right] So, now there is $\text{Rs.100} + \text{Rs.100} = \text{Rs.200}$ in the joint bundle [point at Rs.200 in joint bundle] and, seeing this, we add $2 \times \text{Rs.50} = \text{Rs.100}$ to the joint bundle [point at Rs.100 and arrow].

[show image 30] So, now there is $\text{Rs.200} + \text{Rs.100} = \text{Rs.300}$ in the joint bundle [point at Rs.300 in joint bundle].

[show image 31] Finally, we divide the joint bundle equally between PLAYER 1 and PLAYER 2 [use both hands in front of the image to demonstrate the bundle being divided in half as in the two red zones]. So, they both get half of Rs.300, which is Rs.150, from the joint bundle. So, PLAYER 1 takes home Rs.150 from the joint bundle plus the Rs.300 he put in his pocket, so a total of Rs.450 [point at the Rs.450 below the man on the left]. And PLAYER 2 takes home just Rs.150 from the joint bundle [point at the Rs.150 below the woman on the right and the Rs.150 in the corresponding red zone].

[show image 32] But now let's look at what happens if PLAYER 2 starts with Rs.400 [point at Rs.400 next to woman] and decides to put Rs.100 in the joint bundle and Rs.300 in her pocket [point at red lozenge shape around Rs.100 and arrow].

[show image 33] As before, after both PLAYER 1 and PLAYER 2 have made their decisions, there is $\text{Rs.100} + \text{Rs.100} = \text{Rs.200}$ in the joint bundle, so we add $2 \times \text{Rs.50} = \text{Rs.100}$ to the joint bundle and divide the bundle equally. So, PLAYER 1 gets Rs.150 from the bundle [point at leftmost red zone and arrow] and PLAYER 2 gets Rs.150 from the bundle [point at rightmost red zone and arrow]. And in this case, both PLAYER 1 and PLAYER 2 goes home with Rs.150 from the joint bundle plus the Rs.300 that they put in their pockets earlier.

[If they look like they are about to start talking, ask them not to]

By now you should be beginning to understand how the task works, how the decisions made by each of the two players in the task affect the amount of money they both get from the task. Remember, that you will be performing the same task twice, each time with a different person here today. Let's summarise what we have learnt about the task.

14. Each of you will engage in the task with two other people who are here today. You will be given some information about who you are engaging in the task with, but you will not get a chance to discuss the task with each person before you make your decisions
15. In each pair of people engaging in the task, there is a "PLAYER 1" and a "PLAYER 2". Please note that we are calling them player 1 and player 2 only to differentiate between the roles that the two players will be performing –neither type of player has a superior or an inferior role to play in this game.
16. We give PLAYER 1 an envelope containing Rs.400.
17. PLAYER 1 can: put all of the Rs.400 in their pocket; or put some in their pocket and some back in the envelope to go in the joint bundle; or they can put all of the Rs.400 back in the envelope to go in the joint bundle
18. We also give PLAYER 2 an envelope. However, PLAYER 2's envelope could contain Rs.100, Rs.200, Rs.300, or Rs.400
19. Only PLAYER 2 knows how much money is in their envelope, PLAYER 1 does not know
20. PLAYER 2 can: put all of the money they receive in their pocket; or put some in their pocket and some back in the envelope to go in the joint bundle; or put all of the money back in the envelope to go in the joint bundle
21. PLAYER 2 can decide to put the same or a different amount in the joint bundle for each of the possible amount that PLAYER 1 has put in
22. Once both PLAYER 1 and PLAYER 2 have decided how much money to put in the joint bundle, we add an extra Rs.50 for each Rs.100 in the joint bundle
23. Then, we divide the joint bundle equally between PLAYER 1 and PLAYER 2.
24. The more money PLAYER 1 and PLAYER 2 decide to put back in the envelopes to go into the joint bundle, the more money in total they get to take home.
25. If both people in the task start with the same amount of money but put different amounts in the joint bundle, the person who puts less money in the bundle goes home with more money than the person who puts more money in.
26. Then the whole exercise is repeated for the second time when this task is performed with a different person.

PLAYER 1 does not know how much money PLAYER 2 gets in his or her envelope and so, unless PLAYER 2 puts Rs.400 into the joint bundle, PLAYER 1 cannot work out how much money PLAYER 2 is taking home at the end of the task. Put another way, only PLAYER 2 knows about any money that he or she puts in his or her pocket.

There is one last thing I need to tell you about this task. You are going to perform the task two times. However, you will be paid for only one of those times. To decide which of the two you will be paid for, we will do a simple random draw with you at the end of your individual interview.

[How the session is to proceed]

OK. So now I am going to tell you how we are going to proceed.

Ms. Afzal will call you one by one. When called, you will go up to Ms. Afzal's desk and pick a set of envelopes from this box *[point to box with brown envelopes in, DO NOT at this stage point out that there are two sides, one for PLAYER 1s and one for PLAYER 2s]*. An enumerator will then escort you to a place where you will make your decisions in private. You will have a chance to ask the enumerator your questions before you make your decisions. The enumerators will write down your decisions on these forms and give them back to Ms. Afzal so that she can work out your payments from your joint bundles. The enumerators will also ask you a few questions about the task. Once each of you has made your decisions and answered these few questions, you will be directed to sit <over there> where you will be asked a few more questions, this time about you and your household. Once this is done, you will be allowed to chat with others <over there> while you wait for everyone to make their decisions and for Ms. Afzal to calculate your payments from your joint bundles. Then you will be invited to come and collect these payments plus the additional Rs.150 each for participation.

Please remember not to talk or communicate with each other while you are waiting to meet your enumerators. This is important. If you have questions about the task, you can ask the enumerators in private.

CHAPTER 4

NORMS ON MARRIAGE

ABSTRACT

In this chapter, we investigate whether there is a greater social penalty on love matched couples settled in more remote villages, where the communities are likely to be more conservative. Specifically, we look at the content and strength of the social norms and personal normative beliefs relating to marriage arrangement i.e., the behavioural prescriptions about what sort of marriage a person should enter into. We also explore the second-order social norms and personal normative beliefs, i.e., the prescriptions about how people should behave towards those who violate the norm about marriage arrangement. We investigate the social norms by implementing incentivised games (Krupka and Weber, 2013) and the personal normative beliefs (Bicchieri, 2017) using unincentivized surveys. We find that there is indeed a social norm against love matched marriages and that this norm is stronger in more remote villages. However, the subjects' personal normative beliefs often diverged from the social norm, suggesting that individuals are more broadminded privately. Our results also confirm that men are extended greater autonomy to deviate from the arranged marriage norm compared to women. Moreover, women appear to be cognizant of this and demonstrate greater support for the arranged marriage norm in their personal beliefs. Turning to the second-order norms and personal normative beliefs guiding the enforcement of the marriage norm, we find: no substantive evidence supporting the existence of a second-order social norm; that, individually, the majority think that love matched couples should be accepted and supported by their families and neighbours; that accepting and supporting love matched couples meets with marginally,

but not significantly less approval in more remote villages; and that women rate family members and neighbours as equally legitimate enforcers of the arranged marriage norm, while men only consider family members as legitimate enforcers. The last gender distinction is important as it points towards a social environment in which women fear social backlash and stigmatization at the hands of any social agent in case of a misstep or deviation from the norm more than their male counterparts.

1. Introduction

The first two chapters of this study investigated the differences in cooperative behaviour between spouses across arranged and love matched marriages. We found couples in self-selected marriages to be more unconditionally cooperative towards one another. However, this love match effect was observed only in villages more proximate to the city and, as villages became more remote, the effect dissipated.

There is evidence that non-traditional relationships are viewed negatively by the society. For instance, perceived discrimination against socially devalued relationships can negatively affect the quality of relationship between couples — sometimes even leading to divorce (Bratter and King, 2008; Lehmiller and Agnew, 2006; Otis et al., 2006). Socially inflicted distress is not limited to non-traditional couples but can transcend beyond intimate partner relationship and have adverse consequences on parent-child relationship and family wellbeing (Murray et al., 2001). In a study on racial and sexual minorities, Doyle and Molix (2014) observe that prejudice and discrimination threaten social identity which affects relationship quality that is partially mediated by self-image. Inter-caste and inter-faith marriages challenge the deep-rooted social structure built on a hierarchical caste system in India. Studies on inter-caste and inter-faith marriages suggest that the sufferings of such couples are not limited to emotional, psychological and financial distress — which in extreme cases can escalate to physical violence but can also affect fertility (Dhar, 2013; Tamalapakula, 2019). A study on non-traditional couples in the United States and India reveals that such couples choose to have fewer children for fear of social ostracization and discrimination against their offspring (Das, 1978). Drawing on this body of work, we hypothesise that our earlier results can be explained by the existence of a social norm against love matched marriages that is stronger, i.e., more widely acknowledged, in more remote communities.

Social norms comprise of two elements. First, social norms are shared understandings or collective perceptions about actions that are obligatory, permitted or forbidden among a reference group (Crawford and Ostrom, 1995; Elster, 1989; Ostrom, 2000). Second, social

norms are adhered to because of the expectation that noncompliance will result in social sanctions, as well as peoples' quest for social approval from adherence to the norm (Axelrod, 1986; Fehr and Gächter, 2000; Fehr and Fischbacher, 2004; Krupka and Weber, 2013; Sugden, 1995). However, rules of punishment may themselves be subject to norms (Balafoutas et al., 2014, 2016; Chaurand and Brauer, 2008; Eriksson et al., 2017; Strimling and Eriksson, 2014). Norms guiding punishment of norm violations are called second-order norms (Elster, 1989) or meta-norms (Axelrod, 1986; Horne, 2007; Prietual and Conway, 2006). So, these second-order norms represent a second tier of norms that regulate the punishment of violators of the (first-order) social norm.

Our experimental design is based on recently developed behavioural and experimental techniques which we have especially adapted to measure social norms on marriage, and second-order norms guiding behaviour towards individuals who violate the marriage norm. We implement incentivised coordination games (Krupka and Weber, 2013, henceforth K-W) to identify the presence of the first and second-order norms on marriage and also test if distance from the city is a mediating factor in the strength of these norms.

Although norms are socially prescribed standards of behaviour, individuals can hold personal opinions — personal normative beliefs that deviate from the norm (Bicchieri, 2017). Therefore, to capture personal opinions on marriage, we investigate personal normative beliefs using unincentivized surveys. We are interested in exploring if personal normative beliefs vary more than individual perceptions of the social norms and if there is more support for the social norm (i.e., are personal normative beliefs more likely to concur with the social norm) in remote villages and among women compared to men.

It also important to document personal opinions about the second-order norms on marriage. Specifically, we examine if personal normative beliefs coincide with the second-order norms on the imposition of sanctions on deviant behaviour; and whether and how these beliefs vary across gender. Finally, we also investigate the perceived legitimacy or the support of others in imposing sanctions by different parties — family members or neighbours/community members.

Social norms and personal normative beliefs on marriage have not been examined in an experimental setting before, and ours is the one of the few studies to implement the K-W method to investigate second-order social norms.

In recent years, unprecedented levels of global technological advancement has meant that even the poorest and most isolated regions in Pakistan now have some sort of access to the outside world through the internet. As previously closed societies are exposed to western media and modernisation, existing cultural and social norms can be subject to criticism and re-assessment. Given these changes in the social scene, personal normative beliefs can be expected to be more varied and shift faster than the social norms. Hence, at a given point in time, an individual's personal beliefs may be more liberal than her perceptions of a conservative social norm. Similarly, second-order norms are fragile and depend on the existence of the first order norms. As the social fabric of the society changes, the second-order norms may no longer be valid and representative of the shared opinions of the people. Communities that are more central and closer to cities are likely to have had greater exposure to other cultures and, this being the case, in such communities we hypothesised both, personal normative beliefs and the perceptions of a conservative norm to be more liberal compared to in remote communities.

We find that there is indeed a social norm against love matched marriages and that this norm is stronger in villages that are more remote and less exposed to modernity. Further, we observe personal normative beliefs about marriage arrangement diverge from the social norm, indicting more broadmindedness towards love matched marriages — especially amongst participants from villages closer to the city. Our results also indicate that there is no clarity about the second-order norm regulating the punishment of violations of the marriage norm. We find our participants conflicted between punishment and forgiveness in the case of a norm violation. However, when eliciting personal beliefs on norm enforcement, the majority of the participants, especially those from villages closer to the city, do not support punishment of norm violators.

We also observe partiality in the behavioural prescriptions of the social norms for men and women. Women are expected to follow the social norm more strictly than men and, perhaps owing to this burden of greater conformity, women's personal normative beliefs concur more with the arranged marriage norm compared to men. Finally, family members are regarded as the legitimate party to impose sanctions against norm violations by male respondents, while female respondents do not differentiate between family and neighbours. The rest of the paper is organized as follows: section 2 describes the research questions we are interested in answering and our hypothesis, section 3 describes the experimental design and procedures. We present our results in section 4 and conclude in section 5

2. Research questions

2.1 Social Norms on marriage

The primary objective of the study is to answer the following questions:

1. *Is there a social norm prohibiting love matched marriages?*
2. *Do individuals' personal normative beliefs vary more than perceptions of the social norm?*
3. *Is the social norm stronger, i.e., acknowledged by a larger majority, within communities that are more remote?*
4. *Is the social norm more strictly applied to women compared to men?*
5. *Is there more support for the social norm, i.e., are personal normative beliefs more likely to concur with the social norm, among women compared to among men?*

Krupka and Weber (2013) argue that, in the presence of collectively recognised social norms, an incentivised pure coordination game can elicit beliefs about the general social agreements, i.e., the social norm. In our study, we asked the participants to rate the extent to which certain actions were socially appropriate or inappropriate while matching the responses of others, instead of revealing their own personal beliefs. Hence participants played a coordination game in which they were given monetary incentives to rate the

appropriateness of behaviour in the same way as they expected the majority of participants would. Given that the vast majority of marriages in Pakistan are arranged (Zaidi and Shuraydi, 2002), we hypothesised the answer to the first question to be ‘yes’ - there is a social norm prohibiting love matched marriages.

To answer the second question, information on participants’ normative views about hypothetical decision situations can be gathered effectively through personal interviews and surveys (Görge and Nosenzo, 2020; Kahneman et al., 1986; Reuben and Riedl, 2013). Personal normative beliefs are first-order beliefs about what should be done (Bicchieri et al., 2014). It is important to point out that personal normative beliefs may or may not coincide with social norms. According to Bursztyn et al. (2020), pluralistic ignorance is a belief trap where individuals privately reject a norm but falsely believe that most other people accept it, so they continue enduring and following the norm. This can result in weakly supported norms to persist. However, the greater the divergence between personal beliefs and perceived norms, the easier it will be to change the harmful or inefficient social norms (Bicchieri, 2017).

