The Impact of Media on Attitudes Towards Domestic Violence in India

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Abstract

Gender discrimination and domestic violence are endemic in India and pose an issue of tremendous human rights and public health concern. However, violence against women continues to be perceived as acceptable by a large proportion of both men and women. This paper explores the question: does greater exposure to media affect acceptance of domestic violence by women in India? First, I describe two channels through which greater access to media could affect women's acceptance of domestic violence. Then, I use a difference-in-differences strategy to look at the relationship between switching into frequently watching television and/or listening to radio over time and the acceptance of violence by women. Using all-India, household-level data from two rounds of the National Family Health Survey of India conducted in 1998-99 and 2005-06, I find no significant impact of switching into either only watching television or only listening to radio in the second period on women's acceptance of violence. However, the impact of television when a woman switches into accessing both media over time is associated with a 3.9% reduced probability of accepting domestic violence, indicating a complementary effect of both media on reducing women's acceptance of violence. While the results do not provide clear evidence on which mechanisms drive the association between increased access to media and reduced probability of accepting violence, I find that the complementary effect of television and radio is able to cross the education and urban-rural divides. These results indicate that policies which seek to empower women can promote the regular use of complementary media to further the cause of women's empowerment.

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1. Introduction

Women all over the world face discrimination in various spheres of life, including the workplace and the home. According to the World Development Report for 2012, women are more likely to work in the informal sector than men, earn less than men for similar work, and are more likely to be in poverty even when they work. In the domestic sphere, many women do not have control over household finances, and sometimes do not even have control over their own income. For instance, as many as 34% of married women in Malawi and 28% of women in the Democratic Republic of Congo are not involved in decisions about spending their earnings (World Bank, 2012). This paper looks at a specific kind of discrimination against women in the household: domestic violence and women's attitudes towards such violence. Physical, sexual, and psychological violence against women is endemic across the world, posing an issue of tremendous public health and human rights significance. The World Development Report for 2012 finds that women are at far greater risk than men of violence by an intimate partner or somebody they know than from violence by other people. Yet in many nations, violence against women is perceived as acceptable or justifiable. The report states that on average, 29% of women in a sample of countries agreed that wife beating was justified for arguing with the husband, 25% for refusing to have sex, and 21% for burning food (World Bank, 2012).

Although issues of domestic violence are a concern worldwide, they are particularly important in India, where levels of gender discrimination and domestic violence against women are very high. Several reasons have been suggested for the persistence of gender inequalities in India, such as the prevalence of poverty and the low participation of female labor in income-generating activities. However, Das Gupta (1987) finds evidence against

these hypotheses, observing that major landowning castes in India had the most unequal sex ratios while the poorer castes had more equal sex ratios. She also finds that the Indian states of Punjab and Haryana had highly unequal sex ratios despite the high rate of female labor participation in agricultural activities. Thus, she concludes that discrimination against women in India is primarily because of cultural preference for men. While there have been many studies on the economic reasons for gender inequalities, there has been less research on how underlying cultural beliefs on gender can be changed. My study adds to this literature by focusing on the use of media, in particular television and radio, as a channel through which this cultural preference for men as well as discrimination against women can be lessened.

Media are not only a source of entertainment, but also a source of information about the outside world and exposure to other ways of life. Previous research has found that such awareness can influence a wide range of attitudes and behaviors. Olenick (2000) finds that in India, Pakistan and Bangladesh, women who regularly watched television and who had been exposed to explicit family planning messages on radio or television were more likely than other women to approve of family planning. Also, Chong and La Ferrara (2009) show that the share of women who were separated or divorced increased significantly in Brazil after the availability of a TV channel that circulated ideas such as female emancipation in the work place, the female pursuit of pleasure and love, and emphasis on individualism. On the other hand, Olken (2009) finds that better television signal reception in Indonesian villages, which is correlated with more time spent watching television, is associated with substantially lower levels of participation in social activities, such as neighborhood associations and school committees, and lower self-reported measures of trust. This suggests that accessing media may also lead to a substitution away from other social activities or household duties.

Jensen and Oster (2009) study the impact of cable television on women's status in the Indian state of Tamil Nadu. They find that the introduction of cable television, with television programs that presented urban attitudes and values, is associated with a 16% decrease in the reported acceptability of domestic violence and an 8.8% decrease in son preference, as well as increases in women's autonomy and participation in household decision-making. Their results also provide suggestive evidence that exposure to cable television increases school enrollment for younger children, perhaps because of greater autonomy for women.

I carry forward the work of Jensen and Oster (2009) by studying the relationship between attitudes of women towards domestic violence and greater access to both television and radio because despite the great popularity of cable television, other media such as non-cable television and radio continue to be widely accessed in India. A study by a television research agency finds that the channels provided by the public service broadcaster Doordarshan attracted a large number of viewers and higher channel share than cable broadcasters in 2009 (Sinha, 2009). Another medium that is extremely popular in India is the radio, with the three most popular radio stations attracting about 40 million listeners collectively in 2008 (Ranganathan and Rodrigues, 2010). This reach of the radio is comparable to that of the press and private television channels. While the primary focus of most television and radio programs is entertainment, radio has emerged as a vital source of local information in contrast to television.

These similarities as well as differences in the content of television and radio programs may have a complementary effect on attitudes towards gender and domestic violence. For instance, information about local employment or political opportunities for

women, or stories about empowered women on local radio channels may reinforce the influence of seeing empowered and independent women on television. Indeed, previous studies have found some evidence for complementary effects between different media. Dutta-Bergman (2004) finds support for media complementarity in online and traditional media, with users of online news in a specific content area being more likely to seek out news in the same area from traditional media outlets. A report on radio broadcasting in Senegal also finds a degree of complementarity between radio and television in news broadcasts and in the allocation of hours spent accessing the two media (Dia, 2002).

On the other hand, when women access one or more media, they may be substituting time away from fulfilling the duties traditionally expected of them as wives, homemakers and mothers, similar to the substitution away from social activities found by Olken (2009). This substitution may even increase the incidence of domestic violence, and perhaps consequently influence women's acceptance of violence from their husbands. Thus, in this study, I include a conceptual framework that considers these two possible opposing effects of accessing media over time on acceptance of domestic violence. I focus my attention on television and radio since they are both electronic media, and can be accessed by the literate and illiterate alike in both rural and urban areas.

A central empirical concern is that there may be a problem of endogeneity in the relationship between access to media and attitudes towards domestic violence, because it is possible that women who do not think violence is justified may be more empowered and may access more media.[1] To address this concern, this study focuses on the impact of greater access to media over time on attitudes towards violence instead of doing a cross-sectional

[1] I take the concept of empowerment to mean both control over resources (physical, human, intellectual, and financial) and over ideology (beliefs, values, and attitudes) as defined by Batliwala (1994).

analysis of the relationship between use of media and attitudes towards violence. I use a difference-in-differences strategy to look at the association between switching into watching television and/or listening to radio regularly over time and the acceptance of domestic violence by women. By including a time trend, this strategy attempts to isolate the impact of accessing media from the impact of other factors that are changing over time and are correlated with both media use and attitudes towards domestic violence, such as greater economic prosperity or increase in levels of women's education. I also include state fixed effects to capture the heterogeneity in attitudes towards women's status and domestic violence across different states.

Using all-India, household-level data from two rounds of the National Family Health Survey of India conducted in 1998-99 and 2005-06, I find no significant impact of switching into either only watching television or only listening to radio in the second period on women's acceptance of domestic violence. However, the impact of television when a woman starts accessing both media regularly in the second period is associated with a 3.9% reduced probability of accepting violence, indicating a complementary effect of watching television and listening to radio on reducing women's acceptance of violence. There is no such comparable association between switching into listening to radio when both media are accessed and acceptance of violence. I also find that the impact of accessing both television and radio does not differ for rural and urban areas, or for different levels of women's education. There is, however, no clear evidence on the mechanisms that may be driving the association between access to media and reduction in the probability of accepting violence.

The results of this study have an interesting implication for policies aimed at empowering women in India. The results suggest that there is a significant association

between decrease in the probability of accepting domestic violence and use of media when women have regular access to news and entertainment from multiple and complementary media, namely television and radio. Thus, state policies that subsidize and encourage the use of complementary media together may help to bring about a change in women's acceptance of domestic violence. This exposure could perhaps also influence other norms about gender and women's status in society, or have spillover effects due to social networks. In addition, since the results indicate that the effect of accessing both television and radio is not heterogeneous by location or education, these media may serve an important role in crossing the informational divide between rural and urban areas as well as educated and uneducated women.

The paper proceeds as follows. Section 2 provides background on television, radio, and domestic violence in India and Section 3 describes the NFHS data. Section 4 considers channels through which accessing media may change attitudes and outlines the empirical strategy used to study the impact of accessing media regularly over time on women's attitudes towards domestic violence. Section 5 provides the main results, tests for heterogeneity, and reports evidence for the channels described in Section 4. Section 6 concludes.

2. Background

2.1 Television and radio in India

Television was first introduced in India in 1959 with almost all broadcasting in the hands of the state. The entry of private and foreign broadcasters in the early 1990s transformed the Indian television industry from a government-owned single network to a multi-channel industry and significantly increased the amount of choice of programming for the Indian

audience (Ranganathan and Rodrigues, 2010). The program offerings on cable television differed greatly from government programming which had primarily focused on news or information about national development. Many new soap operas were introduced in the early 2000s which revolved around themes of family and gender, and had a woman protagonist who made a mark in male-dominated society without giving up her traditional Indian values. The new Indian woman was depicted as an independent and assertive woman, a successful wife and mother, who often had a career or worked outside the home, and led a lifestyle that was significantly different from existing rural lifestyles. These soap operas were an instant success and attracted very high viewership all over India (Munshi, 2010).