For the second question, taking into consideration the exposure to modern media and western cultures in recent years, we anticipated individuals’ personal normative beliefs to diverge from the social norm on marriage. Specifically, we expected personal normative beliefs to be more varied and, on average, more liberal than the perceived norms on marriage.

Turning to the third question, a norm can be considered strong if a large majority of the population acknowledges its existence. So, the third research question investigated if there was greater acknowledgement of the arranged marriage norm within the communities that were less exposed to the changing social trends of city life. We hypothesised the norm to be stronger in more remote villages.

In the fourth research question, we were interested in exploring whether violations of the norm by women were disapproved of more than violations by men — if it was more

unacceptable when the marriage norm was violated by a woman instead of a man, or not? We conjectured that violations of the norm by women could cause greater disapproval as women were expected to practice less decision-making power than men — within and outside the household environment (Afzal et al., 2018). Therefore, it was likely that women faced greater opposition than men in exercising the right to choose a spouse.

We also set out to identify differences between genders in their personal normative beliefs regarding the marriage norm. We expected women's personal normative prescriptions to concur more with the norm compared to their male counterparts. In conservative societies, women are often solely dependent on the male household members — father or brother before marriage, and spouse after marriage. In such societies, with poor education and limited employment opportunities — women are the most marginalized segment of the society (Human Development Report, 2016). This can result in women acquiescing to and internalising the socially prescribed norms (Dean and Jayachandran, 2019), or feeling 'alienated' to the extent that they do not see themselves as free agents capable of choice leading to a failure of aspiration (Alan et al., 2018; Krishnan and Krutikova, 2013).

2.2 Second-order norms of punishment

The secondary objective of this research is to explore the second-order norms guiding sanctioning of deviant behaviour:

6. *Is there a second-order norm endorsing the punishment of couples in love matched marriages?*
7. *Do personal normative beliefs about such sanctioning vary more than individuals' perceptions of the second-order norm?*
8. *Is the second-order norm stronger within more remote communities?*
9. *Do family members and neighbours have the same perceived legitimacy to sanction violations of the arranged marriage norm?*

10. Is there more support for the second-order norm, i.e., are personal normative beliefs more likely to concur with the second-order norm, among women compared to among men?

According to Fehr and Fischbacher (2004), norms enforcement is perpetuated by the expectation that violations of the behavioural standards will result in informal social sanctions, or punishment. The most extreme form of punishment that can be imposed for violation of the marriage norm are honour killings. The Human Rights Watch Report (2019) indicates an estimate of about 1000 honour killings every year in Pakistan alone for various reasons, an important one being love marriage against the family's wishes. Given this, we hypothesised that there is a second-order norm that sanctions love matched marriages.

For research question 7 and 8, based on the earlier discussion on greater exposure to modern media and opening up of the society, we hypothesised that individuals' normative beliefs would be less prescriptive about imposing sanctions against love matched couples, especially in communities closer to cities.

To answer the next question, we refer to studies examining the role of third-party sanctions to enforce cooperative effort norms (Fehr and Gächter, 2002; Fehr and Fischbacher, 2004). Fehr and Fischbacher (2004) describe the sanctioning individuals as either the "second party" who are directly affected by the norm violation or the "third party" who are uninvolved and simply happen to know that a violation has occurred. Literature suggests that an important factor guiding second-order norms is the perceived legitimacy to impose sanctions (Chaurand and Brauer, 2008; Strimling and Ericsson, 2014). Strimling and Ericsson (2014) investigate social dilemmas when involved parties have different roles with respect to the norm violator and find that the use of punishment is considered inappropriate except in the case of preferred parties — people in special positions (for instance parents of children who violated a norm). They discover that it is not sufficient to be part of the suffering group to be able sanction punishment, on the other hand, the preferred parties are expected to impose punishment, within limits.

In research question 9, we investigated if family members and neighbours have the same perceived legitimacy, i.e., support of others, to sanction deviant behaviour. The discerning features between the two parties may be that family members could be identified as an involved party who may have incurred social, emotional or financial costs due the norm violation, on the other hand, neighbours are the uninvolved party who suffered no costs but is aware of the violation — in likeness to the second party and third party described by Fehr and Fischbacher (2004). We conjectured that family members have greater perceived legitimacy over neighbours when it comes to imposing punishments.

Finally, we were also interested in the differences between the two genders in their personal normative beliefs regarding the second-order norm. In a natural field experiment in Greece, Balafoutas and Nikiforakis (2012) find that when exposed to a norm violation, men are more likely to punish violators compared to women. Keeping this in mind, we were interested in examining if the personal normative prescriptions of men concurred more with the second-order norms of imposing sanctions against deviant behaviour in comparison to their female counterparts.

3. Experimental Method and Procedures

3.1 Experimental Design

Although our experimental design was simple, low literacy levels in the research area meant we had to ensure that the participants clearly understood the exercise. The experimental instructions were given to all the participants in a session during a group training. We informed the participants that we would describe three different scenarios and they had to rate the appropriateness of the decision taken by the subjects in the vignettes

on a four-point Likert scale: 1, “very inappropriate”; 2 “somewhat inappropriate”; 3, “somewhat appropriate”; 4 “very appropriate”.³⁰

There were three scenarios described in total. The order in which they were presented remained consistent across survey versions. For each scenario, participants had to answer a set of questions twice, once to report their own personal opinions on the decisions, and the second time to report what they considered to be the response from the majority of the people in the session (K-W method). The order of the questions within each scenario was alternated across survey versions, however, the personal opinions were always inquired before the incentivised responses. For the coordination questions, correctly matching a response with the modal response in the session was incentivised monetarily. Participants were informed that at the end of the experiments, one out of the three described scenarios would be selected, and any two out of all the incentivised questions answered for the selected scenario would be chosen for payment. Participants could make Rs. 250 for each correctly matched response, meaning they could earn up to Rs. 500 if they coordinated their responses correctly, in addition to a participation fee of Rs. 500.³¹

Following the group instructions, participants were sent one-by-one for their individual interviews. The enumerators summarised the instructions one more time before starting the interviews. After the participants indicated their personal opinions as well as social appropriateness ratings for all the decisions described in the scenarios, they were interviewed for a household survey, and then sent to be seated in a separate room. This was to ensure that those who were not yet interviewed did not interact and inquire about interview from participants who had finished theirs.

³⁰ To make points on the scale easier to identify, we included pictorial notations of thumbs up or down. Two thumbs-up for “very appropriate”, one thumbs-up for “somewhat appropriate”, one thumbs-down for “somewhat inappropriate” and two thumbs-down for “very inappropriate”.

³¹ In April 2019, the approximate exchange rate was United States Dollar 1 $\approx$ Pakistani Rs. 140.

Scenario 1

The vignette on marriage norms was always described as Scenario 1 (see Appendix B for details of the interview). Scenario 1 focuses on the norm of arranged marriages and the questions aim to ascertain the perceived appropriateness of a couple's decision to concede to the norm of arranged marriages or pursue their love interest despite the norm.

Participants were read a hypothetical situation where a young man and a woman from the participants' village liked each other and wanted to be married, but their parents were in the process of selecting spouses for each of them. The man and the woman had two options, either await their parents' decisions and marry other people selected by their parents, or force their parents to accept their choice to marry each other.³² The next four questions asked the participants to rate using a four-point scale the appropriateness of the decisions described according to participants' own personal opinions.

The questions were:

- 1) In your opinion, how appropriate do you think it is for the man to await his parents' decision and marry the person selected by his parents?
- 2) In your opinion, how appropriate do you think it is for the man to force his parents to accept his choice for marriage and get married to the woman of his choice?
- 3) In your opinion, how appropriate do you think it is for the woman to await her parents' decision and marry the person selected by her parents?
- 4) In your opinion, how appropriate do you think it is for the woman to force her parents to accept her choice for marriage and get married to the man of her choice?

³² The interview instructions were:

“Scenario 1: Imagine there are two young people, a man and a woman living in your village. They would like to be married to each other, but their parents are in the process of selecting spouses for each of them. Now the man and the woman have to choose one of the following two options:

- 1) Await their parents' decisions and marry the people selected by their parents
- 2) Force their parents to accept their choice to marry each other”

Next, for scenario 1, we asked participants to answer the same questions, but this time they were incentivised to match the modal responses of the participants present in the session that day.³³ The questions included additional instructions to ensure that the participants clearly understood the monetary incentives.

The questions were revised to:

- 5) How socially appropriate is it for the man to await his parents' decision and marry the person selected by his parents? *Remember, you should pick a response which you think matches the opinion of the majority of people here today!*
- 6) How socially appropriate is it for the man to force his parents to accept his choice for marriage and get married to the woman of his choice? *Remember, you should pick a response which you think matches the opinion of the majority of people here today!*
- 7) How socially appropriate is it for the woman to await her parents' decision and marry the person selected by her parents? *Remember, you should pick a response which you think matches the opinion of the majority of people here today!*
- 8) How socially appropriate is it for the woman to force her parents to accept her choice for marriage and get married to the man of his choice? *Remember, you should pick a response which you think matches the opinion of the majority of people here today!*

³³ The instructions were: "The next four questions will be the same as you just answered, but this time I will ask you to pick a response you think matches the opinion of the majority. Remember, if this scenario is selected at the end of the session, then any two from the following four questions may be selected for payments."

Scenario 2

The second and third scenarios describe situations aimed at eliciting the second-order norms guiding the enforcement of the second-order beliefs — the social norms on marriage. Scenario 2 described a young couple from the participants' village. The couple had married of their own choosing and forced their parents to accept their decision to marry each other.³⁴ Two types of reactions from the couple's families are presented. One, both sides of the couple's families accepted their marriage decision and welcomed them into their families, providing full support; two, both sides of the couple's families did not accept their marriage decision and became estranged, withdrawing any support to the couple. Participants were first asked to rate the extent to which the families' behaviour was appropriate according to their own personal opinions:

1. In your opinion, how appropriate do you think it is for the boy and the girl's families to accept their marriage decision, and welcome the couple into their families and fully support them?
2. In your opinion, how appropriate do you think it is for the boy and the girl's families to not accept their marriage decision, and not welcome the couple into their families and withdraw any support to the couple?

Next, they were asked to respond to the same questions by incentivising them to match the modal rating in their session:

3. How socially appropriate is it for the boy and the girl's families to accept their marriage decision, and welcome the couple into their families and fully support them? *Remember, you should pick a response which you think matches the opinion of majority of people here today!*
4. How socially appropriate is it for the boy and the girl's families to not accept their marriage decision, and not welcome the couple into their families and

³⁴ The instructions were:

“Scenario 2: Imagine there is a young married couple in your village. The young couple is in a marriage of their own choosing, and they had to force their parents to accept their decision to be married to each other.”

withdraw any support to the couple? *Remember, you should pick a response which you think matches the opinion of majority of people here today!*

Scenario 3

The final scenario described a young couple who married of their own choosing and forced their parents to accept their decision to marry each other. The couple had recently moved into the participant's village.³⁵ Participants were asked to rate the appropriateness of two kinds of reactions from the neighbours. In one situation, the neighbours welcomed the new couple into the neighbourhood and offered them neighbourly support regardless of the couple's marriage decision. In the second situation, the neighbours did not welcome the new couple into the neighbourhood neither offered them neighbourly support because of the couple's marriage decision. Participants were first asked to rate the extent to which the neighbours' behaviour was appropriate according to their own personal opinions:

1. In your opinion, how appropriate do you think it is for the neighbours to welcome the new couple into the neighbourhood and offer them neighbourly support, regardless of the couple's marriage decision?
2. In your opinion, how appropriate do you think it is for the neighbours to not welcome the new couple into the neighbourhood nor offer them neighbourly support because to the couple's marriage decision?

Following this, participants evaluated the appropriateness of the same decisions by coordinating their responses with the rest of the participants:

3. How socially appropriate is it for the neighbours to welcome the new couple into the neighbourhood and offer them neighbourly support, regardless of the couple's marriage decision? *Remember, you should pick a response which you think matches the opinion of majority of people here today!*

³⁵ The instructions were:

"Scenario 3: Imagine there is a young married couple. The young couple is in a marriage of their own choosing, and they had to force their parents to accept their decision to be married to each other. The young couple recently moved into a new neighbourhood, which happens to be yours."

4. How socially appropriate is it for the neighbours to not welcome the new couple into the neighbourhood nor offer them neighbourly support because of the couple's marriage decision? *Remember, you should pick a response which you think matches the opinion of majority of people here today!*

3.2 Household Survey

The household survey was divided into two parts. Part 1 comprised of questions on family and household characteristics. In family characteristics we inquired about household size, education, relation to the household head, income, occupation and decisions related to financial matters, healthcare and children's education. In the household characteristics we inquired about household structure and assets. The second part of the survey asked about marital status, type of marriage (arranged or love matched marriage), quality of marital relationship (only asked from married participants), acceptability of domestic violence (adapted from Demographic and Health survey) and social preferences (adapted from Global Preference Survey by Falk et al. (2018)).

In some sessions, part 1 of the survey was conducted before the start of the session to keep the early comers busy while we waited for more participants to join the session. However, part 2 of the survey was always answered by the participants after the personal interviews had been completed.

3.3 Design of the study

The fieldwork for all three chapters was conducted in the district of Faisalabad, in the Punjab province of Pakistan. The district is further divided into sub-divisions known as *tehsils*, and the data for all three chapters was collected across three tehsils of Faisalabad district. Figure 1 maps the location of the villages for all three rounds of experiments. In Chapter 2, we carried out intra-household public good experiments with married couples

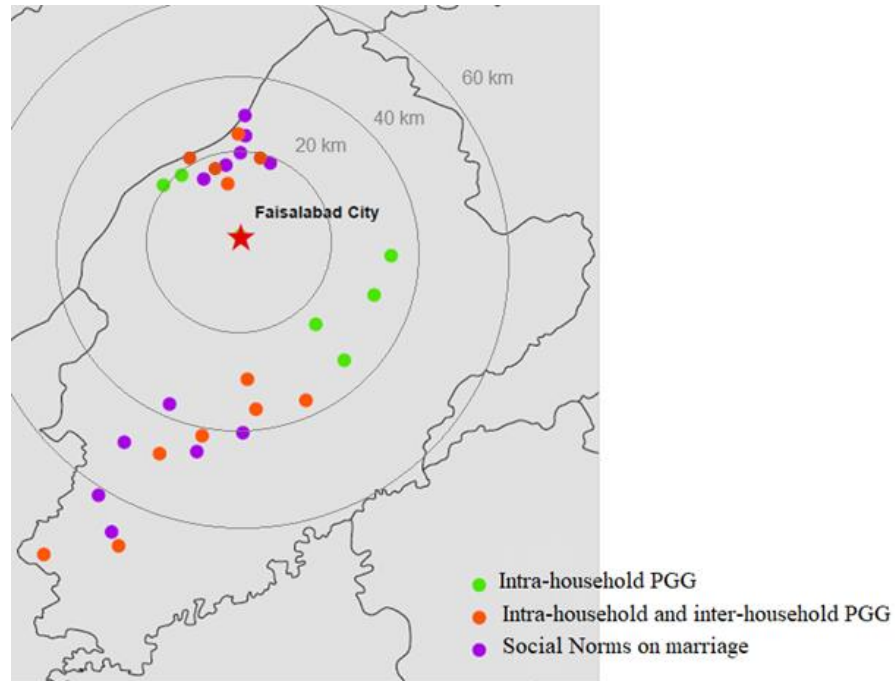
residing in villages closer to the city (green dots in figure 1). Upon finding a significant effect of love matched marriages on unconditional cooperation, we conducted a second round of intra- and inter-household public goods experiments. To test if our findings replicated and if nearness to the city was a mediating factor in Chapter 2 results, we included villages that were near, as well further away from the city (orange dots in figure 1).³⁶

For this chapter, we conducted lab-in-the-field experiments in 12 villages across Faisalabad district. Half of the villages were selected from the Faisalabad tehsil, which is situated close to the district's centre — the closest village being approximately 16 km from the city and the furthest about 27 km. The remaining came from the Samundari tehsil which lies further away from the city, and therefore more remote. The distances from the city for villages in Samundari tehsil range from approximately 35 km to 70 km. The selection of villages was random conditional on tehsil-level stratification.³⁷

³⁶ Villages in chapter 2 were randomly selected from Faisalabad tehsil and Jawanwala tehsil. Villages in chapter 2 were randomly from Faisalabad tehsil and Samundari tehsil.

³⁷ Villages previously visited for the public goods experiments of Chapters 2 and 3 were excluded from the pool of prospective villages for the social norm games.

Figure 1: Map of villages in Faisalabad district



Notes: The cluster of villages to north of the Faisalabad city belong to Faisalabad tehsil. The cluster of villages to the south of the city are in Samundari tehsil (orange and purple dots). The cluster of villages to the right of Faisalabad city is Jaranwala tehsil (green dots).

The norms study ran in April 2019, and one session was conducted in each village. A total of 341 individuals participated in the experiments. Each session lasted about 2 to 2.5 hours. The sessions were carried out in primary school buildings or under erected cloth tents in large open spaces situated in central locations within the villages.

To select our sample, a household listing of 200-250 households was carried out in each of the twelve selected villages. The protocol for the listing exercise is included in Appendix B. During the listing exercise, we obtained information about the number of adults in a household who were able to take time out for a session, their name, age and gender. Keeping one adult male and female from each household, the sample was stratified according to age cohorts: 18-29 years; 30-44 years and 45-60 years. Then a stratified random sample of men and women was drawn — this selection methodology did not

preclude the selection of more than one person from a household. In our final sample, about 16 percent participants (28 male – female pairs) were selected from the same household.³⁸

We selected approximately 90 participants — 45 men and 45 women from each village to be invited. When conducting public goods experiments for Chapter 2 and 3, we learnt that younger men and women, in general, had a lower show-up rate owing to their work commitments. For men it was work outside the home and for women it was household work and childcare. Keeping this in mind, we over-sampled them; a little over 40 percent of the invitations went to men and women between the age group of 18-29 years; around 35 percent went to individuals aged between 30-44 years; the remaining to 45-60 years old. In our sample, 34 percent of the sample are from the youngest age category, indicating a show up rate of about 23 percent. The show-up rate for participants aged 30-44 years was about 37 percent, and for the older age group of 45-60 it was around 31 percent.

Our sessions were designed to have a maximum of 32 participants, with no more than 16 participants from each gender. After sample selection, a two-person team was sent out to invite individuals one or two days before the session. An invitation, in Urdu was handed inviting to participate in a study about everyday decision-making being conducted by a university student. The invitation had the name of the selected participant, date, time and duration of the session along with the venue details. It also explained that if the participant actually participated in the session, she could earn up to Rs. 1000. However, if the participant, turned up for the session but did not actually participate (in case of extra show-ups), then a fee of Rs. 150 would be given to thank the participant for her time and to cover transportation costs. The invitations were also read out and explained by the enumerators in case the participants were illiterate. Participants were recruited according to arrival time at the venue, and those arriving earlier were given precedence in recruitment.

³⁸ There were 26 married couples, one pair of mother and son, and one pair of father-in-law and daughter-in-law.

4. **Results**

4.1 **Descriptive Statistics**

Table 1 presents the descriptive statistics for all the participants in this study. We report the total sample size and means for selected indicators, and also test if our sample is balanced across the two tehsils — note that the Samundari tehsil is located further away from the city of Faisalabad compared to Faisalabad tehsil. We include socio-demographic characteristics such as age, education, marital status, number of children, income, as well as behavioural preference measures adopted from Falk et al. (2018) assessing the willingness to return a favour, seek revenge or give altruistically.

Our sample comprises of 341 participants, 165 men (86 from Samundari tehsil and 79 from Faisalabad tehsil) and 176 women (92 from Samundari tehsil and 84 from Faisalabad tehsil). The mean age of the sample is about 37 years and on average most participants have not completed primary education. Majority of the sample is married, and the proportion of married subjects is slightly greater in the Samundari tehsil subjects. However, participants from Faisalabad tehsil on average report higher levels of happiness from their marriage. We also inquired about tolerance towards domestic violence and make two observations based on our data.³⁹ First, there is more tolerance for wife-beating in villages further away from the city compared to those near it. This is indicative of secluded villages being more conservative and patriarchal in their outlook. Second, women are more tolerant towards wife-beating than men. This is in line with Sardinha and Catalan (2018) who utilise data from the Demographic and Health surveys conducted across 49 low- and middle-income countries. Apart from this, we do not find any significant differences in the reported characteristics of participants across the two tehsils.

³⁹ Our domestic violence indicator is a widely used instrument adopted from the Demographic and Health Surveys on acceptability of domestic violence. The questions briefly describe five different scenarios and inquire if it is justified for the husband to hit/beat his wife in each situation. We construct an index by summing the total number of times a participant indicates a husband to be justified to hit his spouse. The mean for female respondents is 1.386 and that for males is 0.558.

Table 1: Descriptive Statistics

<i>Indicators</i>	All Sample		Samundari tehsil		Faisalabad tehsil		
	<i>N</i>	<i>Mean</i>	<i>N</i>	<i>mean</i>	<i>N</i>	<i>mean</i>	<i>Diff.</i>
Participant is female	176	0.516	92	0.517	84	0.515	0.002
Age in years	341	36.619	178	37.49	163	35.67	1.82
Years of education	341	4.493	178	4.534	163	4.448	0.086
Subject is married	341	0.894	178	0.86	163	0.933	-0.073**
Number of children	341	2.455	178	3.096	163	1.755	1.341
Subject is in an arranged marriage	311	0.875	156	0.885	155	0.865	0.02
Consider of your marriage, how happy are you on a scale 1-7?	312	6.285	156	6.154	156	6.417	-0.263*
Monthly household income (Rs.)	341	18,646	178	18,447	163	18,865	-418
Acceptance to spousal violence	341	0.985	178	1.14	163	0.816	0.324**
Girls should not be sent to school beyond the primary level?	341	3.704	178	3.702	163	3.706	-0.004
On a scale of 1-10: When someone does me a favour, I am willing to return?	341	9.378	178	9.348	163	9.411	-0.063
On a scale of 1-10: If I am treated unjustly, I will take revenge at any cost?	341	1.349	178	1.461	163	1.227	0.234
How willing are you to give to good causes without expecting anything in return?	341	8.273	178	8.236	163	8.313	-0.077
Version 1 of social norms survey	341	0.246	178	0.247	163	0.245	0.002
Version 2 of social norms survey	341	0.273	178	0.253	163	0.294	-0.042
Version 3 of social norms survey	341	0.246	178	0.258	163	0.233	0.023
Version 4 of social norms survey	341	0.235	178	0.242	163	0.227	0.015

Notes: All differences are means tested with a t-test. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

4.2 Social norms and personal normative beliefs on marriage

Figure 1 presents the elicited appropriateness ratings for the hypothetical decisions presented in Scenario 1 by all the 341 participants. Panel A presents the responses to the four questions relating to scenario 1 when participants were incentivised to match the modal ratings in their session. Columns 1 and 3 in Panel A present the proportions of the four response options selected by the participants when the male or female subjects in the vignette accept an arranged marriage (AM), and the other two columns correspond to the appropriateness ratings when the male and female subjects in the vignette insist on love marriages (LM). Within each column, the green and yellow sections indicate the proportion evaluating the decision as “very appropriate” and “somewhat appropriate”, and the red and orange parts indicate the proportion evaluating the decision as “very inappropriate” and “somewhat inappropriate”.

We observe a substantial social agreement that the decision supporting an arranged marriage is considered “very appropriate” by a vast majority (approximately 90 percent) of the participants — with less than 5 percent selecting either of the two ‘inappropriateness’ ratings. These percentages also inform about the strength of the norm, i.e., the arranged marriage norm being very strongly acknowledged by the participants. Again, the majority, more than 60 percent of participants, rate love marriage by either gender to be “very inappropriate”. To be precise, about 63 percent of the participants rate pursuing a love marriage by a male subject as “very inappropriate”, and this percentage increases to 73 percent when the subject is female. This graph assists us in answering our first research question — there is indeed a social norm on marriage, and it strongly supports arranged marriages over love matched marriages.

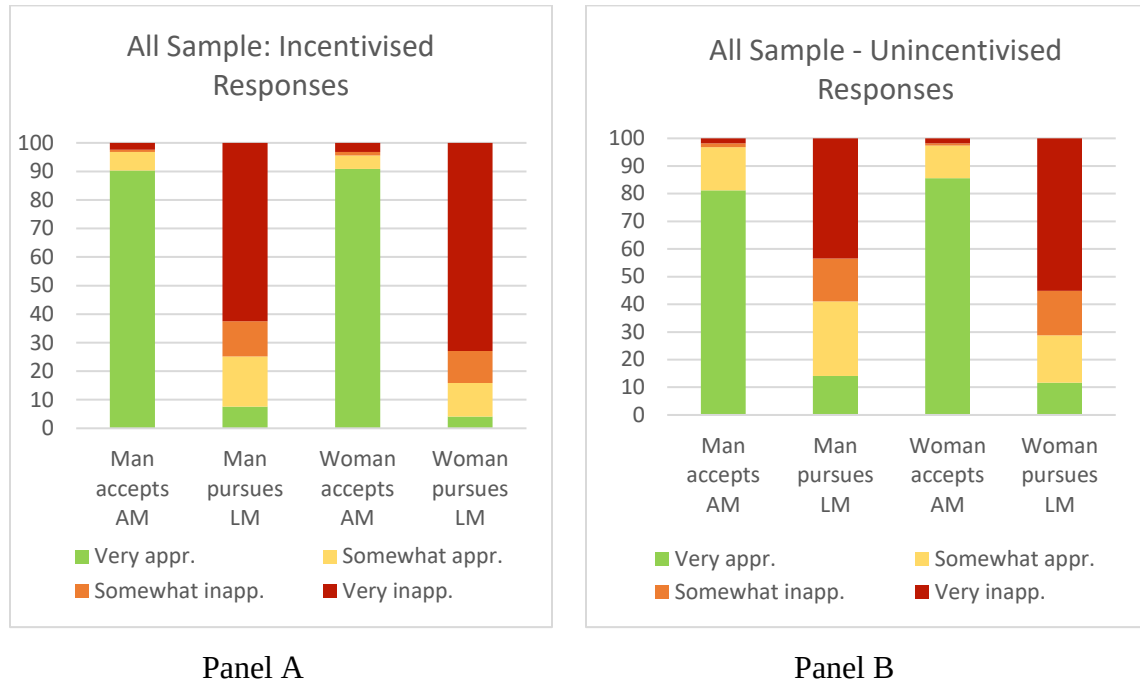
The same graph also points towards the difference in the strength of the social norm when it is being applied to male versus female subjects. As indicated by the larger red segment

in column 4 compared to column 2 (Panel A), there is a greater proportion of participants who rate a woman's decision to marry out of love "very inappropriate" compared to the situation when a man makes the same choice. This clearly indicates that the norm is indeed stronger when it is applied to women compared to men.

Panel B on the right presents the appropriateness ratings according to the participants' personal normative beliefs on the same decisions portrayed in the vignette with no monetary incentives attached to their answers. As expected, individual preferences are not as supportive of arranged marriages as in the elicited social norm. Most notably, participants display greater support for love marriages in their personal beliefs compared to the norm. For the love marriage scenario, the proportion of participants who rated "very inappropriate" is 63 percent in the incentivised and 43 percent in unincentivized responses in the case of a male subject and 73 percent in the incentivised and 55 percent in the unincentivized responses when the subject is female.

In summary, Figure 1 reveals that individuals are cognizant of a social norm favouring arranged marriages over love marriages and they can coordinate based on this knowledge. However, some individuals harbour values that are inconsistent with the norm — they appreciate an individual's right to choose his or her spouse.