Radio broadcasting began in India in 1927 under the British rule. The public radio broadcaster, All India Radio (AIR), was established in 1936 to "inform, educate and entertain the masses", and today it has a network of 237 broadcasting centers, covering 27 languages and reaching 99% of the Indian population.[2] Great efforts have been taken to use radio as a medium for social change, such as state-supported radio rural forums for agricultural communication and promotion of adult literacy (Neurath, 1962). Besides AIR, the other popular radio channels are privately owned Frequency Modulation (FM) radio channels. A large number of the currently most popular radio stations were launched in the early 2000s, marking a dramatic change in the popularity of radio as a medium of development and entertainment. FM Radio programs are primarily entertainment-based, but they also play a role in supporting local businesses by advertising them, and are important sources of local information. For instance, during floods in Mumbai in 2005, FM radio stations played a vital role in providing information to citizens stuck on the roads (Ranganathan and Rodrigues, 2010).

[2] This information is drawn from AIR's official website: http://www.allindiaradio.org/about1.html.

Several anthropological studies show that television and radio have had a wide impact on Indian society, particularly in rural areas where they seem to be the primary source of information about the outside world. An ethnography of Indian villages by Johnson (2000) finds that television has contributed to a spirit of consumerism, restructured traditional age and gender relations, and influenced the political landscape in these villages. Studies have also found that radio forums have been effective in introducing agricultural and health innovations, transmitting knowledge about health and sanitation, and initiating the formation of informal village parliaments in rural India (Roy et al, 1969; Kivlin, 1968; Neurath, 1962). The impact of these media may be particularly salient in the case of norms about women and their gendered roles because this is an area in which the lives of rural viewers differ greatly from those depicted on popular shows. Johnson (2001) observes that in certain Indian villages after the introduction of television, men in homes with television sets tended to help their wives with more household chores than those without television sets. Another study by Scrase (2002) finds that several of his respondents thought television might lead women to question their social position and help the cause of female advancement. These observations are, however, based mostly on interviews and anecdotal evidence. Thus, it is useful to study empirically what impact greater access to television and radio has had on norms about gender in India, particularly after the changes that occurred in the content of television and radio programs in the early 2000s.

2.2 Domestic violence and attitudes towards violence in India

Violence against women is a major concern in India. According to a report on gender equality and women's empowerment published by the International Institute for Population Sciences (IIPS), 39% of currently married women aged 15-49 have experienced some kind of

violence (physical/emotional/sexual) at least once in their current marriage, and 27% have experienced the violence in the past 12 months. The most common form of emotional violence is being humiliated by the husband in front of others, and the most common form of physical violence is being slapped (IIPS, 2005-06).

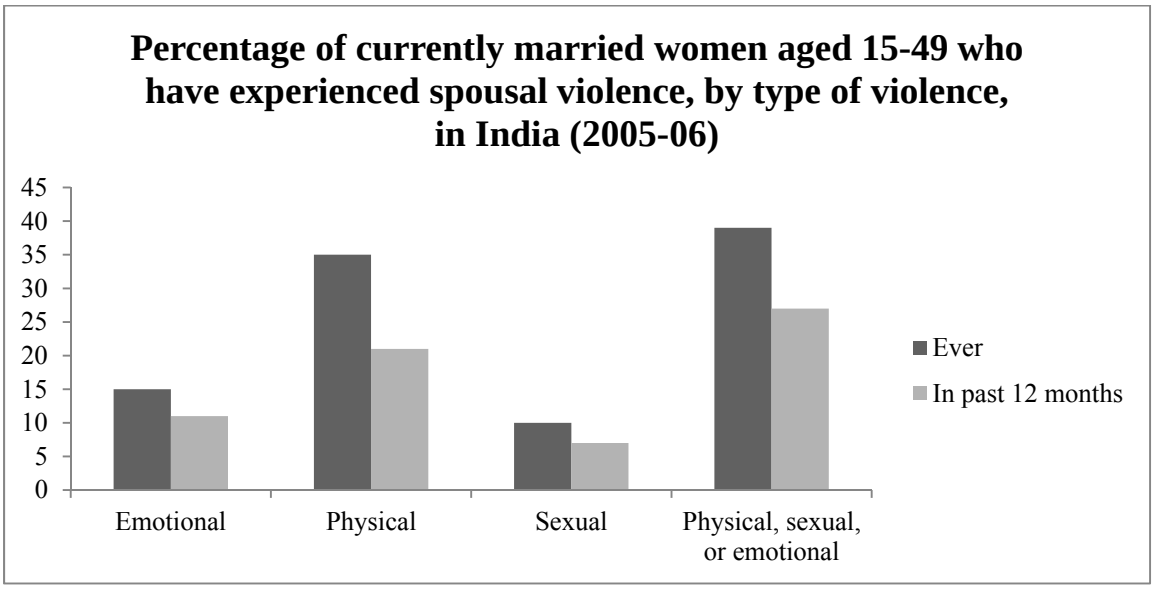

Figure 1: Source- IIPS, 2005-06

Domestic violence is widely recognized as a serious human rights violation since it includes physical and mental suffering and incapacitation of women. Experiencing and living with the constant threat of violence is also a source of disempowerment for women. In addition, such violence poses an important public health concern. Violence is a major cause of morbidity from multiple mental, physical, sexual and reproductive health outcomes, and it is also linked with known risk factors for poor health, such as alcohol and drug use and smoking. Children who witness domestic violence are more likely to exhibit behavioral and physical health problems, including depression and anxiety, and are more likely to attempt suicide and use drugs and alcohol (Garcia-Moreno and Watts, 2011). Moreover, research shows that violence has large economic costs, including the loss of women's labor hours and

productivity as well as direct costs to health, legal, and police services. For instance, a case study in Nagpur, India by the International Center for Research on Women found that after incidents of physical violence, the average number of days women were unable to work for income was 6.88 days and the mean number of days they were unable to do housework was 6.87 days. In addition, 42% of the women who reported injury also reported that their husbands missed work after an incident of violence. Using the reported average daily wage of Rs. 32 (approximately $1 at current price levels) for women and Rs. 55 (approx. $2) for men, this translated into a loss of income from waged work of Rs. 759.30 (approx. $27) per incident per household, and Rs. 974.10 (approx. $34) if the cost of women being unable to complete housework was added.[3] Additionally, the average cost per incidence of violence including healthcare costs was Rs. 1084.50 (approx. $38), about a third of the monthly income for households in slum and rural communities if one assumes that each household has one working woman and one working man (Burton et al., 2000).

According to sociologist Mary White Stewart (2002), a large part of the violence against women is explained in terms of cultural beliefs and ideas that define men and women as different and socialize male and female children into different roles and identities. This different socialization reinforces cultural beliefs about the male right to control women's bodies and leads to a reproduction of gender inequality in everyday behavior through domestic violence (Stewart, 2002). Women's agreement with normatively ascribed rights of husbands, such as the right to be the key decision-maker on major household decisions and the right to control their wives' behavior and bodies, reflects an acceptance of unequal gender roles and a lack of empowerment. Thus, an important step towards reducing domestic

[3] The figures in Indian rupees are at the 1997 price level, while the figures in US dollars are at current price levels. I first converted those to US dollars at the 1997 price level (assuming $1=Rs. 40), and then to the current price level in 2012.

violence and achieving greater empowerment of women is changing the attitudes of women towards themselves and towards domestic violence.

Figure 2 presents data on the levels of acceptance of violence by women and men from the above-mentioned IIPS report. Some key observations from this figure are that 54% of women and 51% of men agree with one or more reasons for wife-beating, and the gender differential in agreement for almost all reasons is small, suggesting that the level of socialization regarding these norms is similar for women and men. The data also suggest that violence is more likely to be justified if the behavior described in the figure violates what is acceptable behavior for women in their gendered roles as wives, mothers, and daughters-in-law, such as neglecting the house or children (IIPS, 2005-06).

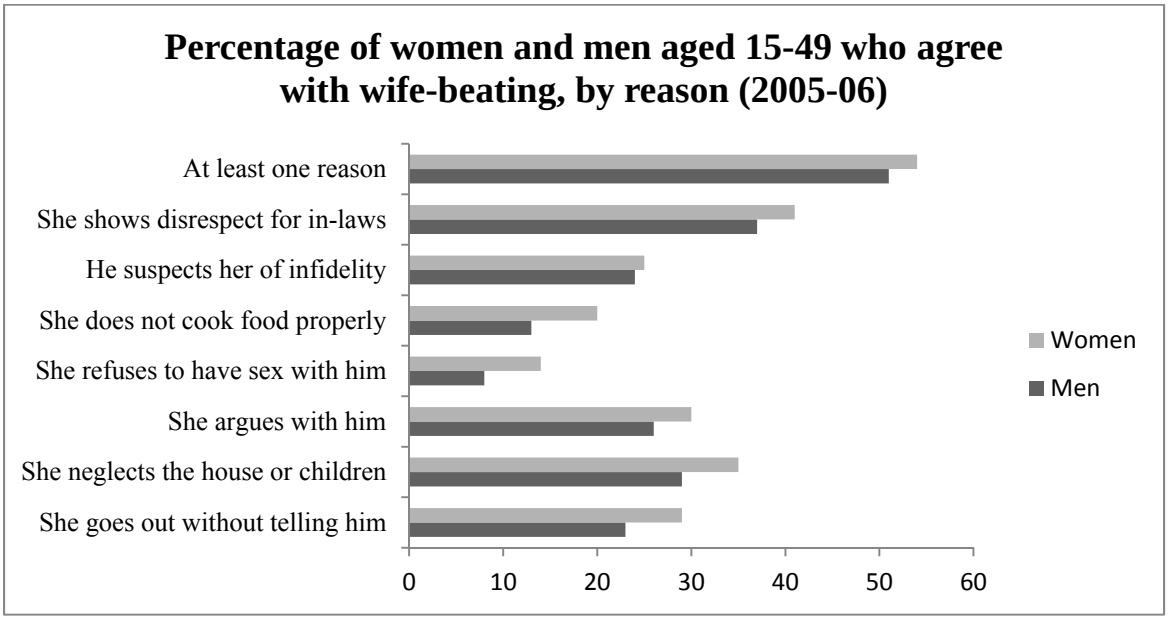

Figure 2: Source- IIPS, 2005-06

In the context of India, where women have traditionally had minimal control over resources or voice in decision-making in the household or community, external agents may be crucial in setting off or catalyzing the process of women empowerment. In this paper, I

test the role of one such external agent, increased exposure to media, on women's attitudes towards domestic violence.