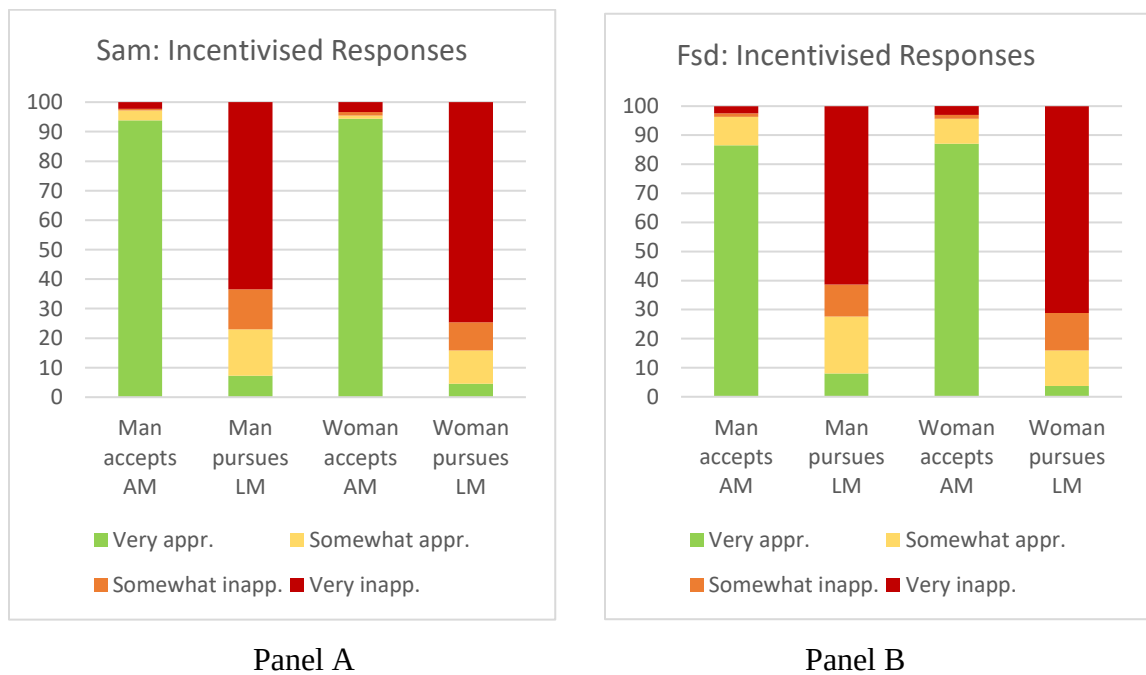
Figure 1: Appropriateness ratings for incentivised and unincentivized responses to scenario 1 — All sample

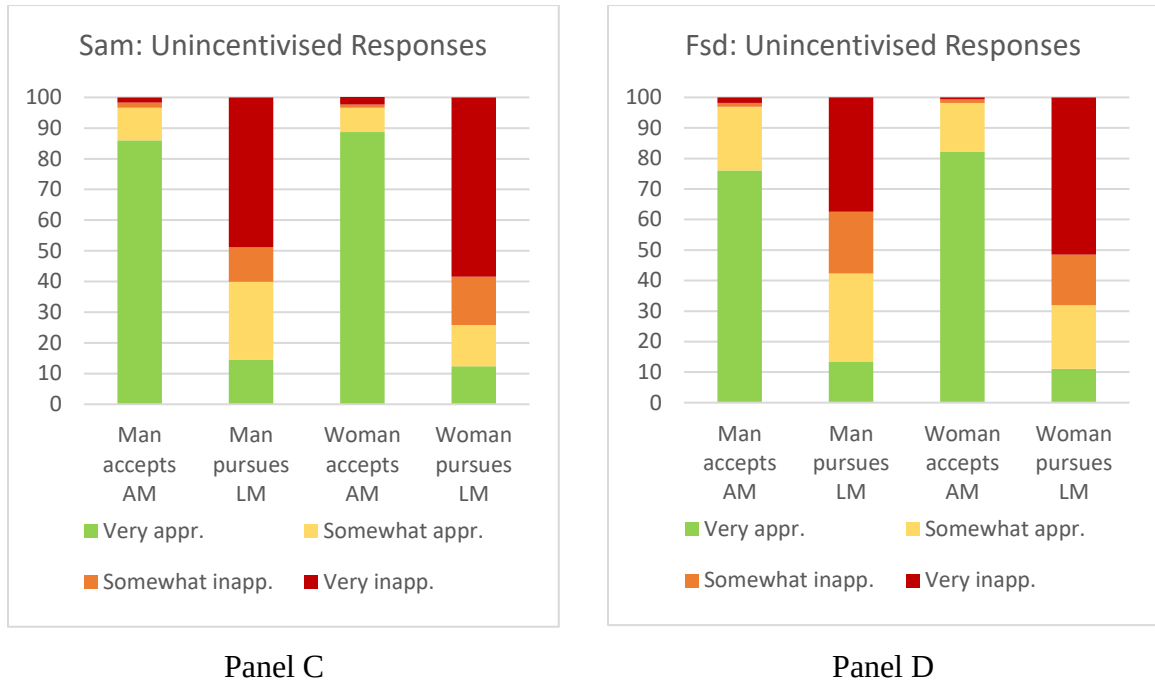


Next, in Figure 2 we look at the incentivised and unincentivized responses for each tehsil separately. Looking at the incentivised responses, the general patterns of appropriateness for the vignettes supporting arranged marriages (columns 1 and 3) appear to be similar across Samundari and Faisalabad tehsil. However, within the spectrum of ‘appropriateness’ (green and yellow), there is a greater proportion of those who rank arranged marriage as “very appropriate” instead of “somewhat appropriate” in the Samundari tehsil compared to Faisalabad tehsil — note the difference in the “yellow” segments of the graphs (Panels A and B). Similarly, the percentage of extreme inappropriateness ratings for love marriages (marked in red colour) is slightly higher in the Samundari tehsil (64 percent for male subject and 75 percent for female subject) compared to Faisalabad tehsil (61 percent for male subject and 71 percent for female subject). The personal normative beliefs present even greater divergence across tehsils (Panels C and D). In Faisalabad tehsil, we observe lower proportions of subjects rating the arranged marriage decisions as “very appropriate”, and similarly fewer number of individuals rating the love marriage decisions as “very inappropriate”, compared to those in the Samundari tehsil.

This figure confirms the presence of a social norm favouring arranged marriage across both tehsils, with the norm being stronger (marked by the extreme ‘green’ pattern) in the Samundari tehsil compared to the Faisalabad tehsil. The personal normative beliefs of participants from villages closer to the city are also less prohibitive of the notion of entering into a marriage of own choice instead of an arranged one, in comparison to the beliefs elicited by participants residing in more secluded villages.

Figure 2: Appropriateness ratings for incentivised and unincentivized responses to scenario 1— Samundari and Faisalabad tehsil

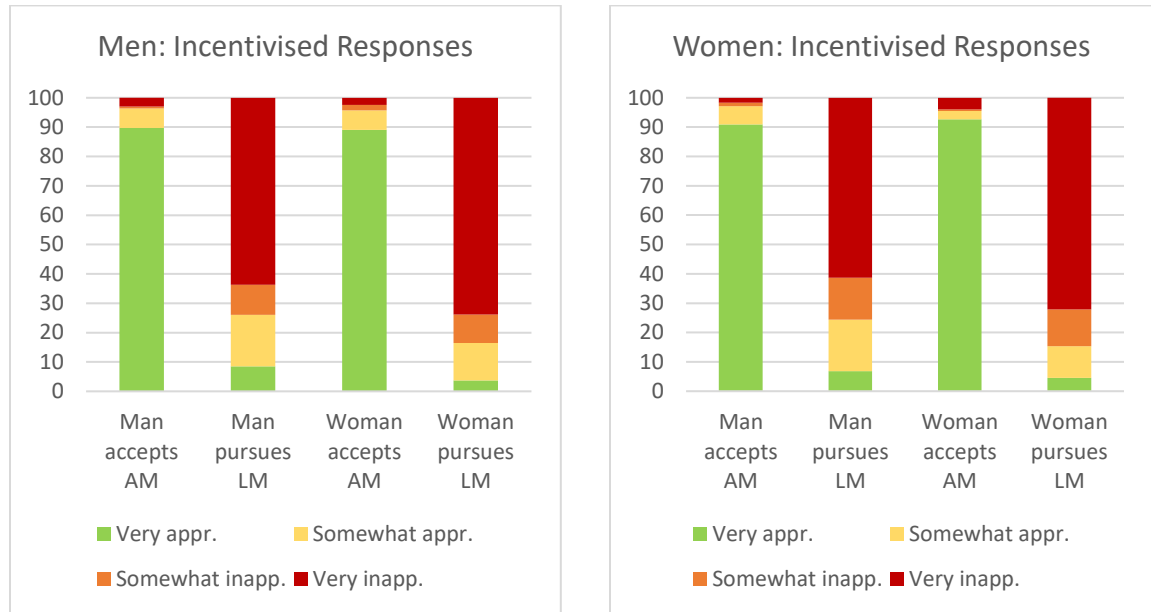




In figure 3, we look at the entire samples' appropriateness ratings conditional on the participants' genders. The general pattern of incentivised responses across male and female participants are quite similar, indicating substantial social agreement. We observe high levels of approval for arranged marriages and the opposite for love matched marriages. The unincentivized responses reflect more open-mindedness towards love matched marriages by the male participants compared to their female counterparts. About 45 percent of the male participants rate the decision of a man pursuing a love matched marriage in the 'appropriate' range (green and yellow) and 35 percent rate the same when a woman pursues love. On the other hand, about 38 percent women rate the decision of a man pursuing love marriage in the 'appropriate' range and 23 percent rate the same when the subject pursuing a love marriage is a woman.

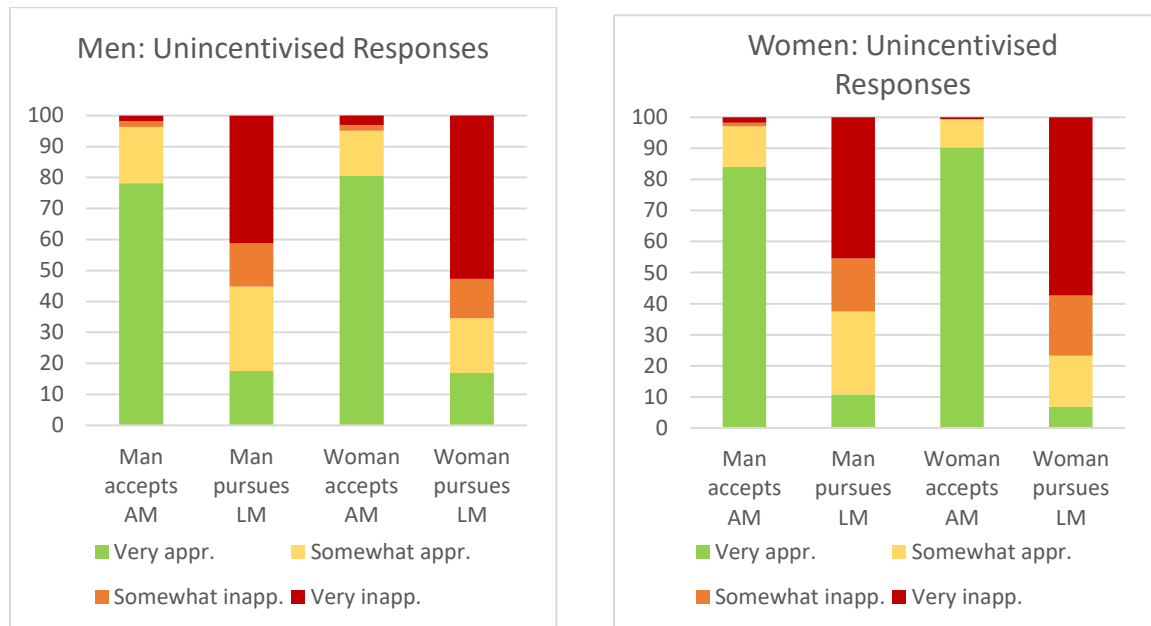
These graphs suggest that, while both men and women coordinate on the social norm prescribing arranged marriages and prohibiting love matched marriages, their distributions of personal normative beliefs do not fully coincide on the two marriage decisions. Women's personal normative beliefs concur with the norm more than their male counterparts.

Figure 3 - Appropriateness ratings for incentivised and unincentivized responses to scenario 1 by gender



Panel A

Panel B



Panel C

Panel D

4.2.1 Empirical results on social norms and personal normative beliefs on marriage

In Table 2, we report the results of a series of ordered logit estimations taking the ordinal response variable of the appropriateness ratings by the participants as the dependent variable. Recall that participants rate the decisions presented in each vignette on a four-point Likert scale: 1 “very inappropriate”; 2 “somewhat inappropriate”; 3 “somewhat appropriate”; 4 “very appropriate”. We report the odds ratios obtained by exponentiating the estimated coefficients of the ordered logits. An odds ratio tells us the factor by which, for a unit change in the independent variable, the odds of a higher outcome in the dependent variable compared to a lower outcome are changed (Long and Freese, 2001). If the odds ratio is greater than one it implies a positive effect on the dependent variable, and a value between zero and one implies a negative effect.

Columns 1-3 estimate participants’ appropriateness ratings to the incentivised questions for the decisions presented in scenario 1. Columns 4-6 estimate the appropriateness ratings by participants for the unincentivized responses to the decisions in the scenario 1. In each case, we are interested in estimating the effect of four main explanatory variables on our dependent variable. The first is “LM” which is a dummy variable that takes the value of 1 for the decision describing a male or female subject selecting a love matched marriage, and 0 for the decision of accepting an arranged match. Second, “Samundari” is the tehsil dummy capturing the effect of distance from the city on the dependent variable. Third, “FemSub” determines if the female gender of the decision-maker in the vignette has an effect on the appropriateness ratings elicited by the participants. Fourth, “FemP” is dummy variable included to measure the effect of female respondent on appropriateness ratings.

The general models in columns 1 and 4 include the four explanatory variables mentioned above, plus their interactions with each other. The parsimonious models (columns 2 and 5) include only the statistically significant interaction terms and are therefore the preferred models. Columns 3 and 6 are the parsimonious models again, but with controls for personal characteristics such as age, education, wealth score and marriage type for married

respondents, as well as survey versions. Adding the controls does not change the results by much, therefore, the interpretations below are based on the models in columns 2 and 5.

The analysis shows that, when being evaluated by a male respondent from Faisalabad tehsil, the odds of a *higher* appropriateness rating are 0.016 (p-value = 0.000) times smaller when the male subject in the vignette chooses love marriage instead of an arranged marriage (column 2).⁴⁰ According to Long and Freese (2001) it is sometimes easier to understand the results if ‘increases’ in odds are discussed instead of ‘decreases’. This can be done by a simple transformation of taking the reciprocal of the coefficient obtained from the odds ratios. The reciprocal informs us that the odds of a *lower* appropriateness rating are 64.28 times larger when the male subject in vignette decides to pursue the love match instead of agreeing to an arranged marriage, and the evaluator is a male participant from Faisalabad tehsil.⁴¹ The magnitude of the coefficient informs us about the strength of the norm — it shows how the decision to choose love over an arranged marriage can result in such a strong disapproval from the participants. The result holds in the general model (column 1) and when we include controls in the parsimonious model (column 3).⁴²

To assess if personal normative beliefs regarding self-selected marriages coincide with the perceived social norms, we look at the unincentivized responses by the participants. Looking at the coefficient of “LM” in column 5, we can observe that the odds of a higher appropriateness ranking are 0.082 (p-value = 0.000) times lower when the male subject in the vignette decides to enter a love marriage instead of an arranged marriage, when being evaluated by male participants from Faisalabad tehsil. Conversely, the odds of a *lower* appropriateness ranking are 12.25 times more likely (reciprocal of 0.082) when the male subject in the vignette decides to enter a love marriage instead of an arranged marriage,

⁴⁰Alternatively, we can say that for the case when “LM” equals to 1, the odds of the appropriateness ratings (when the male subject is being evaluated by a male participant from Faisalabad tehsil) to increase from “very inappropriate” to a higher rating are a factor of 0.016.

⁴¹ In other words, the odds of getting a rating in the ‘inappropriate’ range of responses instead of the ‘appropriate’ range are 64 times larger when the male subject in the vignettes favours a love marriage over an arranged one when being evaluated by a male participant from Faisalabad tehsil.

⁴² The controls included are participant’s age, years of education, wealth score, if a married participant is in an arranged marriage, survey version. Only the variable controlling for a married participant who is in an arranged marriage is significant and negatively affects the dependent variable.

when being evaluated by male participants from Faisalabad tehsil. Note that while the hypothetical decisions supporting a love marriage result in lower appropriateness ratings across both incentivised as well as unincentivized responses, the magnitude of the effect on the ratings is several times larger when responses are incentivised to coordinate on a social norm. We investigate the significance of this by pooling the incentivised and unincentivized responses by the participants for scenario 1. In Table A1 (Appendix A), we estimate the pooled sample and include a dummy variable for incentivised responses “SN” and all its interactions in the general model (column 1), as well as the parsimonious model (column 2), and the parsimonious model with controls (column 3). The coefficient on “SN” is significant across all three models and supports the hypothesis that participants indeed coordinate on the arranged marriage norm when incentivised to do so. This implies that, while people know what the norm is and can, therefore, use it to coordinate, they do not necessarily agree with the norm personally.

Now, to establish if there is a difference in the strength of the norm against love matched marriages in the remote villages of Samundari tehsil compared to those more proximate to the city, the exponentiated coefficient on “LM x Samundari” tells us that the odds of a *higher* appropriateness rating for a male subject in the vignette choosing a love marriage instead of an arranged marriage are 0.37 (p-value = 0.038) times smaller when the evaluator is a male participant from Samundari tehsil instead of Faisalabad tehsil (column 2). Conversely, the odds of a *lower* appropriateness ratings for a male subject in the vignette choosing a love marriage instead of an arranged marriage are 2.71 times greater when the male participants rating them belongs to Samundari tehsil instead of Faisalabad tehsil. This supports our conjecture that the social norm against love matched marriages is stronger in the remote villages compared to villages closer to the city. The difference in support of the arranged marriage norm between Samundari and Faisalabad tehsil is captured by the “Samundari tehsil” dummy (column 2). It tells us that the odds of a *higher* appropriateness rating for a male subject in the vignette choosing arranged marriage over love are 2.37 (p-value = 0.016) times greater when the male evaluator is from Samundari instead of Faisalabad tehsil.

Similarly, to ascertain the difference in personal normative beliefs across the two tehsils, we look at the interaction term “LM x Samundari” in column 5. The odds of a *lower* appropriateness rating for a vignette with a male subject choosing love marriage over arranged are 2.22 (p-value = 0.038) times higher when the male respondent belongs to the Samundari tehsil instead of the Faisalabad tehsil. Therefore, we can conclude that participants residing in Samundari tehsil are more strictly supportive of the social norm of arranged marriage as well as holding personal normative beliefs favouring arranged marriage over love matched marriage, when compared to individuals residing in villages closer to the city from Faisalabad tehsil.

Next, to investigate if the violation of the norm is met with greater disapproval when the offender is a woman instead of a man, we refer to the coefficient of the interaction term “LM x FemSub” (column 2). It tells us that the odds of a *higher* appropriateness rating when the evaluator is a male participant from Faisalabad tehsil are 0.571 (p-value = 0.018) times lower when the female subject chooses love marriage over arranged compared to a male subject making the same decision. Similarly, it tells us that the odds of a *lower* appropriateness rating are 1.75 times greater when the subject in a love marriage scenario is female instead of a male, ceteris paribus. The coefficient remains significant when we include controls (column 3).

Moving to personal normative beliefs observed from the unincentivized responses, the coefficient on “FemP” (column 5) informs that the odds of a *higher* appropriateness ranking when the male subject in the vignette chooses arranged marriage over love marriage are 1.76 (p-value = 0.025) times greater when the participant is a female instead of a male, from Faisalabad tehsil. Similarly, the reciprocal of the coefficient on “LM x FemP” (column 5) explains that the odds of a *lower* appropriateness rating for the vignette describing a situation where the male subject chooses to be in a love marriage instead of an arranged one are 2.45 (p-value = 0.017) times greater when the evaluator is female instead of a male, from the Faisalabad tehsil. This is important, it suggests that women acknowledge and have internalised the arranged marriage norm more than their male counterparts. The two results discussed in the paragraph shed light on two very important

observations. The fact that a female subject choosing a love marriage is met with greater disapproval informs us that the burden of conforming to “socially accepted behaviour” falls more heavily on women than men and, by showing greater support of arranged marriages in their personal normative beliefs, women demonstrate a greater internalisation of the norm.

Table 2: Ordered Logit estimations (Odds Ratios) for social norms and personal normative beliefs on marriage

Indicators	Social Norms			Individual Preferences		
	(1)	(2)	(3)	(4)	(5)	(6)
LM	0.019*** (0.009)	0.016*** (0.005)	0.019*** (0.007)	0.090*** (0.030)	0.082*** (0.025)	0.083*** (0.027)
Samundari	3.990** (2.407)	2.371** (0.847)	2.742** (1.080)	2.413** (0.930)	1.741** (0.456)	1.771** (0.513)
LM x Samundari	0.217** (0.167)	0.369** (0.177)	0.298** (0.160)	0.275** (0.156)	0.451** (0.173)	0.384** (0.163)
FemSub	0.924 (0.355)	1.059 (0.216)	1.171 (0.260)	1.394 (0.393)	1.365** (0.192)	1.458** (0.233)
LM x female subject	0.733 (0.345)	0.571** (0.136)	0.483*** (0.127)	0.474** (0.160)	0.461*** (0.080)	0.448*** (0.086)
Female participant	1.661 (0.768)	1.119 (0.155)	1.237 (0.190)	1.844* (0.658)	1.764** (0.448)	1.623* (0.458)
LM x female participant	0.611 (0.403)			0.349** (0.176)	0.408** (0.153)	0.519 (0.216)
FemSub x female participant	1.390 (0.813)			1.065 (0.446)		
FemSub x Samundari	1.071 (0.569)			0.593 (0.199)		
LM x FemSub x FemP	0.580 (0.402)			0.858 (0.451)		
LM x Femsub x Samundari	0.695 (0.455)			1.715 (0.744)		
Samundari x FemP	0.357 (0.286)			0.554 (0.310)		
LM x Samundari x FemSub	2.904 (3.015)			2.501 (1.977)		
Samundari x FemSub x FemP	0.832 (0.624)			2.634* (1.470)		

LM x FemSub x FemP x Samundari	2.025 (1.814)			0.367 (0.252)		
Age			1.007 (0.008)			1.011* (0.006)
Years of education			0.994 (0.020)			1.003 (0.017)
Wealthscore			0.995 (0.046)			0.918** (0.031)
Subject is in an arranged marriage			0.583** (0.128)			0.720* (0.137)
Version 2 of Interview			0.859 (0.172)			0.771 (0.125)
Version 3 of Interview			0.883 (0.194)			1.133 (0.214)
Version 4 of Interview			0.803 (0.172)			1.011 (0.200)
/cut1	0.031*** (0.011)	0.026*** (0.007)	0.022*** (0.011)	0.048*** (0.011)	0.046*** (0.010)	0.053*** (0.024)
/cut2	0.055*** (0.019)	0.046*** (0.012)	0.041*** (0.019)	0.092*** (0.021)	0.088*** (0.017)	0.099*** (0.044)
/cut3	0.197*** (0.060)	0.165*** (0.036)	0.145*** (0.065)	0.397*** (0.087)	0.382*** (0.072)	0.434* (0.194)
Observations	1,364	1,364	1,104	1,364	1,364	1,104
Controls	No	No	Yes	No	No	Yes

Notes: Standard errors clustered at the individual level and reported in parenthesis. Ordinal dependent variable: 1: Very inappropriate, 2: Somewhat inappropriate; 3: Somewhat Appropriate; 4: Very Appropriate. *** p<0.01, ** p<0.05, * p<0.1.

4.3 Second-order norms and personal normative beliefs on sanctioning norm violations

Below we present the elicited appropriateness ratings by all the participants for scenarios 2 and 3, describing different responses by the families and neighbours to the love matched couple. Panel A in figure 4 presents the responses to the incentivised questions. Column 1 and 3 of Panel A present the proportions of the four response options selected by the participants when the family members or neighbours reject the love matched couple. The other two columns correspond to the appropriateness ratings for the situations in which

family members or neighbours accept the love matched couple into their family or neighbourhood.

In Panel A, there is some support for rejection of the love matched couple, around 42 percent of the respondents indicate rejection by the family or neighbours as “very appropriate” (Panel A). Similarly, about 41 percent of the respondents consider acceptance of the love matched couple by family or neighbours to be “very inappropriate”. However, by combining the “very” and “somewhat” categories we observe an almost equal split between the perceived ‘appropriate’ and ‘inappropriate’ behaviour ratings across all four scenarios.⁴³

To investigate this further, we look at the patterns of evaluations across the dataset to examine how many participants perfectly matched evaluations, i.e., they all make the same evaluation for each question when incentivised to match. In the perfectly matched responses, the modal response is “very appropriate” for the decisions by family and neighbours rejecting the couple and “very inappropriate” for the decisions accepting the couple — we call this the punishment norm. In the overall sample, about 26 percent (90 out of 341) of the participants coordinate on the punishment norm when answering the four hypothetical situations — see Table A2, Appendix A. However, there is also a second mode eliciting the exact opposite, i.e., “very inappropriate” for family and neighbours rejecting the couple, and “very appropriate” for accepting the couple. The percentage of total participants coordinating on the forgiveness norm are about 13 percent (45 out of 341).

Looking at the perfectly matched responses at the session-level, in 10 out 12 sessions, we observe the punishment norm as modal response. In 9 out of these 10 sessions, a second mode eliciting the forgiveness norm is also observed. There is no mode in the remaining two sessions (see Table A3 in Appendix A). However, note that the proportions of subject evaluations matched to the dominant mode are heterogenous across sessions — the punishment mode in session 3 represents only 19 percent of the session participants,

⁴³ In Panel A (figure 4), green and yellow combined, constitute close to 50 percent of the total responses across all four scenarios.

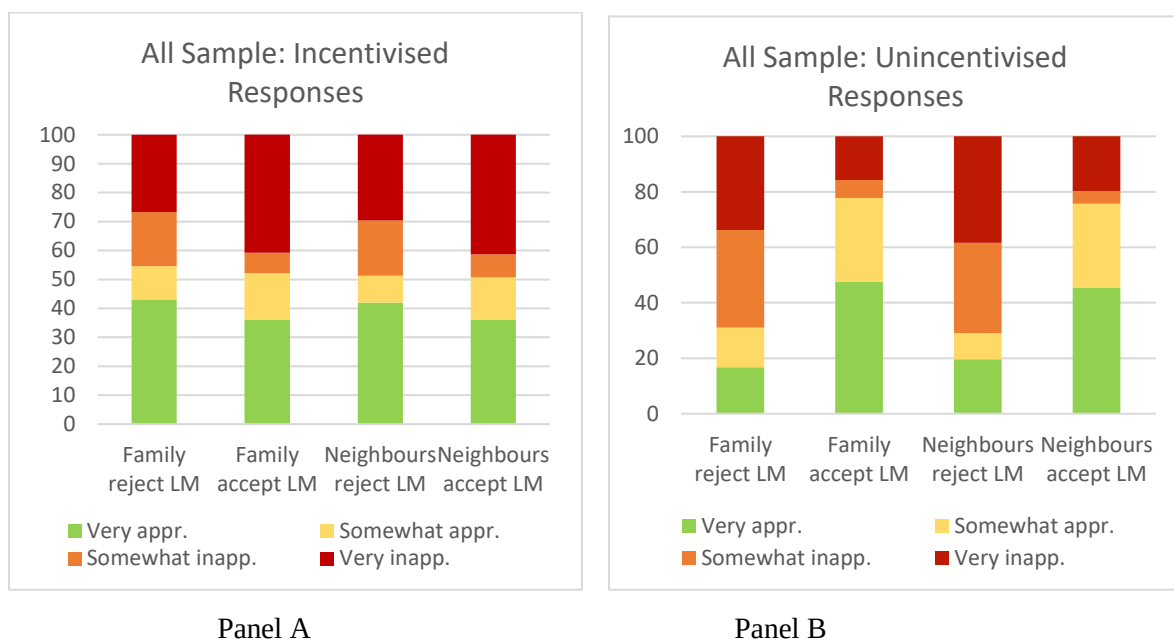
whereas in session 12 about 44 percent of session participants coordinate on the punishment mode.

Partial matching is when all participants rating a decision as either “very” or “somewhat” appropriate are merged together, and those rating “very” or “somewhat” inappropriate together. We observe partial matching on the punishment norm in 32 percent (108 out of 341) of the total sample, and the forgiveness norm in 28 percent (95 out of 341) of the participants (Table A2, Appendix A).⁴⁴ At the session level, the modal response corresponds with the punishment norm in 7 sessions, and the forgiveness norm in 5 sessions (Table A3, Appendix A). The proportions of participant evaluations matched to the two modes vary across sessions.

Panel B presents the appropriateness ratings according to the participants personal normative beliefs on the same decisions portrayed in the scenarios 2 and 3 with no monetary incentives attached to their answers. In Panel B, rejection of the love matched couple by families and neighbours is considered ‘very’ or ‘somewhat’ appropriate by only 30 percent of the sample (green and yellow combined), while close to 80 percent rated support for the love matched couples as ‘very’ or ‘somewhat’ appropriate. This suggests that in addition to the second order norm being insufficiently strong for it to serve as a coordination focal point for the majority, most individuals do not personally endorse punishment. To the contrary, they believe in supporting love matched couples regardless of their marriage decisions.

⁴⁴ For scenario 1, perfect matching is observed in 56 percent of the total sample (191 out of 341), and partial matching in 70.1 percent (239 out 341) — both supporting the arranged marriage decisions.