3. Data source and description

3.1 Data source

I use the National Family Health Survey (NFHS) of India, which is a large-scale multi-round survey conducted by the International Institute for Population Sciences in a representative sample of households throughout India. Three rounds of the survey have been conducted, of which I am using those conducted in 1998-98 (NFHS-2) and 2005-06 (NFHS-3) to study the impact of the large increase in media access over this period as well as the changes in television and radio programming that occurred in the early 2000s. NFHS-2 collected information from approximately 90,000 ever-married women in the age group 15-49 years. NFHS-3 expanded the scope of the survey by interviewing approximately 124,000 women (both ever- and never-married), 109,000 households, and 74,000 men. The surveys provide information on a range of demographic, social and economic variables, such as infant and child mortality, utilization and quality of health and family planning services in the household, and indicators of household wealth, such as ownership of durable goods.

The NFHS surveys adopted a multi-stage sample design in all states to ensure that the data reflected a representative sample of the population. In each state, the rural sample was selected in two stages: the selection of Primary Sampling Units (PSUs), which are villages, with probability proportional to population size (PPS) at the first stage, followed by the random selection of households within each PSU in the second stage. In urban areas, a three-stage procedure was followed due to the large size of urban wards. In the first stage, wards were selected with PPS sampling. In the next stage, one census enumeration block (CEB)

was randomly selected from each sample ward, and in the final stage, households were randomly selected within each sample CEB. To get unbiased estimates and standard errors with these data, this paper reports analyses with observations weighted by sampling probabilities.

In both NFHS-2 and 3, women were asked if they thought it was justified for their husband to beat them for the following reasons: if she leaves the household without telling him, if she neglects the household or children, if she does not cook food properly, and if he suspects her of being unfaithful.[4] The main outcome measure of this paper captures whether a woman respondent thinks domestic violence is justified in at least one of the situations mentioned above.[5] The NFHS surveys also provide information on households' access to media and the frequency with which these media are used. This paper assumes that it is the new content of television shows and radio programs and the regular exposure over time to this content that brings about a change (if any) in women's attitudes about violence. Thus, I use the frequency of accessing media as the main explanatory variable instead of the household's ownership of television or radio. In addition, I utilize the large number of respondent and household characteristics provided by the surveys, such as education of the respondent and indicators of household wealth, as control variables.

3.2 Data summary

Table 3.1 summarizes the variables of interest separately for each wave of the survey. In NFHS-2, we see that 52.7% women think it is acceptable for a husband to beat his wife for at least one reason. This number decreases to 46.5% in NFHS-3. For each of the individual

[4] There were other reasons suggested for acceptability of domestic violence in NFHS-3, such as if the wife shows disrespect towards the husband, but these were not asked in NFHS-2, and so I only use the aforementioned variables that are present in both surveys.

[5] I am unable to use the responses of men on acceptance of domestic violence as men were not interviewed in NFHS-2.

reasons, a larger proportion of women agree with the reasons for domestic violence in NFHS-2 compared to NFHS-3. In the first survey, 40.9% of the households owned television sets, which increased to 59.8% of households in the second period, suggesting that access to television increased greatly over time. We also see that in both surveys more respondents report watching television at least once a week than they report owning a television set, which indicates that women may have access to television outside their homes, for instance, at the homes of relatives or neighbors. These trends do not hold for radio access; we see a small decline in the proportion of households who own radio sets, from 43.6% households in 1998-99 to 38.4% in 2005-06, and fewer respondents listen to radio than who those own radio sets.

Table 3.1 also provides information on other characteristics of the respondents and their households, such as education level of the respondent and location of the household in a rural or urban area. We see that the average level of education for women and proportion of women with an occupation have risen from 1998-99 to 2005-06, while the proportion of households living in rural areas has decreased from 68.9% to 54.2%. These figures indicate a trend towards urbanization and higher levels of education for women, which may be correlated with both greater access to media and lower acceptance of domestic violence by women. Thus, I include these variables as controls in my regressions for a more robust test of the relationship between increased access to media and acceptance of domestic violence.

Table 3.1: Descriptive Statistics

	1998-99		2005-06	
Variable	**Mean (%)**	**Std. Dev.**	**Mean (%)**	**Std. Dev.**
Attitudes towards domestic violence:				
Husband may hit wife if-				
she goes out without telling him	34.6	0.48	27.8	0.45
she neglects the house or children	38.3	0.49	35.8	0.48
she does not cook properly	22.0	0.41	18.0	0.38
he thinks she is unfaithful	31.3	0.46	25.5	0.44
Husband may hit wife for at least one of the above reasons	52.7	0.50	46.5	0.50
Media ownership and access				
Household has a TV	40.9	0.49	59.8	0.49
Household has a radio	43.6	0.50	38.4	0.49
Respondent watches TV at least once a week	49.9	0.50	64.7	0.48
Respondent listens to the radio at least once a week	39.2	0.49	31.8	0.47
Respondent and household characteristics				
Respondent's education (in years)	3.9	4.73	6.1	5.19
Respondent has an occupation	35.7	0.48	40.3	0.49
Location of household (urban=0, rural=1)	68.9	0.46	54.2	0.50
Household has electricity	66.5	0.47	80.6	0.39
Household has a refrigerator	14.4	0.35	25.4	0.43
Household has a bicycle	48.2	0.50	50.3	0.50
Household has a motorcycle	13.9	0.35	23.5	0.42
Household has a car	2.4	0.15	5.3	0.22
Household has a telephone	9.9	0.30	21.3	0.41

Notes: The number of observations for the variables ranges from 88,831 to 90,303 for 1998-98 and 116,111 to 124,284 for 2005-06. For the dummy variables on accepting violence, owning and accessing TV or radio, and measures of a household's wealth, the variables take value 0 if the answer to the question is no and 1 if yes.

The attitudes towards violence and access to media differ greatly in different states at baseline, as seen in Figure 3. The north-east Indian states of Manipur, Meghalaya and Nagaland, and Andhra Pradesh have the highest proportions of women who agree that domestic violence is justified for at least one of the reasons mentioned previously. The states with the lowest levels of accepting violence are Delhi, Punjab, Himachal Pradesh and West Bengal. To control for the heterogeneity in attitudes and other unobserved factors across

states, I include state fixed effects in this study. Table 3.2 shows the levels of acceptance of violence and media access by state for both surveys. We observe that the level of television access seems to have increased over time for almost all states, while the levels of radio access and acceptance of violence have gone down for most states. The following sections seek to explain how much of the decrease in acceptance of violence is associated with increase in media exposure.

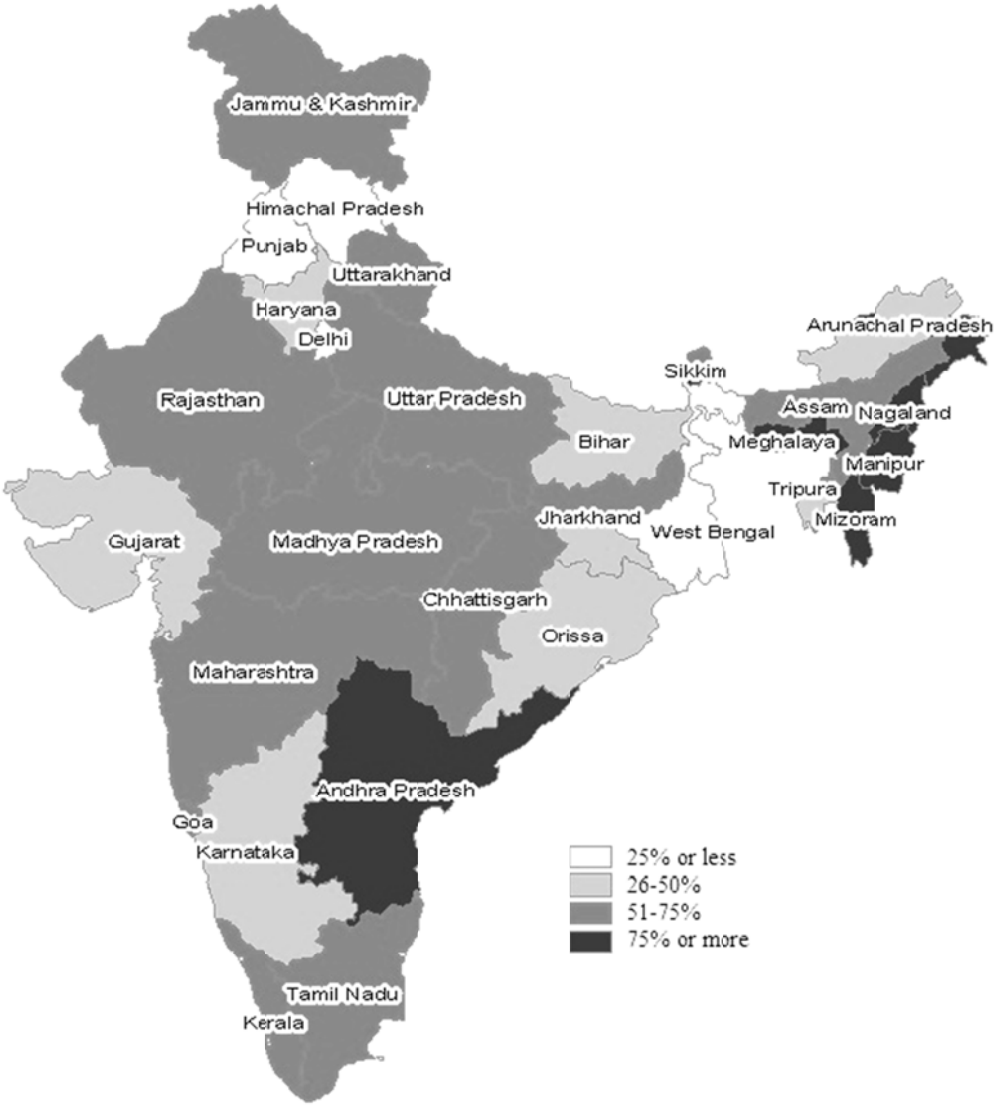

Figure 3: Percentage of women who agree with at least once reason for domestic violence at baseline (1998-99)