Figure 4: Appropriateness ratings for incentivised and unincentivized responses to scenarios 2 and 3 — All sample



In figure 5, we look at the incentivised and unincentivized responses for each tehsil separately. The incentivised responses (Panels A and B) rating the appropriateness of rejecting versus accepting the love matched couple appear to be similar across Samundari and Faisalabad tehsil. However, we observe a slightly greater proportion of participants from Faisalabad tehsil rating acceptance of the love matched couple as “somewhat” and “very” appropriate (green and yellow) — 56 percent for family and 54 percent for neighbours — compared to Samundari tehsil, 51 percent for family and 48 percent for neighbours. Correspondingly, the proportions of participants rating rejection by family and neighbours in the “somewhat” and “very” appropriate range of responses is slightly lower in Faisalabad tehsil compared to Samundari tehsil.⁴⁵

Looking at the perfectly matched evaluations across the two tehsils, 32 percent of the participants in Samundari tehsil coordinate on the punishment norm, compared to 20 percent in the Faisalabad tehsil (Table A2, Appendix A). Conversely, 16 percent of the

⁴⁵ It is 53 percent for family and 49 for neighbours by participants from Faisalabad tehsil, compared to 56 percent for family and 54 percent for neighbours by participants from Samundari tehsil.

participants from Samundari tehsil, and 10 percent from Faisalabad tehsil perfectly match their responses to coordinate on the forgiveness norm.

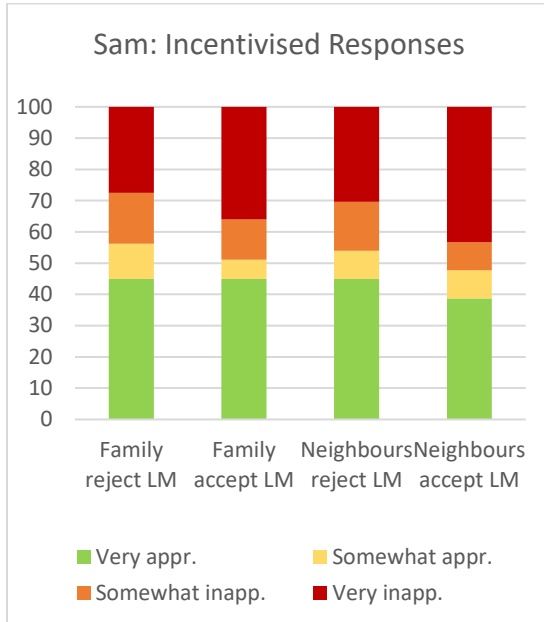
Partial matching of decisions coordinating on the punishment norm is more prevalent amongst participants from the Samundari tehsil (37 of the Samundari tehsil sample) compared to Faisalabad tehsil (26 percent of the Faisalabad tehsil sample). However, about the same proportions of participants partially match their responses when coordinating on the forgiveness norm across the two tehsils (28 percent) — see Table A2, Appendix A.

A session-level analysis shows that in 3 out of the 6 sessions conducted in the Faisalabad tehsil, participants partially matched their responses to coordinate with the forgiveness norm (Table A3, Appendix A). This is also true for two sessions in Samundari tehsil. However, as already noted in the previous discussion, the proportions of subject evaluations matched to the dominant mode vary across sessions.

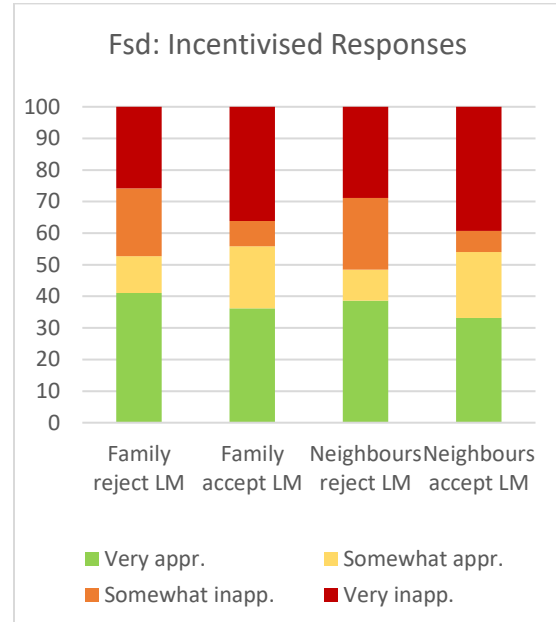
The personal normative beliefs of participants across the two tehsils are presented in Panel C and D. Acceptance of the love matched couple by family members is rated “very appropriate” by a greater proportion of participants from the Faisalabad tehsil (52 percent) compared to those from the Samundari tehsil (43 percent). However, acceptance of love matched couples by neighbours is rated “very appropriate” by similar proportions across both tehsils (about 45 percent).

These observations suggest that participants across both tehsils, but especially in Faisalabad tehsil, struggle to bring to mind a well-defined second-order norm that would help them coordinate owing to the existence of two conflicting views on whether violators of the arranged marriage norm should be punished.

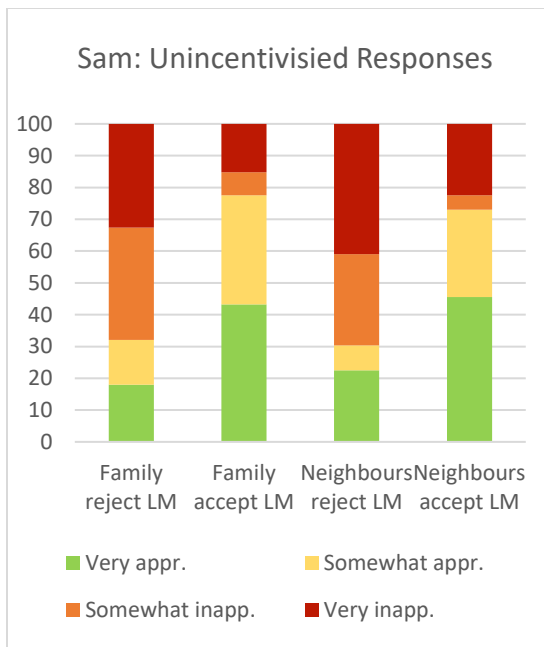
Figure 5: Appropriateness ratings for incentivised and unincentivized responses to scenarios 2 and 3 — Samundari and Faisalabad tehsil



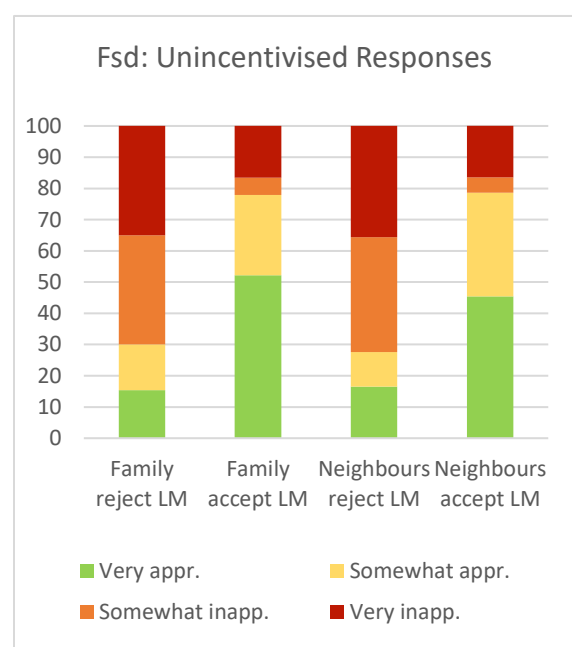
Panel A



Panel B



Panel C



Panel D

Figure 6 presents the appropriateness ratings for the scenarios 2 and 3 by all the participants conditional on gender. The incentivised responses in Panel A and B presenting the appropriateness ratings appear to be similar in general. However, there are some differences that should be explained further. The proportion of male participants rating the scenarios with family and neighbours accepting the love matched couple in the ‘appropriate’ range (green and yellow) is slightly higher (56 percent for both, family and neighbours) compared to female respondents (49 percent for family and 46 percent for neighbours). Moreover, the proportion of responses rated in the ‘appropriate’ range for the situation where neighbours reject the love matched couple is higher for women (55 percent) compared to men (48 percent).

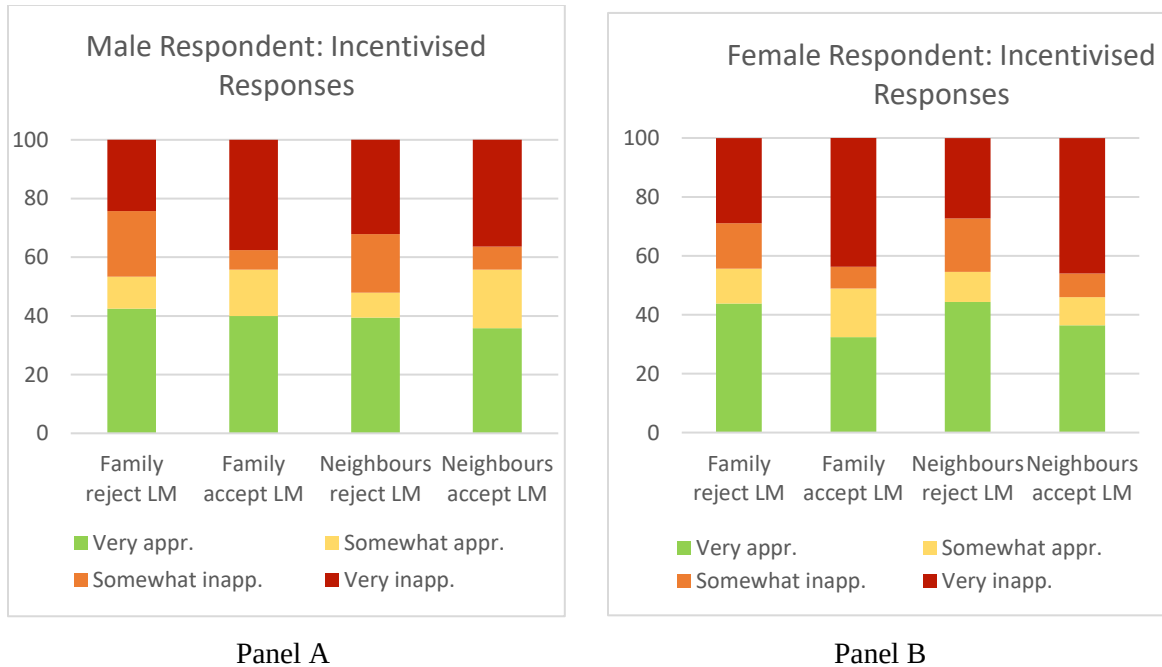
Perfectly matched evaluations coordinating on the punishment norm are observed in 28 percent of the total female sample and 25 percent of the male sample (see Table A2, Appendix A). Very similar proportions of males and females elicit perfectly matched responses coordinating on the punishment norm. Partial matching coordinating on the punishment norm was achieved in 33 percent of the female sample, and 30 percent of male sample. However, only 25 percent women compared to 31 percent men partially match responses eliciting the forgiveness norm. We do not discuss male and female evaluations at the session-level due to small sample sizes.

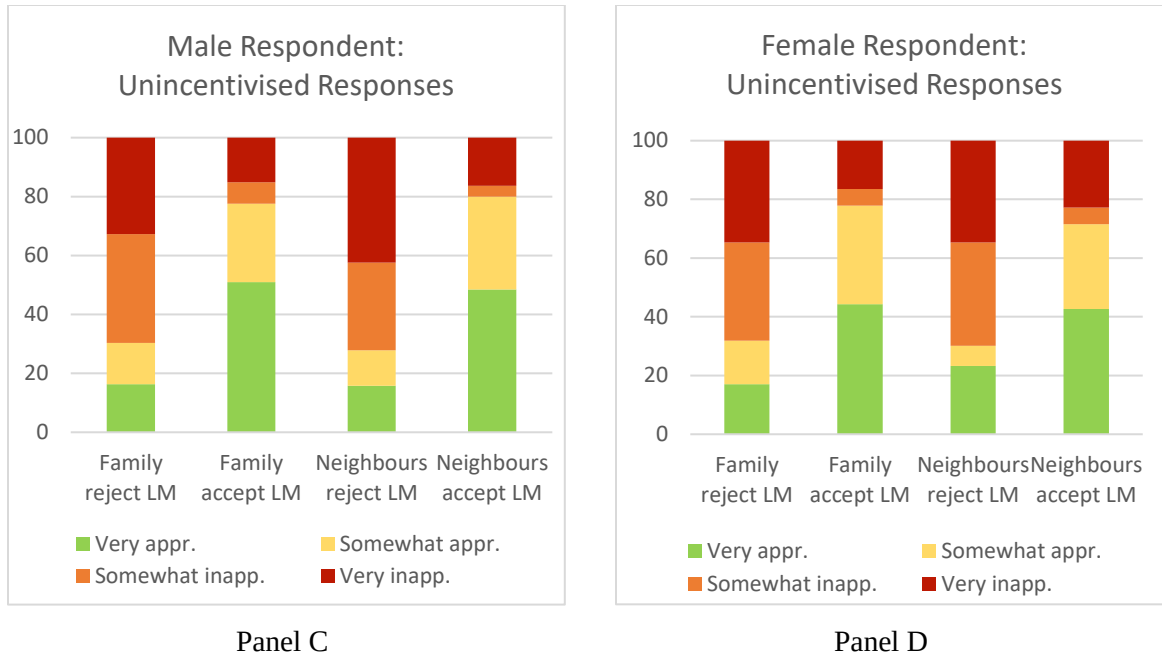
For the unincentivized responses, the proportion rating “very appropriate” for the scenarios where the family members and neighbours accept the love matched couple is higher amongst male respondents (51 percent for family and 49 percent for neighbours) compared to female respondents (44 percent for family and 43 percent for neighbours). Moreover, a much higher percentage of women perceive punishment by neighbours to be “very appropriate” (23 percent) compared to men (16 percent).

We make two observations from these graphs. First, while both genders appear to be uncertain about the second-order norm on marriage, relatively more women support the punishment norm over the forgiveness norm. However, when it comes to punishing the violators, women rate sanctions from both parties (family members and neighbours) in a

similar manner without granting any party more legitimacy. Men, on the other hand consider family members to be the preferred party who can enforce any punishments. Nevertheless, it should also be noted that both genders rate acceptance of the love matched couple as more ‘appropriate’ in comparison to imposing sanctions for norm violations. In the next section we will also empirically test for differences in the incentivised and unincentivized responses according to gender.

Figure 6: Appropriateness ratings for incentivised and unincentivized responses to scenarios 2 and 3 by gender





4.3.1 Empirical results on second-order norms and personal normative beliefs on sanctioning norm violations

In Table 3, we explore whether the behaviour towards norm violators is itself subject to norms defined as second-order norms. We follow a similar estimation methodology to Table 2. The dependent variables are the ordinal response variables of the appropriateness ratings by the participants for scenarios 2 and 3. Recall that participants rate the decisions presented in each vignette on a four-point Likert scale: 1, “very inappropriate”; 2, “somewhat inappropriate”; 3, “somewhat appropriate”; 4, “very appropriate”. We report the odds ratios obtained by exponentiating the coefficients of the ordered logit estimation model. The first three columns present the appropriateness ratings to the incentivised questions for the decisions described in scenarios 2 and 3.