Table 3.2: Descriptive Statistics by State

State	Variables					
	Accept violence		TV ownership		Radio ownership	
	1998-99 Mean(%)	2005-06 Mean(%)	1998-99 Mean(%)	2005-06 Mean(%)	1998-99 Mean(%)	2005-06 Mean(%)
Andhra Pradesh	78.9	58.5	37.3	68.6	37.5	22.3
Arunachal Pradesh	49.0	63.6	36.4	47.3	47.7	34.1
Assam	59.8	35.5	28.1	45.3	39.8	32.1
Bihar+ Jharkhand	46.0	41.9	14.7	36.2	32.3	31.3
Delhi	19.4	25.4	90.3	88.8	67.8	53.3
Goa	56.3	34.3	68.5	82.0	61.7	51.7
Gujarat	35.8	51.8	45.8	60.1	37.0	30.7
Haryana	25.6	43.4	61.6	69.5	47.4	31.5
Himachal Pradesh	20.7	20.5	68.8	79.2	58.8	51.1
Jammu and Kashmir	72.8	59.4	58.4	68.7	69.2	72.1
Karnataka	47.9	61.0	41.6	57.4	54.0	36.4
Kerala	59.0	58.1	40.8	68.5	68.9	55.3
Madhya Pradesh+ Chhattisgarh	71.8	30.1	34.3	53.3	27.2	29.9
Maharashtra	66.5	38.7	60.9	73.7	44.9	39.7
Manipur	89.4	82.1	31.1	56.0	46.6	71.7
Meghalaya	86.0	51.8	27.0	55.7	32.4	32.8
Mizoram	81.1	80.3	26.2	55.3	54.7	44.7
Nagaland	97.1	75.9	26.9	53.3	37.2	33.2
Orissa	47.2	52.3	23.9	40.5	37.0	26.4
Punjab	20.8	45.7	76.2	84.7	49.0	32.4
Rajasthan	50.2	47.2	31.7	46.7	36.0	29.5
Sikkim	66.8	65.7	39.3	68.6	50.8	22.1
Tamil Nadu	68.3	64.1	47.0	65.5	54.5	43.6
Tripura	35.7	45.5	33.5	51.3	31.1	24.8
Uttar Pradesh+ Uttarakhand	58.7	37.2	30.1	54.0	36.6	39.1
West Bengal	18.4	25.1	39.4	52.7	44.5	41.4
Median	57.5	49.5	38.3	56.7	45.7	33.6

Notes: Results for some of the states are combined (such as Bihar and Jharkhand) because these states were partitioned in the year 2000, and so they were considered one state in NFHS-2.

4. Conceptual framework and empirical strategy

4.1 Conceptual framework

This section describes the channels through which accessing media frequently could affect women's acceptance of domestic violence. The acceptance of violence by respondent *i* can be modeled as follows:

$$Accept_i = f[w_i(media), h_i(media), v_i(w_i, h_i, media)]$$

Here, w_i and h_i represent the general norms about women's status in society held by respondent *i* and her husband respectively, which are a function of accessing media. Greater exposure to media, and thus to news, information and programs that depict empowered women, may promote norms that accord a more equal status to women in society, and consequently reduce the acceptability of domestic violence.

In addition, acceptance of violence also depends on the previous incidence of domestic violence against the respondent, v_i, because it is possible that women learn to accept violence as normal when they have experienced it before.[6] I assume that whether the respondent has experienced domestic violence, v_i, is a function of the gender norms of both partners as well as the frequency with which the respondent accesses media. When women access media (and particularly two or more media), they may be substituting time away from performing duties that are traditionally expected of them, such as cooking food and taking care of the house and children. Failure to perform these duties adequately may make women more likely to experience physical assault from their husbands.

[6] A report by the World Health Organization on women's health and domestic violence finds that acceptance of wife-beating was higher among women who had experienced abuse than among those who had not, and many women who were interviewed and had been beaten before considered violence a normal part of their lives (WHO, 2005).

Based on the above discussion, I expect the impact of increasing regular access to media to be the following:

(i) Greater access to media can positively influence general norms about gender, and thus reduce the acceptance of violence by women.

(ii) Greater access to media can increase the probability of experiencing violence, and thus increase the acceptance of violence by women.

The overall relationship between increased media access and acceptance of violence depends on which of the two effects dominates.

4.2 Empirical strategy

I employ a difference-in-differences strategy to study the association between increased exposure to media over time and acceptance of domestic violence. I choose this strategy over a cross-sectional analysis of the data from the second NFHS survey to be able to isolate the impact of increased access to media over time from the impact of other factors that are changing over time and are correlated with both media use and attitudes towards domestic violence. These factors could include greater economic prosperity, higher levels of education for women, and trends towards greater urbanization (as seen in Table 3.1). I also use a binary choice logit model because the dependent variable in this study, acceptance of domestic violence, is a binary variable (taking values 0 if the respondent does not accept violence and 1 if she does). The main regression specification is as follows:

$$Accept^{*}_{ijt} = \alpha_0 + \alpha_1 Post_t + \alpha_2 Tvfreq_{ijt} + \alpha_3 Radiofreq_{ijt} + \alpha_4 (Tvfreq * Radiofreq)_{ijt} + \alpha_5 (Post * Tvfreq)_{ijt} + \alpha_6 (Post * Radiofreq)_{ijt} + \alpha_7 (Post * Tvfreq * RadioFreq)_{ijt} + \boldsymbol{X_{ijt}\beta} + \gamma_j + \varepsilon_{ijt}$$

Here, $Accept^{*}_{ijt}$ is a measure denoting the probability that respondent 'i' in state 'j' at time 't' accepts domestic violence for at least one reason. As $Accept^{*}_{ijt}$ is not observable, I use the actual acceptance of violence, $Accept_{ijt}$, to estimate the association between explanatory variables and the probability of accepting violence.

The explanatory variables are as follows:

- *Post* is a time dummy (0 for 1998-99, 1 for 2005-06).
- $Tvfreq_{ijt}$ is a dummy variable for whether the respondent watches television at least once a week (0 if no, 1 if yes). [7]
- $Radiofreq_{ijt}$ is a dummy variable for whether the respondent listens to the radio at least once a week (0 if no, 1 if yes).
- X_{ijt} are respondent and respondent's household characteristics that may be correlated with frequency of accessing media and acceptance of violence- education of the woman, wealth of the household, whether the respondent has a job, location of the household in a rural or urban area, and religion and caste of the household.
- γ_j are state fixed effects, included to capture the heterogeneity in attitudes towards women and domestic violence across different states.[8] Errors are clustered at the state level to account for the possible correlation between standard errors.

[7] The only available data on frequency of accessing media consistent across both surveys were whether the respondent accesses each media at least once a week. Also, the data do not provide information on whether respondents are watching cable television or non-cable television.

[8] Some states, such as Bihar and Jharkhand, were partitioned off as two states in the year 2000. NFHS-2 was conducted before this partition, and hence I combine the observations for these states to keep the state variable consistent between the two NFHS surveys.

The binary logit model estimates the impact of the explanatory variables on the probability of outcome $Accept_{ijt}$=1, i.e., the respondent accepts violence. The coefficients of the explanatory variables measure the extent to which a change in one of the explanatory variables is associated with the probability of a respondent accepting violence. A positive sign for a coefficient indicates that a particular variable is correlated with an increase in the probability of accepting violence.

The coefficients α_2, α_3, and α_4 are the differences at baseline between respondents who access these media frequently and those who do not. For example, the probability of accepting violence is higher by α_2 for a respondent at baseline who watches television regularly but does not access radio regularly compared to a respondent who does not access either medium regularly.

The effect of accessing television on the probability of accepting violence in the two periods is as follows:

$$\frac{\partial\, P(Accept = 1)}{\partial TVFreq}\Big|_{post=0} = \alpha_2 + \alpha_4\, Radiofreq_{ij0}$$

$$\frac{\partial\, P(Accept = 1)}{\partial TVFreq}\Big|_{post=1} = \alpha_2 + \alpha_4\, Radiofreq_{ij0} + \alpha_5 + \alpha_7\, Radiofreq_{ij1}$$

Hence, the additional effect of switching into watching television regularly over time is $\alpha_5 + \alpha_7 Radiofreq_{ij1}$. This is associated with a change in acceptance of violence through two channels- the direct effect of watching television, α_5, and the interactive effect of accessing both television and radio, α_7. Thus, for women who start watching only television regularly in the second period, the association of watching television with the probability of accepting violence is α_5, while for women who switch into using both television and radio regularly,

the association is $\alpha_5 + \alpha_7$. Similarly, the additional effect of starting to listen to radio over time is $\alpha_6 + \alpha_7 Tvfreq_{ij1}$. This too has a direct effect of listening to radio, α_6, and the interactive effect of accessing both television and radio, α_7. If α_7 is negative, this would imply that there is a complementary effect between accessing both media that is correlated with a decrease in the probability of acceptance of violence by women. However, if α_7 is positive, it would suggest that women think it is more acceptable for their husbands to beat them if they spend time accessing both television and radio, perhaps because they are spending less time doing other household duties expected of them, which may increase the probability of experiencing violence.