We look at four main explanatory variables. “Accept” which is a dummy variable for the scenarios where family members or neighbours accept the love matched couple. The “Samundari” and “Accept x Samundari” take into account the effect of distance from the city and any differences in the strength of the second-order norm across the villages.

“Neighbour” looks at whether family members and neighbours both have equal social approval or legitimacy to punish violations, measured by the appropriateness ratings of the participants. “FemP” measures the effect of respondent gender on appropriateness ratings for the second-order norm.

The general models in columns 1 and 4 include the aforementioned explanatory variables, plus their interactions with each other. The parsimonious models (columns 2 and 5) include only the statistically significant interaction terms. Columns 3 and 6 present the parsimonious models again, but with controls for personal characteristics such as age, education, wealth score and marriage type for married respondents, as well as survey versions. Adding the controls has very little effect on the main findings, so the interpretations below are based on the parsimonious models.

For the incentivised responses, when being evaluated by a male participant from Faisalabad tehsil, the odds of having a *higher* appropriateness rating are 0.717 (p-value = 0.049) times smaller when the family members or neighbour in the vignettes accept the love matched couple instead of rejecting them (column 2). The reciprocal of the odds ratios shows that the odds of a *lower* appropriateness rating are 1.395 times larger when the subjects in the vignette accept the love matched couple instead of rejecting them, when being evaluated by a male participant from Faisalabad tehsil. This result presents a systematic variation in the responses by the participants depending on whether the vignettes on families and neighbours accept or reject the love matched couple. Recall that while relatively more participants converge towards the punishment norm, the punishment norm is moderated by the forgiveness norm resulting in two contrasting perceptions of the second-order norm. Consequently, we cannot establish the presence of a second-order norm guiding the violation of the marriage norm.

The personal normative beliefs regarding punishing the violators show the opposite (column 5). When being evaluated by a male participant from Faisalabad tehsil, the odds of a *higher* appropriateness rating are 4.464 (p-value = 0.000) times greater when the subjects in the vignettes accept the love matched couple instead of rejecting them. This

indicates that male respondents from Faisalabad tehsil do not personally prescribe to sanctioning violations of the marriage norm.

The coefficient on “Samundari” informs that for incentivised responses there are no significant differences in the social appropriateness ratings by the male respondents from the two tehsils, when rating the imposition of sanctions by family members (column 2). However, in their personal normative beliefs, male respondents from Samundari tehsil elicit significant support for family members imposing sanctions on the love matched couple compared to the male participants from Faisalabad tehsil (column 5).

In the unincentivized responses, “Accept x Samundari” is significant in the general model (column 4) but is dropped from the parsimonious models (columns 5 and 6) as only significant interactions that survive the elimination of other insignificant interactions are included in these models. Nevertheless, the significant coefficient of the interaction “Accept x Samundari” (column 4) reiterates that the odds of a *higher* appropriateness rating when the subjects in the vignettes support the love matched couple instead of rejecting them are 0.413 (p-value = 0.073) times smaller when the evaluator is a male participant from Samundari tehsil instead of Faisalabad tehsil. To recap, we observe that while there are no significant differences across the two tehsils when participants are incentivised to coordinate on their responses, male participants from Samundari tehsil are more supportive of punishment for the marriage norm violations in their personal normative beliefs compared to men from Faisalabad tehsil.

Next, we look at the perceived legitimacy of neighbours and community members versus family members in the case of imposing sanctions against the norm violators — “Neighbour”. In column 2, the odds of a *higher* appropriateness rating when the evaluator is a male participant from Faisalabad tehsil are 0.875 (p-value = 0.020) times lower when neighbours’ sanction the love matched couple by not welcoming them to the neighbourhood, instead of family members doing the same. Alternatively, the reciprocal of the coefficient informs that the odds of a *lower* appropriateness rating are 1.142 times greater when the punisher is a neighbour instead of family members, all else equal. This

implies that when being evaluated by male participants from Faisalabad tehsil, family members are perceived to have greater legitimacy than neighbours, should sanctions be imposed on the love matched couple.

Finally, the incentivised responses for the coefficient on “FemP” (column 2) inform that the odds of a *higher* appropriateness ranking for the vignette where family members reject the love matched couple are 0.854 (p-value = 0.024) times smaller when the respondent is a female instead of a male from Faisalabad tehsil. However, for the case where neighbours impose sanctions on the love married couple (Neighbour x FemP), the odds of a *higher* appropriateness rating are 1.156 (p-value = 0.096) times greater when the respondent is a female instead of a male from Faisalabad tehsil. For the unincentivized responses (column 5), the odds of a *higher* appropriateness ranking for the hypothetical situation where family members reject the love matched couple are 0.847 times smaller when the respondent is female, instead of a male from Faisalabad tehsil. The results show that women from Faisalabad tehsil are more critical of family members imposing sanctions once the violation has been committed compared to men. By combining the findings from the two indicators — “Neighbour” and “FemP”, it appears that for male participants from Faisalabad tehsil, the legitimacy to punish norm violators is assigned to family members but not neighbours. Women, however, do not make that distinction. We observed a similar pattern in the bar graphs presented in section 4.3.

Table 3: Ordered Logit estimations (Odds Ratios) for second-order norms and personal normative beliefs on sanctioning norm violations

Variables	Social Norms			Individual Preferences		
	(1)	(2)	(3)	(4)	(5)	(6)
Accept	0.826 (0.303)	0.717** (0.121)	0.695* (0.133)	7.996*** (3.011)	4.464*** (0.792)	4.175*** (0.823)
Samundari	0.964 (0.250)	0.991 (0.053)	1.003 (0.058)	1.232 (0.301)	0.841** (0.071)	0.812** (0.074)
Accept x Samundari	0.936 (0.496)			0.413* (0.204)		
Neighbour	0.801 (0.140)	0.875** (0.050)	0.860*** (0.049)	0.847 (0.127)	0.901** (0.046)	0.869** (0.050)
Accept x neighbour	1.069 (0.320)			0.957 (0.272)		
FemP	0.874 (0.229)	0.854** (0.060)	0.862* (0.068)	1.102 (0.277)	0.847* (0.074)	0.815** (0.081)
Accept x FemP	0.953 (0.477)			0.475 (0.239)		
Neighbour x FemP	1.212 (0.334)	1.156* (0.101)	1.178* (0.110)	1.297 (0.322)		
Samundari x FemP	1.252 (0.472)			0.814 (0.285)	1.252* (0.154)	1.372** (0.183)
Accept x neighbour x FemP	0.877 (0.410)			0.816 (0.366)		
Samundari x neighbour	1.011 (0.250)			0.866 (0.216)		
Accept x Samundari x neighbour	1.218 (0.540)			1.521 (0.713)		
Accept x Sam x FemP	0.633 (0.471)			2.908 (1.976)		
Samundari x Neighbour x FemP	1.102 (0.407)			1.059 (0.397)		
Accept x Samundari x Neighbour x FemP	0.881 (0.576)			0.668 (0.457)		
Age			1.003 (0.003)			0.999 (0.003)

Years of education			0.993 (0.008)		0.983* (0.009)	
Wealth score			0.980 (0.017)		0.992 (0.014)	
Subject is in an arranged marriage			1.012 (0.084)		0.938 (0.104)	
Version 2 of Interview			0.963 (0.083)		1.042 (0.105)	
Version 3 of Interview			1.023 (0.085)		1.129 (0.112)	
Version 4 of Interview			1.189** (0.099)		1.153 (0.115)	
/cut1	0.415*** (0.078)	0.400*** (0.040)	0.462*** (0.085)	0.690** (0.120)	0.553*** (0.054)	0.506*** (0.108)
/cut2	0.722* (0.134)	0.695*** (0.067)	0.809 (0.149)	1.873*** (0.333)	1.496*** (0.157)	1.269 (0.273)
/cut3	1.222 (0.234)	1.173 (0.122)	1.307 (0.243)	5.297*** (1.051)	4.202*** (0.565)	3.416*** (0.795)
Observations	1,364	1,364	1,104	1,364	1,364	1,104
Controls	No	No	Yes	No	No	Yes

Notes: Standard errors clustered at the individual level and reported in parenthesis. Ordinal dependent variable: 1: Very inappropriate, 2: Somewhat inappropriate; 3: Somewhat Appropriate; 4: Very Appropriate. *** p<0.01, ** p<0.05, * p<0.1

5. Conclusion

Our research contributes to the existing literature on social norms and second-order norms by examining the content and strength of the perceived behavioural prescriptions and personal normative beliefs about marriage arrangement, as well as violations of this marriage arrangement. While there is some descriptive literature on marriage norms (Watson, 2004), our study is the first to examine first and second-order norms on marriage by implementing behavioural and experimental methods.

In this research, we attempt to answer an extensive list of research questions. The first five questions examine social norms and personal normative beliefs on marriage:

1. *Is there a social norm prohibiting love matched marriages?*
2. *Do individuals' personal normative beliefs vary more than perceptions of the social norm?*
3. *Is the social norm stronger, i.e., acknowledged by a larger majority, within communities that are more remote?*
4. *Is the social norm more strictly applied to women compared to men?*
5. *Is there more support for the social norm, i.e., are personal normative beliefs more likely to concur with the social norm, among women compared to among men?*

By implementing incentivised games and unincentivized surveys, we find strong evidence of a social norm favouring arranged marriages over love matched marriages. This result is crucial as it provides empirical evidence of a marriage norm that may have been assumed, but never tested. Also, because it lays the ground for answering the next set of questions. To answer the question 2, our results reveal that individuals' personal opinions on choice of marriage indeed vary and diverge from the perceptions of the social norm — suggesting a shift in personal beliefs pertaining the right to choose a spouse.

Shifting our focus towards the strength of social norms across geographic distances for question 3, we observe that the norm is stronger in more remote villages. This result supports our hypothesis that there is a social stigma or disapproval attached to violation of the marriage norm that takes a toll on unconditional cooperation between love matched couples.

Our results confirm that the behavioural prescriptions of social norms vary with gender — deviations from the arranged marriage norm are tolerated more from men than women. So, to answer question 4, social norms are indeed applied more strictly to women compared to men. Moreover, we observe that women demonstrate greater support for the arranged marriage norm in their personal beliefs suggesting that the burden of conformity weighs more heavily on women resulting in internalisation of the social norm. This result resolves question 5 showing that women are indeed more likely to concur with the social norm.

The next set of questions explore the presence of second-order norms and personal normative beliefs reinforcing the marriage norm:

6. *Is there a second-order norm endorsing the punishment of couples in love matched marriages?*
7. *Do personal normative beliefs about such sanctioning vary more than individuals' perceptions of the second-order norm?*
8. *Is the second-order norm stronger within more remote communities?*
9. *Do family members and neighbours have the same perceived legitimacy to sanction violations of the arranged marriage norm?*
10. *Is there more support for the second-order norm, i.e., are personal normative beliefs more likely to concur with the second-order norm, among women compared to among men?*

When asked to coordinate with the majority of the participants in the session, the appropriateness responses for norm violations were split across two opposing perceptions of the norm, a norm of punishment and a norm of forgiveness. So, to answer question 6, we find no evidence of collectively acknowledged second-order norms endorsing punishment of love matched couples. In response to question 7, we find less variance in the personal beliefs of participants compared to their perceptions of the second-order norm since participants largely reject the decisions reprimanding the marriage norm violators — and more so amongst those living closer to the city. However, to answer question 8, second-order norms or the lack thereof, are not affected by the geographic location of the participants.

Question 9 looks into the perceived legitimacy of family and neighbours to impose sanctions against norm violations. We observe that women rate sanctions by both family and neighbours as equally legitimate. Men, on the other hand, only consider family members as the legitimate party in the case of a sanction being enforced. When eliciting their personal normative beliefs, women show greater support for the punishment norm over the forgiveness norm compared to men. So to answer question 10, while the results are not strong enough to support the existence of a second-order norm sanctioning

violations of the marriage norm, women in their personal beliefs do show greater support for punishment over forgiveness when the marriage norm is violated. The results for the last questions are important as they point towards the larger social environment where women have internalised the notion of punishment, and are more fearful of social backlash and stigmatization at the hands of any social agent in case of a misstep or deviation from the norm in comparison to their male counterparts.

According to Heraclitus, “nothing endures but change”. Our study shows that as the Pakistani society is opening up to outside cultures and influences, the society within is also evolving. Our results indicate the existence of a social norm against love matched marriages, but we find no evidence of a second-order norm preserving the sanctity of the marriage norm. To the contrary — when eliciting their personal opinions, majority of participants endorse compassion towards those who marry out of love. Suffice to say, the traditional norm of arranged marriage is eroding. How this change affects intra-household dynamics and gender roles can be interesting topics for future research.