5. Results

5.1 Main results

Table 5.1 reports the estimation results for the main specification. Table 5.1a provides coefficient estimates using the logit model, and Table 5.1b shows marginal effects of explanatory variables on the probability of accepting domestic violence.[9] Column 1 of Table 5.1b finds that respondents who watch television at least once a week are 4.8% more likely to accept violence for any reason than respondents who do not watch television at baseline. This difference becomes statistically insignificant when we add state fixed effects. Columns 1 and 2 find no significant association of switching into watching television over time with the probability of accepting violence, as seen by the coefficient of *Post*Tvfreq*. Similarly, we find no significant relationship between switching into listening to radio over time with probability of acceptance, in columns 3 and 4.

[9] These marginal effects were calculated by taking the average of the marginal effects for each observation. I use this method instead of calculating the more commonly used marginal effects for the average observation, since it is unclear what an average observation would be and if it would accurately represent the general population.

Columns 5 and 6 look at the impact of accessing both television and radio at least once a week. When we do not use state fixed effects, the impact of switching into watching television over time is insignificant for both the direct and interactive effects of watching television. Column 6 adds fixed effects to the regression and finds that while the direct effects of switching into only watching television or only listening to radio remain insignificant, the interactive effect of television and radio (the coefficient of *Post*Tvfreq*Radiofreq*) is associated with a reduction in the probability of acceptance of violence by 3.6% which is significant at the 10% significance level. This suggests that there exists a complementarity between television and radio that is associated with the reduction in the probability of women accepting domestic violence. Overall, for women who switch into accessing both media, watching television is correlated with a decrease in the probability of accepting violence by 3.9%, which is significant at the 10% significance level. There no such comparable significant effect of radio for women who switch into accessing both media.

The above result can have two explanations with respect to the conceptual framework outlined in Section 4.1. The conceptual framework had suggested two channels through which access to media could have an impact on acceptance of violence. The first channel predicted that media access may positively influence norms about women's status in society, and hence reduce women's acceptance of violence. In contrast, the second channel posited that greater access to media may mean that women substitute more time away from household duties, making them more likely to experience, and thus to accept, violence. In the above results, the association between increased media access over time and reduced probability of acceptance of violence may mean that only the first channel has explanatory power for this association. On the other hand, the result could mean that both channels may

play a role in determining the relationship between increased media access and acceptance of violence, but the effect of the first channel dominates the effect of the second channel. I look for further evidence of these channels in Section 5.4.

In addition, it is interesting to observe that the education and working status of the respondent and location of the household are significantly correlated with the acceptance of violence in all the regressions. Column 6 shows that a small increase, say x, in education is associated with a $1.3x$% decrease in the probability of accepting violence, while the household's location in a rural makes the respondent 5.2% more likely to accept violence from her husband. This suggests that more educated women or women in urban areas might be more empowered than less educated or rural women respectively.

It should be noted that the difference-in-differences strategy relies on a common-trend assumption, i.e., it assumes that the trend in the acceptance of violence by women was the same for women who accessed television and radio in the second period and those who did not before these media were adopted. I am unfortunately unable to check the validity of the common-trend assumption because the NFHS survey prior to NFHS-2 does not ask questions about acceptance of violence by women.

Table 5.1a: Probability of accepting violence- logit regression coefficient estimates

VARIABLES	(1) Accept	(2) Accept	(3) Accept	(4) Accept	(5) Accept	(6) Accept
Post	-0.204	-0.171	-0.218	-0.188	-0.211	-0.188
	(0.175)	(0.189)	(0.189)	(0.208)	(0.175)	(0.188)
Tvfreq	0.209**	0.077			0.258**	0.127
	(0.106)	(0.076)			(0.129)	(0.09)
Radiofreq			0.0589	-0.021	0.091	0.014
			(0.0822)	(0.066)	(0.109)	(0.074)
Tvfreq*Radiofreq					-0.133	-0.095
					-0.111	(0.072)
Post*Tvfreq	-0.071	-0.04			-0.034	-0.014
	(0.0960)	(0.094)			(0.114)	(0.107)
Post*Radiofreq			-0.084	-0.023	0.056	0.101
			(0.096)	(0.082)	(0.112)	(0.089)
Post*Tvfreq* Radiofreq					-0.163	-0.162*
					(0.111)	(0.087)
Education	-0.052***	-0.061***	-0.049***	-0.06***	-0.052***	-0.061***
	(0.005)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
Location	0.258***	0.232***	0.248***	0.229***	0.261***	0.236***
	(0.050)	(0.038)	(0.050)	(0.038)	(0.051)	(0.038)
Constant	-0.233	1.189***	-0.185	1.223***	-0.251	1.172***
	(0.223)	(0.090)	(0.232)	(0.103)	(0.223)	(0.096)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
State fixed-effects	No	Yes	No	Yes	No	Yes
Observations	197,314	197,314	197,308	197,308	197,279	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 'Accept' is a dummy variable that takes the value 1 when the respondent agrees with at least one reason for domestic violence. 'TVfreq' and 'Radiofreq' are dummy variables for whether the respondent accesses each medium at least once a week. Other controls include: education of the respondent in years; location of the household in a rural or urban area (location=1 if rural area); whether the respondent has a job (work=1 if yes); type of toilet facility and source of drinking water of the household; household has electricity, refrigerator, bicycle, motorcycle, car, and telephone; religion and caste of the respondent's family. The observations are weighted for sampling probabilities. Coefficients on dummies for states, religions, castes and variables that indicate a household's wealth are not reported here.

Table 5.1b: Change in probability of accepting violence- marginal effects for logit model

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Accept	Accept	Accept	Accept	Accept	Accept
Post	-0.047	-0.038	-0.051	-0.041	-0.049	-0.041
	(0.040)	(0.041)	(0.044)	(0.045)	(0.040)	(0.041)
Tvfreq	0.048**	0.017			0.060**	0.028
	(0.024)	(0.017)			(0.030)	(0.02)
Radiofreq			0.014	-0.005	0.021	0.003
			(0.019)	(0.015)	(0.025)	(0.016)
Tvfreq*Radiofreq					-0.031	-0.021
					(0.026)	(0.016)
Post*Tvfreq	-0.016	-0.009			-0.008	-0.003
	(0.022)	(0.021)			(0.027)	(0.023)
Post*Radiofreq			-0.019	-0.005	0.013	0.022
			(0.022)	(0.018)	(0.026)	(0.02)
Post*Tvfreq* Radiofreq					-0.038	-0.036*
					(0.026)	(0.019)
Education	-0.012***	-0.013***	-0.011***	-0.013***	-0.012***	-0.013***
	(0.001)	(0.001)	-0.001	(0.001)	(0.001)	(0.001)
Location	0.06***	0.051***	0.057***	0.05***	0.06***	0.052***
	(0.011)	(0.008)	(0.012)	(0.008)	(.012)	(0.008)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
State fixed-effects	No	Yes	No	Yes	No	Yes
Observations	197,314	197,314	197,308	197,308	197,279	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The average marginal effects reported in this table are calculated for each respondent individually and then averaged.

5.2 Robustness checks

i) Probit model-

I use the binary choice probit model to test the robustness of my main result found by using a binary choice logit model. The probit model uses the cumulative distribution function (cdf) of the standard normal distribution instead of the cdf of the logistic function used by the logit model. The different distributional assumption means that the probit model has thinner tails

than the logit model, which assigns a lower probability to extreme outcomes. Using probit regressions allows me to check the extent to which my results are sensitive to the assumptions made about the tail distribution. Table 5.2 reports results for the main specification. Column 1 provides estimates using the probit model and Column 2 reports marginal effects. We see that these results are very similar to the results from the logit model; there is no significant correlation between switching into only watching television or only listening to radio, but there is a complementary effect of using both media on acceptance of violence. The magnitudes of coefficient estimates and significance of estimates are also almost identical in both models, indicating the robustness of my previous result in terms of the assumption about the tail distribution.

ii) Ownership of television-

I check whether the association of watching television and reduced acceptance of violence comes about from actually accessing television regularly or only from owning a television or radio (which may only be a measure of a household's socio-economic status but not reflect the impact of accessing these media) by using the ownership of television and radio as the explanatory variables instead of the frequency with which they are accessed. Table 5.3 finds that there is no significant correlation between owning a television and/or radio either at baseline or over time with acceptance of violence by women. This suggests that the change in attitudes may be driven by the regular use of media over time instead of the mere presence of media in the household.

Table 5.3 also shows results when both ownership and frequency of accessing media are included as explanatory variables to see whether the frequency of media use has a stronger association with attitudes towards violence than the ownership of media. These

results are similar to the previous results; there continues to be neither a significant correlation between ownership of media and acceptance of violence nor any significant independent effect of accessing either television or radio, while the complementarity between watching television and listening to radio still holds, and is associated with a 3.5% reduced probability of accepting violence.

iii) Individual reasons for accepting violence-

To see if the main results with the dependent variable as accepting violence in at least one scenario are being driven only by a particular reason, I use each individual reason as the dependent variable. The individual reasons for accepting violence are- 'Go' (the wife leaves the house without telling the husband), 'Neglect' (she neglects the house or children), 'Cook' (she does not cook properly), and 'Unfaithful' (he suspects her of being unfaithful). Table 5.4 shows that switching into accessing either only television or only radio does not have any significant relationship with the probability of accepting violence for any reason. The complementary effect of accessing television and radio on acceptance of violence is significant for the reasons 'Go' and 'Unfaithful', but not for 'Neglect' and 'Cook'. However, the magnitudes of the coefficients on *Post*Tvfreq*Radiofreq* for reasons 'Neglect' and 'Cook' are similar to that of the coefficient of the same variable for the remaining reasons. These coefficients also have standard errors only slightly higher than the standard error for the coefficient for the reason 'Go' (which is statistically significant), suggesting that acceptance of violence for all the reasons contributes to the main result when the dependent variable is accepting violence in at least one situation, and this result is not solely driven by one reason for accepting violence.

iv) Individual states-

I run the main regression separately for each state to see if the main results are being driven only by one state, which might be anomalous in its levels of media access or acceptance of domestic violence. Table 5.5 reports results individually by state and finds that the association between media use over time and probability of accepting violence varies greatly by state. Many states, including Delhi and Rajasthan, experience a significant association between switching into watching only television over time and a decrease in probability of accepting violence, with the magnitudes of the associations ranging from 6.7% to 21.7%, seen by the coefficient of *Post*Tvfreq*. Only the states of Kerala, Orissa and Tripura see a correlation between switching into watching television and an increase in the probability of violence. Switching into only listening to radio is associated with increases in probability of accepting violence for the states in which this association is statistically significant, such as Gujarat and Meghalaya, seen by the coefficient of *Post*Radiofreq*. The positive association between switching into accessing media in the second period and acceptance of violence in these states may mean that the second channel described in the conceptual framework (which predicts an increase in acceptance of violence due to greater access to media) has a stronger effect in these states.

The complementary effect between television and media is significantly associated with decreases in the probability of acceptance only for the states Karnataka, Kerala, Orissa and Punjab (seen by the coefficient of *Post*Tvfreq*Radiofreq*). This indicates that the strong complementarity between television and radio that exists in these states may be driving the main result. However, the insignificance of the results for other states could mean that the impact of increased media exposure on attitudes towards violence may take longer to be

realized in some states compared to others. The states that do experience a significant complementary effect of media had medium to high levels of media access at baseline, and perhaps other states would need to achieve a certain level of media penetration for media to have a significant impact on acceptance of domestic violence. Overall, Table 5.5 suggests that about one-third of the states have some significant association between switching into accessing only television or both television and radio and decrease in acceptance of violence. This is an encouraging result as it suggests that greater exposure to media over time may gradually bring about larger changes in women's acceptance of domestic violence.

5.3 Heterogeneous effects

This section considers possible factors that could have heterogeneous effects on the association between the reduction of acceptance of violence and accessing media over time.

Education of the respondent:

It is possible that more educated women are better able to process and internalize the content that they see on television or hear on the radio. This would lead to the impact of media being different for women with different levels of education. We can test this possible heterogeneity by including the interaction terms of the variable *Education* with the variables on frequency of media use. The regression specification is now as follows:

$$Accept^{*}_{ijt} = \alpha_0 + \alpha_1 Post_t + \alpha_2 Tvfreq_{ijt} + \alpha_3 Radiofreq_{ijt} + \alpha_4 Education_{ijt} + \alpha_5 (Tvfreq * Radiofreq)_{ijt} + \alpha_6 (Tvfreq * Education)_{ijt} + \alpha_7 (Radiofreq * Education)_{ijt} + \alpha_8 (Tvfreq * Radiofreq * Education)_{ijt} + \alpha_9 (Post * Tvfreq)_{ijt} + \alpha_{10} (Post * Radiofreq)_{ijt} + \alpha_{11} (Post * Education)_{ijt} + \alpha_{12}(Post * Tvfreq * Radiofreq)_{ijt} + \alpha_{13} (Post * Tvfreq * Education)_{ijt} + \alpha_{14} (Post * Radiofreq * Education)_{ijt} + \alpha_{15} (Post * Tvfreq * Radiofreq * Education)_{ijt} + \boldsymbol{X_{ijt}\beta} + \gamma_j + \varepsilon_{ijt}$$

The additional impact of watching television over time is now $\alpha_9 + \alpha_{12}\, Radiofreq_{ij1} + \alpha_{13}\, Education_{ij1} + \alpha_{15}\, (Radiofreq*Education)_{ij1}$. We find the differential effect of education on this impact by taking the derivative of the impact with respect to education:

$$\frac{\partial}{\partial Education}(\alpha_9 + \alpha_{12} Radiofreq_{ij1} + \alpha_{13} Education_{ij1} + \alpha_{15}(Radiofreq * Education)_{ij1}) = \alpha_{13} + \alpha_{15} Radiofreq_{ij1}$$

Similarly, the additional impact of listening to radio over time is $\alpha_{10} + \alpha_{12}\, Tvfreq_{ij1} + \alpha_{14}\, Education_{ij1} + \alpha_{15}\, (Tvfreq*Education)_{ij1}$, and the differential effect of education is:

$$\frac{\partial}{\partial Education}(\alpha_{10} + \alpha_{12} TVfreq_{ij1} + \alpha_{14} Education_{ij1} + \alpha_{15}(TVfreq * Education)_{ij1}) = \alpha_{14} + \alpha_{15} TVfreq_{ij1}$$

Table 5.6 finds that the magnitudes of α_{13}, α_{14} and α_{15} are all close to zero and statistically insignificant, suggesting that the association between changes in acceptance of violence and the complementary effect of media is not mediated by differences in women's education.

Location of the household:

The new soap operas that began to be offered on television since the early 2000s primarily depicted urban settings, lifestyles, and value systems. These characteristics of the soap operas might have different impacts on women in rural and urban areas. For example, rural women may not identify with the values and roles of women shown on television, and thus television may not have much impact on their attitudes. On the other hand, such depictions may have the greatest effects in rural areas where discrimination against women is high, and these programs may make rural women aspire to be as empowered as the urban women shown on television. I test the possible heterogeneity of location on the impact of television and radio by adding interaction terms of the variable *Location* with the variables on frequency of media use. The new specification is:

$$
\begin{aligned}
Accept^{*}_{ijt} = {} & \alpha_0 + \alpha_1 Post_t + \alpha_2 Tvfreq_{ijt} + \alpha_3 Radiofreq_{ijt} + \alpha_4 Location_{ijt} \\
& + \alpha_5 (Tvfreq * Radiofreq)_{ijt} + \alpha_6 (Tvfreq * Location)_{ijt} \\
& + \alpha_7 (Radiofreq * Location)_{ijt} + \alpha_8 (Tvfreq * Radiofreq * Location)_{ijt} \\
& + \alpha_9 (Post * Tvfreq)_{ijt} + \alpha_{10} (Post * Radiofreq)_{ijt} \\
& + \alpha_{11} (Post * Location)_{ijt} + \alpha_{12} (Post * Tvfreq * Radiofreq)_{ijt} + \alpha_{13} (Post \\
& * Tvfreq * Location)_{ijt} + \alpha_{14} (Post * Radiofreq * Location)_{ijt} + \alpha_{15} (Post \\
& * Tvfreq * Radiofreq * Location)_{ijt} + \boldsymbol{X_{ijt}\beta} + \gamma_j + \varepsilon_{ijt}
\end{aligned}
$$

The additional impact of television over time is now $\alpha_9 + \alpha_{12} Radiofreq_{ij1} + \alpha_{13} Location_{ij1} + \alpha_{15} (Radiofreq*Location)_{ij1}$. The differential effect of location is:

$$
\begin{aligned}
\frac{\partial}{\partial Location} (\alpha_9 + \alpha_{12} Radiofreq_{ij1} + \alpha_{13} Location_{ij1} + \alpha_{15} (Radiofreq \\
* Loccation)_{ij1}) = \alpha_{13} + \alpha_{15} Radiofreq_{ij1}
\end{aligned}
$$

Likewise, the additional impact of radio over time is $\alpha_{10} + \alpha_{12} Tvfreq_{ij1} + \alpha_{14} Location_{ij1} + \alpha_{15} (Tvfreq*Location)_{ij1}$. The differential effect of location is:

$$\frac{\partial}{\partial Location}(\alpha_{10} + \alpha_{12} TVfreq_{ij1} + \alpha_{14} Location_{ij1} + \alpha_{15}(TVfreq * Location)_{ij1})$$
$$= \alpha_{14} + \alpha_{15} TVfreq_{ij1}$$

Table 5.7 finds that α_{13}, α_{14} and α_{15} all have coefficients close to zero and are statistically insignificant. Thus, the association between switching into accessing media in the second period and reduced acceptance of domestic violence does not seem to be different for rural and urban areas.

5.4 Mechanisms

In this section, I look for evidence of the two opposing effects of media on attitudes towards domestic violence as described by the conceptual framework. The first channel predicts that greater access to media could promote norms about women's empowerment and hence reduce the acceptance of violence. The NFHS surveys do not provide many measures of women's status in society that are consistent across both surveys, and they also do not interview men in the first period, thus limiting my ability to test the impact of accessing media over time on women's and men's norms separately. Thus, I use a binary variable 'Money', whether the respondent has a say in how to spend household income (0 if no, 1 if she has a say alone or jointly with her husband), as a measure of a woman's status in her household and use it as the dependent variable in the main regression specification. Table 5.8 finds that over time, women are 8.9% more likely to have a say in allocation of income, but

the magnitude of the correlation between switching into accessing television and/or radio over time and having a say in income allocation is very small and statistically insignificant.