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Appendix A

Table A1: Ordered Logit estimations (Odds Ratios) for the pooled sample of incentivised and unincentivized decisions on marriage

Variables	Pooled Sample Estimations		
	(1)	(2)	(3)
LM	0.092*** (0.031)	0.082*** (0.024)	0.085*** (0.027)
FemSub	1.331 (0.328)	1.240* (0.143)	1.336** (0.174)
FemP	1.751* (0.589)	1.577* (0.378)	1.406 (0.379)
Samundari	2.353** (0.892)	1.953*** (0.493)	2.097*** (0.579)
SN	1.884** (0.578)	1.862*** (0.287)	1.786*** (0.297)
LM x FemP	0.382* (0.188)	0.459** (0.165)	0.603 (0.240)
LM x FemSub	0.516** (0.159)	0.499*** (0.074)	0.461*** (0.076)
LM x Samundari	0.288** (0.161)	0.423** (0.156)	0.353** (0.144)
LM x SN	0.195*** (0.075)	0.203*** (0.046)	0.202*** (0.050)
Samundari x FemP	0.583 (0.318)		
Sam x FemSub	0.622 (0.191)		
Samundari x SN	1.760 (1.005)		
FemSub x FemP	1.188 (0.397)		
FemSub x SN	0.738 (0.277)		
FemP x SN	1.026 (0.388)		
LM x FemP x SN	1.434 (0.693)	1.457** (0.275)	1.515* (0.322)
LM x FemSub x FemP	0.726 (0.318)		

LM x FemSub x Samundari	1.589 (0.649)		
LM x FemP x Samundari	2.294 (1.785)		
LM x Samundari x SN	0.713 (0.484)		
LM x FemSub x SN	1.280 (0.538)		
FemSub x FemP x Samundari	2.353* (1.169)		
FemSub x Samundari x SN	1.619 (0.836)		
FemP x Samundari x SN	0.565 (0.404)		
LM x FemSub x FemP x Samundari	0.435 (0.270)		
LM x Samundari x FemP x SN	1.415 (1.221)		
LM x Samundari x FemSub x SN	0.481 (0.302)		
Samundari x FemSub x FemP x SN	0.414* (0.218)		
LM x Samundari x FemSub x FemP x SN	3.721** (2.292)		
/cut1	0.051*** (0.012)	0.048*** (0.009)	0.046*** (0.017)
/cut2	0.096*** (0.021)	0.090*** (0.017)	0.084*** (0.031)
/cut3	0.386*** (0.081)	0.363*** (0.067)	0.343*** (0.129)
P-value of F-test ¹		<0.001	<0.001
Observations	2,728	2,728	2,208
Controls	No	No	Yes

Notes: Standard errors clustered at the individual level and reported in parenthesis. Ordinal dependent variable: 1: Very inappropriate, 2: Somewhat inappropriate; 3: Somewhat Appropriate; 4: Very Appropriate. Controls: participant's age, years of education, wealth score, if a married participant is in an arranged marriage, survey version. ¹F-test on joint significance of SN and its interactions. *** p<0.01, ** p<0.05, * p<0.1

Table A2: Percentage of participants coordinating on the punishment and forgiveness norm

	Perfect matching		Partial matching	
	Punishment norm (%)	Forgiveness norm (%)	Punishment norm (%)	Forgiveness norm (%)
<i>Total Sample</i>	26	13	32	28
<i>Sam. tehsil</i>	32	16	37	28
<i>Fsd. tehsil</i>	20	10	26	28
<i>Male</i>	25	13	30	31
<i>Female</i>	28	14	33	25

Notes: This table presents the percentage of participants eliciting the punishment norm and the forgiveness norm in the total sample, Samundari tehsil sample and the Faisalabad tehsil sample. In perfect matching, the punishment norm corresponds to “very appropriate” for the decisions where family and neighbours reject the couple and “very inappropriate” for the decisions where family and neighbours accept the couple; and the forgiveness norm corresponds to “very inappropriate” for the decisions where family and neighbours reject the couple, and “very appropriate” for the decisions where family and neighbours accept the couple. In partial matching, decisions elicited as either “very” or “somewhat” appropriate are merged together, and those rating “very” or “somewhat” inappropriate together - without altering the definitions of the punishment and forgiveness norm.

Table A3: Percentage of participants in each session coordinating on the punishment and forgiveness norm

Session No.	Perfect matching		Partial matching	
	Punishment norm (%)	Forgiveness norm (%)	Punishment norm (%)	Forgiveness norm (%)
1	-	9	-	28
2	-	-	-	35
3	19	12	23	31
4	28	-	38	16
5	41	22	41	34
6	37	16	37	32
7	22	19	22	26
8	28	16	41	28
9	25	13	34	-
10	29	18	32	36
11	39	19	39	26
12	44	15	48	30
<i>Total Sample</i>	26	13	32	28

Notes: This table presents the percentage of participants coordinating on the punishment norm and the forgiveness norm in each session. The definitions of perfect matching and partial matching for the punishment and forgiveness norm are the same as described in Table A1. The hyphen indicates the absence of a unique mode in the responses. Gray rows represent sessions conducted in Faisalabad tehsil and the remaining were carried out in the Samundari tehsil.

Appendix B

Household listing Protocol

Once someone answers the door the enumerator has to ask the following questions:

[Enumerator: Introduce yourself and ask the following questions]

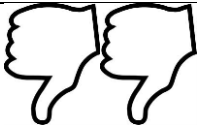
“Assalam o alaikum! My name is _____ and I am working for an organization called RCONS, who are carrying out research for a researcher from Lahore. Can you please provide me with some information about the household members who live in this house who are 18 years and older? After a few days, we may invite one individual from this household to participate in a survey with us at a nearby location in this village and the survey session can take 2-3 hours. This can be any day of the week and there will be a chance to earn money up to Rs. 1000 in this survey!

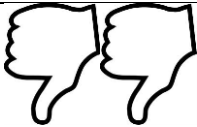
INDIVIDUAL INTERVIEWS (Version 1)

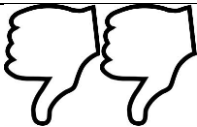
I will read out three scenarios and ask you to respond to different choices within each scenario. The first time, I will ask you to indicate the extent to which *you* believe the decision in the scenario presented to be correct/ethical or incorrect/unethical thing to do according to your own opinion.

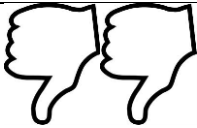
Then, a second time, I will read out the same scenario to you and ask you again to indicate the extent to which you believe the decision in the scenario presented to be "socially appropriate" and the "correct thing to do" or "socially inappropriate" and "not the correct thing to do". **This time, however, you need to respond according to what you think the majority of the people sitting here would consider appropriate or inappropriate behaviour.** Remember, we will randomly select one scenario. And two questions from that scenario will be considered for payments. If your responses to those two questions match the response selected by majority of the participants here today, then you can receive Rs. 250 for each matched response.

[Enumerator: Read out the options below and tick in the corresponding box after asking each question]

Question No. [Enumerator Instructions]	 Very Inappropriate	 Somewhat Inappropriate	 Somewhat Appropriate	 Very Appropriate
Scenario 1: Imagine there are two young people, a man and a woman living in your village. They would like to be married to each other, but their parents are in the process of selecting spouses for each of them. Now the man and the woman have to choose one of the following two options. 1) Await their parents' decisions and marry the people selected by their parents 2) Force their parents to accept their choice to marry each other				
1	<i>In your opinion, how appropriate do you think it is for the man to await his parents' decision and marry the person selected by his parents?</i>			
	☐	☐	☐	☐
2	<i>In your opinion, how appropriate do you think it is for the man to force his parents to accept his choice for marriage and get married to the woman of his choice?</i>			
	☐	☐	☐	☐

3	<i>In your opinion, how appropriate do you think it is for the woman to await her parents' decision and marry the person selected by her parents?</i>			
	☐	☐	☐	☐
Question No.	 Very Inappropriate	 Somewhat Inappropriate	 Somewhat Appropriate	 Very Appropriate
4	<i>In your opinion, how appropriate do you think it is for the woman to force her parents to accept her choice for marriage and get married to the man of her choice?</i>			
	☐	☐	☐	☐
<i>The next four questions will be the same as you just answered, but this time I will ask you to pick a response you think matches the opinion of the majority. Remember, if this scenario is selected at the end of the session, then any two from the following four questions may be selected for payments.</i>				
5	<i>How socially appropriate is it for the man to await his parents' decision and marry the person selected by his parents? Remember, you should pick a response which you think matches the opinion of the majority of people here today!</i>			
	☐	☐	☐	☐
6	<i>How socially appropriate is it for the man to force his parents to accept his choice for marriage and get married to the woman of his choice? Remember, you should pick a response which you think matches the opinion of the majority of people here today!</i>			
	☐	☐	☐	☐
7	<i>How socially appropriate is it for the woman to await her parents' decision and marry the person selected by her parents? Remember, you should pick a response which you think matches the opinion of the majority of people here today!</i>			
	☐	☐	☐	☐
8	<i>How socially appropriate is it for the woman to force her parents to accept her choice for marriage and get married to the man of his choice? Remember, you should pick a response which you think matches the opinion of the majority of people here today!</i>			
	☐	☐	☐	☐
Scenario 2: Imagine there is a young married couple in your village. The young couple is in a marriage of their own choosing, and they had to force their parents to accept their decision to be married to each other.				

Now two different situations are possible: 1) After marriage, both sides of the couple's families accept the boy and the girl's decision to marry each other, and welcome them into their families, and provide full support to the couple. 2) After marriage, both sides of the couple's families do not accept the boy and girl's decision to marry each other and become estranged, withdrawing any support to the couple.				
9	In your opinion, how appropriate do you think it is for the boy and the girl's families to accept their marriage decision, and welcome the couple into their families and fully support them?			
	☐	☐	☐	☐
Question No.	 Very Inappropriate	 Somewhat Inappropriate	 Somewhat Appropriate	 Very Appropriate
10	In your opinion, how appropriate do you think it is for the boy and the girl's families to not accept their marriage decision, and not welcome the couple into their families and withdraw any support to the couple?			
	☐	☐	☐	☐
<i>The next two questions will be the same as you just answered, but this time I will ask you to pick a response you think matches the opinion of the majority. Remember, if this scenario is selected at the end of the session, then the following two questions will be considered for payments.</i>				
11	How socially appropriate is it for the boy and the girl's families to accept their marriage decision, and welcome the couple into their families and fully support them? <i>Remember, you should pick a response which you think matches the opinion of majority of people here today!</i>			
	☐	☐	☐	☐
12	How socially appropriate is it for the boy and the girl's families to not accept their marriage decision, and not welcome the couple into their families and withdraw any support to the couple? <i>Remember, you should pick a response which you think matches the opinion of majority of people here today!</i>			
	☐	☐	☐	☐
Scenario 3: Imagine there is a young married couple. The young couple is in a marriage of their own choosing, and they had to force their parents to accept their decision to be married to each other. The young couple recently moved into a new neighbourhood, which happens to be yours. Now two different situations are possible: 1) After moving into the new neighbourhood, the neighbours welcome the couple into the neighbourhood and offer neighbourly support, regardless of the couple's decision to be in a marriage of their own choosing.				

2) After moving into the new neighbourhood, the neighbours do not welcome, nor offer any neighbourly support to the couple because of the couple's decision to be in a marriage of their own choosing.				
13	In your opinion, how appropriate do you think it is for the neighbours to welcome the new couple into the neighbourhood and offer them neighbourly support, regardless of the couple's marriage decision?			
	☐	☐	☐	☐
14	In your opinion, how appropriate do you think it is for the neighbours to not welcome the new couple into the neighbourhood nor offer them neighbourly support because to the couple's marriage decision?			
	☐	☐	☐	☐
The next two questions will be the same as you just answered, but this time I will ask you to pick a response you think matches the opinion of the majority. Remember, if this scenario is selected at the end of the session, then the following two questions will be considered for payments.				
Question No.	 Very Inappropriate	 Somewhat Inappropriate	 Somewhat Appropriate	 Very Appropriate
15	How socially appropriate is it for the neighbours to welcome the new couple into the neighbourhood and offer them neighbourly support, regardless of the couple's marriage decision? <i>Remember, you should pick a response which you think matches the opinion of majority of people here today!</i>			
	☐	☐	☐	☐
16	How socially appropriate is it for the neighbours to not welcome the new couple into the neighbourhood nor offer them neighbourly support because of the couple's marriage decision? <i>Remember, you should pick a response which you think matches the opinion of majority of people here today!</i>			
	☐	☐	☐	☐

CHAPTER 5

CONCLUSIONS

In this thesis we present three studies that use specially designed lab-in-the-field experiments to explore two important topics in the field of behavioural and experimental economics — cooperation between spouses and social norms of marriage. Chapters 2 and 3 explore unconditional cooperation between spouses in different types of marriage and whether distance from the city is a moderator of the marriage-type effect.

We find that, in villages close to the city, love matched spouses are significantly more likely to be unconditionally cooperative. However, as distance from the city increases, the love matched effect declines. The behaviour of husbands and wives in a corresponding series of *inter*-household games establishes that greater unconditional cooperation between spouses in love marriages close to the city cannot be attributed to the selection of unconditionally cooperative people into love marriages.

In Chapter 4, we find a plausible explanation for the result that the effect of marriage on cooperativeness depends on distance from the city. We find that there is a social norm against love marriages, and it is stronger in more remote villages. This suggests that there is a social penalty on rejecting the marriage norm, which takes a toll on the relationship of these couples and negatively affects unconditional cooperation.

So, as we asked at the outset of Chapter 2, should societies such as Pakistan be “putting on the brakes”, encouraging adherence to the tradition of marriage arrangement, or should

they be embracing the change? Based on our analysis the answer is ‘No’. Spouses in love-matched marriages appear to care more about the households’ joint earnings compared to their personal gains. When located in communities that are more tolerant of love matches, they are more cooperative as first movers and are more likely to be unconditionally cooperative.

Studies have looked at the existence of a norm of conditional cooperation amongst strangers (Fehr and Fischbacher, 2004). However, conditional cooperation can be costly in the intra-household context if, owing to a single event, a single downward revision in cooperativeness is reciprocated and this sets off a race to the bottom. This could explain our discovery of a new behavioural type. The U-shaped contributors appear to acknowledge the cost of being conditionally cooperative if their spouse chooses to play selfishly and compensate by contributing more to the households’ common pool as contributions by their spouses’ decline. However, our results indicate that unconditional cooperators often have spouses who also contribute their entire endowment — suggesting that cooperation is mutual and prevalent when relationships are stronger.

Furthermore, our inter-household experiments inform us that individuals in love matched marriages do not behave differently from those in arranged marriages when interacting with unspecified neighbours of the opposite sex. Having said that, our experimental design does not preclude other sources of selection that may explain cooperative behaviour in love matched couples. For instance, we cannot establish whether those who select into love matched marriages are a special type of individuals who are especially cooperative towards people to whom they are closely related. This would be an interesting topic for future research.

Our findings from the first two series of household experiments discussed in Chapters 2 and 3 motivate the norm elicitation experiments for Chapter 4. However, Chapter 4 sets out to investigate much more; not only does it examine the first order arranged marriage social norm and how its strength varies with remoteness, but also second order norms and the personal normative beliefs of men and women from more and less remote villages. Our

results indicate that, while there is an arranged marriage social norm, individuals' personal normative beliefs often diverge from the social norm, suggesting that individuals are more broadminded privately. We find no substantive evidence supporting the existence of a second-order social norm; that, individually, the majority think that love matched couples should be accepted and supported by their families and neighbours.

We also observe partiality in the behavioural prescriptions of the social norms for men and women. Women are expected to follow the social norm more strictly than men and, perhaps owing to this burden of greater conformity, women's personal normative beliefs concur more with the arranged marriage norm compared to men. Moreover, women rate family members and neighbours as equally legitimate enforcers of the arranged marriage norm, while men only consider family members as legitimate enforcers. The last gender distinction is important as it points towards a social environment in which women fear social backlash and stigmatization at the hands of any social agent in case of a misstep or deviation from the norm more than their male counterparts.

Chapter 4 provides evidence to support the notion that social norms play a role in determining behavioural regularities. However, the extent to which social norms can affect intra-household cooperation is not fully understood. Our study is a small contribution in understanding this complex relationship and there is, undoubtedly, scope for future research into other channels through which social norms can interact with cooperative decision-making across households.

References

Fehr, E., & Fischbacher, U. (2004). Social norms and human cooperation. *Trends in cognitive sciences*, 8(4), 185-190.