Additionally, although there is no data on men's attitudes in the first survey, NFHS-3 does include surveys with men, allowing me to study the correlation between media access and men's norms about women's status in the second period. I use the following four measures of women's status: whether the male respondent's wife has a say in making household purchases for daily needs ('Daily Purchases'), whether she has a say in making large household purchases ('Big Purchases'), whether she has a say in how her income is used ('Wife's Income'), and whether she has a say in how many children to have ('Children'). For all of these measures, the variable takes on value 0 if the respondent's wife does not have a say in these decision, and 1 if she does (either alone or jointly with her husband). Table 5.8 reports results for a cross-sectional analysis with the above four reasons as dependent variables, and variables on media use by men as explanatory variables. In column 2, we see that watching both television and radio frequently is associated with a 3.1% reduced probability of the respondent's wife having a say in making large household decisions. On the other hand, watching television regularly is correlated with a 1.4% increased probability of women having a say in how their income is used (column 4). There are no other statistically significant relationships between media use and women's status in the household, suggesting that accessing media over time does not have an overall consistent and significant association with general norms about women's status.

I then look at the other channel which hypothesizes that by accessing media, women may be substituting time away from doing household duties expected of them, and thus becoming more prone to experiencing and accepting violence. I use the variable 'Violence',

whether a woman has experienced domestic violence as the dependent variable in the main specification.[10] We see in Table 5.8 that for women who switch into only listening to radio, there is no correlation between probability of being beaten and listening to radio. In contrast, women who switch into watching only television are 5.6% more likely to experience domestic violence, indicating that there may be some substitution between household duties and watching television that increases the probability of experiencing violence. In contrast, when women switch into watching both media, the interactive effect between the media is associated with a 4.9% decrease in probability of being beaten. This could be seen as a contradiction of the substitution hypothesis because accessing two media should, in theory, take away more time from household activities than accessing only one medium. However, women who access both media may allocate their hours between accessing media and doing household duties differently from women who access only television, leading to a dissimilar substitution of time away from these duties and consequently dissimilar effects on the probability of being beaten by their husbands. The available data do not have information on the amount of time respondents spend watching television, listening to radio and on household duties, and hence limit my ability to explore this channel further.

Overall, there seems to be limited evidence for either of the two proposed channels through which media access could have an effect on acceptance of domestic violence. It is, however, important to note that these results are restricted by the lack of variables on women's status, as well as the possibility of under-reporting for questions related to incidence of domestic violence. Thus, there is need for more detailed data on patterns of

[10] The NFHS survey asks women separately about specific acts of violence, such as if she has been slapped by her husband or threatened by a knife, instead of being asked if she has experienced 'violence' to minimize different understandings of violence by different women. I use an aggregate measure of domestic violence which takes value 1 if women have experienced at least one kind of physical violence and 0 otherwise.

accessing media and women's status to study the mechanisms through which media may have an impact on attitudes towards domestic violence.

6. Conclusion

This paper has investigated whether there is any link between greater exposure to media over time and women's attitudes towards domestic violence in India. The study proposes two channels through which media access could have an impact on acceptance of violence: accessing media could positively influence general norms about women's status and reduce acceptance of violence, or it may lead to substitution away from household duties, which may increase the probability of experiencing and accepting violence. Using household-level data on media use and acceptance of violence by women, I find evidence that switching into regularly accessing television and radio over time has a small but statistically significant association with reduction in the probability of women accepting violence. This association holds only when women access both media regularly, indicating a complementary effect of accessing television and radio in reducing acceptance of violence. We also find that the complementarity holds for women in both rural and urban areas, as well as for differences in women's education. Unfortunately, due to lack of adequate data, it is unclear which mechanism is driving the association between media access and reduction in acceptance of violence. Better data on women's status and patterns of media access would enable further study of these channels.

The results of this study suggest that policymakers who wish to address the concern of domestic violence by empowering women could look beyond traditional policies, such as improving access to girls' education or providing economic opportunities to women, which need a large number of state resources and can be as difficult to implement as the problems

they attempt to solve.[11] These policies can exploit the potential of media to bring about their desired objective. In particular, they should take advantage of the complementarity that this paper finds between television and radio by subsidizing and encouraging their use together, especially in states where discrimination against women is greatest. Such policies, coupled with the considerable increase in media access that India has experienced, could lead to greater reductions in the acceptance and incidence of domestic violence, and further the cause of women's empowerment.

7. Tables

Table 5.2: Probit model estimates

	Probit estimates	Marginal effects
	(1)	(2)
VARIABLES	Accept	Accept
Post	-0.115	-0.041
	(0.116)	(0.041)
Tvfreq	0.076	0.027
	(0.054)	(0.019)
Radiofreq	0.008	0.003
	(0.045)	(0.019)
Tvfreq*Radiofreq	-0.056	-0.020
	(0.044)	(0.016)
Post*Tvfreq	-0.006	-0.002
	(0.064)	(0.023)
Post*Radiofreq	0.063	0.022
	(0.054)	(0.019)
Post*Tvfreq*Radiofreq	-0.100*	-0.036*
	(0.052)	(0.019)
Education	-0.037***	-0.013***
	-0.002	(0.001)
Location	0.146***	0.052***
	(0.024)	(0.008)
Other controls	Yes	Yes
State fixed-effects	Yes	Yes
Observations	197,279	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

[11] An example of such a project is the 'Swashakti Project' (Rural Women's Development and Empowerment Project) undertaken by the Government of India, which promote activities such as providing health and education services. This project has an estimated outlay of Rs. 186 crores (approx. $36 million) over five years (This information is drawn from the official website of the Ministry of Women and Child Development, Government of India: http://wcd.nic.in/ .)

Table 5.3: Ownership of media- marginal effects

VARIABLES	(1) Accept	(2) Accept
Post	-0.038	-0.04
	(0.042)	(0.041)
TV	-0.002	-0.012
	(0.016)	(0.013)
Radio	-0.022	-0.024***
	(0.01)	(0.008)
TV*Radio	-0.001	0.007
	(0.011)	(0.011)
Post*TV	-0.018	-0.021
	(0.024)	(0.020)
Post*Radio	0.012	0.008
	(0.016)	(0.012)
Post*TV*Radio	-0.005	0.002
	(0.014)	(0.013)
TVfreq		0.021
		(0.019)
Radiofreq		0.008
		(0.016)
Tvfreq*Radiofreq		-0.023
		(0.016)
Post*TVfreq		0.01
		(0.023)
Post*Radiofreq		0.017
		(0.017)
Post*Tvfreq*Radiofreq		-0.035*
		(0.020)
Education	-0.013***	-0.013***
	(0.001)	(0.001)
Location	0.05***	0.052***
	(0.008)	(0.008)
Other controls	Yes	Yes
State fixed-effects	Yes	Yes
Observations	197,347	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. 'TV' and 'Radio' are dummy variables for whether the respondent's household has a television set and radio respectively (0 if no, 1 if yes).

Table 5.4: Results by individual reason- marginal effects

VARIABLES	(1) Go	(2) Neglect	(3) Cook	(4) Unfaithful
Post	-0.037	-0.022	-0.022	-0.061*
	(0.037)	(0.036)	(0.035)	(0.036)
Tvfreq	0.026	0.031*	0.015	0.005
	(0.016)	(0.017)	(0.016)	(0.014)
Radiofreq	0.001	-0.007	-0.014	-0.021
	(0.014)	(0.014)	(0.010)	(0.013)
Tvfreq*Radiofreq	-0.017	-0.02	-0.002	0.0004
	(0.013)	(0.014)	(0.011)	(0.015)
Post*Tvfreq	-0.015	-0.005	0.003	-0.0003
	(0.021)	(0.017)	(0.019)	(0.020)
Post*Radiofreq	0.019	0.026	0.023	0.038**
	(0.017)	(0.018)	(0.018)	(0.016)
Post*Tvfreq*Radiofreq	-0.028*	-0.024	-0.025	-0.028**
	(0.017)	(0.018)	(0.020)	(0.013)
Education	-0.013***	-0.01***	-0.01***	-0.011***
	(0.001)	(0.001)	(0.001)	(0.001)
Location	0.04***	0.036***	0.045***	0.045***
	(0.008)	(0.008)	(0.006)	(0.008)
Other controls	Yes	Yes	Yes	Yes
State fixed-effects	Yes	Yes	Yes	Yes
Observations	201,089	201,239	201,045	199,360

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The individual reasons for accepting violence are- 'Go' (the wife leaves the house without telling the husband), 'Neglect' (she neglects the house or children), 'Cook' (she does not cook properly), and 'Unfaithful' (he suspects her of being unfaithful).

Table 5.5: Results by state- marginal effects

	Andhra Pradesh	Arunachal Pradesh	Assam	Bihar+ Jharkhand	Delhi	Goa	Gujarat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Post	-0.011	0.151***	-0.24***	0.0310**	0.167***	-0.184***	0.176***
	(0.020)	(0.037)	(0.022)	(0.013)	(0.033)	(0.053)	(0.021)
Tvfreq	0.049**	0.050	0.013	0.055*	0.040	0.025	-0.015
	(0.020)	(0.044)	(0.034)	(0.029)	(0.030)	(0.051)	(0.022)
Radiofreq	0.058**	0.029	0.094***	0.0437**	0.137**	0.061	0.001
	(0.024)	(0.048)	(0.028)	(0.022)	(0.065)	(0.074)	(0.033)
Tvfreq*							
Radiofreq	-0.066*	0.070	-0.102**	-0.124***	-0.091	-0.069	-0.026
	(0.034)	(0.066)	-0.044	(0.036)	(0.068)	(0.081)	(0.040)
Post*Tvfreq	-0.005	-0.004	0.044	-0.105***	-0.081**	-0.005	-0.011
	(0.025)	(0.054)	(0.041)	(0.032)	(0.041)	(0.061)	(0.029)
Post*Radiofreq	-0.002	0.019	-0.059	-0.015	-0.091	-0.112	0.124**
	(0.048)	(0.074)	(0.041)	(0.032)	(0.073)	(0.096)	(0.053)
Post*Tvfreq*							
Radiofreq	-0.066	-0.078	0.047	0.139**	0.031	0.155	-0.018
	(0.061)	(0.099)	(0.062)	(0.054)	(0.092)	(0.108)	(0.063)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,134	2,342	5,932	13,024	5,433	3,502	7,163

Notes: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.5: Results by state- marginal effects (cont.)

	Haryana	Himachal Pradesh	Jammu & Kashmir	Karnataka	Kerala	Madhya Pradesh+ Chhattisgarh
	(8)	(9)	(10)	(11)	(12)	(13)
VARIABLES	Accept	Accept	Accept	Accept	Accept	Accept
Post	0.24***	0.038	-0.062*	0.134***	-0.057	-0.318***
	(0.021)	(0.027)	(0.038)	(0.022)	(0.036)	(0.013)
Tvfreq	0.006	-0.028	0.144***	-0.058**	-0.116***	0.009
	(0.024)	(0.027)	(0.035)	(0.027)	(0.035)	(0.019)
Radiofreq	0.059	0.042	0.035	-0.099***	-0.048	-0.048*
	(0.044)	(0.034)	(0.034)	(0.025)	(0.033)	(0.028)
Tvfreq*Radiofreq	-0.055	-0.030	-0.092*	0.037	0.106**	-0.012
	(0.047)	(0.039)	(0.047)	(0.034)	(0.043)	(0.035)
Post*Tvfreq	-0.048	0.010	-0.217***	0.039	0.162***	-0.038
	(0.031)	(0.034)	(0.051)	(0.032)	(0.043)	(0.023)
Post*Radiofreq	-0.031	0.067	0.017	0.01**	0.056	0.118***
	(0.066)	(0.056)	(0.056)	(0.039)	(0.048)	(0.036)
Post*Tvfreq*Radiofreq	0.017	-0.062	0.039	-0.091*	-0.122*	-0.06
	(0.079)	(0.052)	(0.071)	(0.051)	(0.063)	(0.048)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,339	5,884	4,239	9,491	5,626	16,209

Notes: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.5: Results by state- marginal effects (cont.)

	Maharashtra	Manipur	Meghalaya	Mizoram	Nagaland	Orissa	Punjab
	(14)	(15)	(16)	(17)	(18)	(19)	(20)
VARIABLES	Accept	Accept	Accept	Accept	Accept	Accept	Accept
Post	-0.29***	-0.047*	-0.32***	-0.09**	-0.15***	0.13***	0.26***
	(0.020)	(0.026)	(0.031)	(0.033)	(0.023)	(0.018)	(0.027)
Tvfreq	-0.014	0.046	0.109*	0.075	0.16**	-0.028	-0.016
	(0.024)	(0.043)	(0.064)	(0.056)	(0.071)	(0.028)	(0.028)
Radiofreq	0.052	0.061*	-0.031	-0.001	-0.017	-0.029	-0.12**
	(0.043)	(0.037)	(0.059)	(0.037)	(0.042)	(0.023)	(0.055)
Tvfreq* Radiofreq	-0.094*	-0.051	-0.122	-0.047	-0.026	0.11***	0.049
	(0.048)	(0.047)	(0.095)	(0.064)	(0.094)	(0.037)	(0.066)
Post*Tvfreq	0.044	0.022	-0.164**	0.081	-0.154	0.058*	-0.010
	(0.029)	(0.046)	(0.073)	(0.059)	(0.096)	(0.032)	(0.035)
Post*Radiofreq	-0.040	-0.026	0.145**	0.079	-0.002	0.086**	0.26***
	(0.058)	(0.039)	(0.066)	(0.049)	(0.044)	(0.040)	(0.085)
Post*Tvfreq* Radiofreq	0.030	-0.013	0.11	-0.074	0.024	-0.17***	-0.16**
	(0.062)	(0.058)	(0.095)	(0.089)	(0.074)	(0.055)	(0.069)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,259	5,037	2,410	2,552	4,208	8,249	6,030

Notes: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.5: Results by state- marginal effects (cont.)

	Rajasthan	Sikkim	Tamil Nadu	Tripura	Uttar Pradesh+ Uttarakhand	West Bengal
	(21)	(22)	(23)	(24)	(25)	(26)
VARIABLES	Accept	Accept	Accept	Accept	Accept	Accept
Post	0.05***	0.16***	0.033	0.043	-0.16***	0.12***
	(0.015)	(0.041)	(0.027)	(0.035)	(0.011)	(0.016)
Tvfreq	0.038*	-0.043	0.017	-0.098**	6.7e-05	0.052**
	(0.019)	(0.043)	(0.023)	(0.044)	(0.018)	(0.024)
Radiofreq	0.051*	0.017	-0.006	-0.043	-0.005	0.05**
	(0.028)	(0.044)	(0.027)	(0.051)	(0.019)	(0.023)
Tvfreq*Radiofreq	-0.033	0.048	0.028	0.050	-0.011	-0.081***
	(0.037)	(0.056)	(0.033)	(0.070)	(0.028)	(0.030)
Post*Tvfreq	-0.068***	-0.068	-0.024	0.165***	-0.014	0.010
	(0.026)	(0.052)	(0.034)	(0.052)	(0.022)	(0.029)
Post*Radiofreq	-0.017	0.065	-0.042	0.034	-0.006	0.002
	(0.051)	(0.074)	(0.047)	(0.076)	(0.026)	(0.032)
Post*Tvfreq*Radiofreq	-0.032	-0.111	-0.071	-0.007	0.007	0.012
	(0.066)	(0.109)	(0.055)	(0.095)	(0.037)	(0.046)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,157	2,938	10,034	2,711	22,097	9,940

Notes: Standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.6: Heterogeneity by education- marginal effects

VARIABLES	(1) Accept
Post	-0.039
	(0.043)
Tvfreq	0.029
	(0.021)
Radiofreq	0.002
	(0.017)
Education	-0.008***
	(0.002)
Post*Tvfreq	0.011
	(0.029)
Post*Radiofreq	0.020
	(0.021)
Post*Education	-0.003
	(0.004)
Tvfreq*Radiofreq	-0.002
	(0.018)
Tvfreq*Education	-0.004**
	(0.002)
Radiofreq*Education	-0.003*
	(0.002)
Tvfreq*Radiofreq*Education	-0.0002
	(0.002)
Post*Tvfreq*Radiofreq	-0.030
	(0.022)
Post*Tvfreq*Education	0.0002
	(0.003)
Post*Radiofreq*Education	0.003
	(0.002)
Post*Tvfreq*Radiofreq*Education	-0.002
	(0.003)
Other controls	Yes
State fixed-effects	Yes
Observations	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.7: Heterogeneity by Location- marginal effects

VARIABLES	(1) Accept
Post	-0.067
	(0.051)
Tvfreq	-0.002
	(0.016)
Radiofreq	0.009
	(0.026)
Location	0.009
	(0.022)
Post*Tvfreq	0.001
	(0.021)
Post*Radiofreq	0.03
	(0.022)
Post*Location	0.032
	(0.027)
Tvfreq*Radiofreq	-0.024
	(0.020)
Tvfreq*Location	0.03
	(0.025)
Radiofreq*Location	-0.007
	(0.024)
Tvfreq*Radiofreq*Location	0.002
	(0.022)
Post*Tvfreq*Radiofreq	-0.045*
	(0.023)
Post*Tvfreq*Location	0.014
	(0.029)
Post*Radiofreq*Location	-0.009
	(0.019)
Post*Tvfreq*Radiofreq*Location	0.008
	(0.024)
Other controls	Yes
State fixed-effects	Yes
Observations	197,279

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 5.8: Channels for changing acceptance of violence- marginal effects

VARIABLES	(1) Money	(2) Daily Purchases	(3) Large Purchases	(4) Wife's Income	(5) Children	(6) Violence
Post	0.089***					-0.514***
	(0.028)					(0.016)
Tvfreq	0.021**	0.008	0.016	0.014*	0.009	-0.025
	(0.010)	(0.012)	(0.016)	(0.008)	(0.006)	(0.019)
Radiofreq	-0.003	-0.006	0.003	0.002	-0.001	-0.005
	(0.009)	(0.008)	(0.018)	(0.010)	(0.010)	(0.018)
Tvfreq* Radiofreq	0.024	-0.011	-0.031*	-0.001	-0.006	0.009
	(0.010)	(0.013)	(0.017)	(0.013)	(0.010)	(0.014)
Post*Tvfreq	0.010					0.056***
	(0.018)					(0.019)
Post*Radiofreq	0.006					0.028
	(0.026)					(0.020)
Post*Tvfreq* Radiofreq	0.001					-0.049***
	(0.028)					(0.018)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
State fixed-effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	42,853	67,258	67,488	66,868	67,483	81,995

Notes: Robust standard errors clustered at the state-level are in parentheses. *** p<0.01, ** p<0.05, * p<0.1. The measures of women's status are as follows: 'Money' (whether the female respondent has a say in how to spend household income), 'Daily Purchases' (whether the male respondent's wife has a say in making household purchases for daily needs), 'Big Purchases' (whether she has a say in making large household purchases), 'Wife's Income' (whether she has a say in how her income is used), 'Children' (whether she has a say in how many children to have). For all of these variables, the value is 0 if the wife does not have a say and 1 if she does, either alone or jointly with her husband. 'Violence' is a dummy variable for whether a woman has experienced domestic violence (0 if now, 1 if yes).

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