



HAL
open science

Towards Safe Spaces Online: A Study of Indian Matrimonial Websites

Vishal Sharma, Bonnie Nardi, Juliet Norton, A. M. Tsaasan

► **To cite this version:**

Vishal Sharma, Bonnie Nardi, Juliet Norton, A. M. Tsaasan. Towards Safe Spaces Online: A Study of Indian Matrimonial Websites. 17th IFIP Conference on Human-Computer Interaction (INTERACT), Sep 2019, Paphos, Cyprus. pp.43-66, 10.1007/978-3-030-29387-1_4 . hal-02553879

HAL Id: hal-02553879

<https://inria.hal.science/hal-02553879v1>

Submitted on 24 Apr 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

Towards Safe Spaces Online: A Study of Indian Matrimonial Websites

Vishal Sharma, Bonnie Nardi, Juliet Norton, and A. M. Tsaasan

UC Irvine, CA, USA

{vishals1, nardi, jnnorton, tsaasan}@uci.edu

Abstract. We studied Indian matrimonial websites that facilitate arranged marriages, focusing on how they are designed to foster safety and inclusivity. We conducted 20 interviews with marriage seekers and parents to understand how they use the sites. We examined government policy, technical affordances, human services, and the presence of the social network. We contrast matrimonial sites to dating websites in the Indian context. Matrimonial websites’ affordances suggest ways we might make other kinds of sites safer.

Keywords: Matrimonial Sites · Safe Spaces · Arranged Marriage · Safety · Inclusion · Marginalized Communities · Computer-mediated Communication · India

1 Introduction

90% of all Indian marriages are arranged marriages [59, 83]. Indian matrimonial websites offer what we refer to as a “safe space” by helping family members *stay involved in and watching over the matrimonial process*. They promote inclusivity by *facilitating spousal search for persons from marginalized groups including the disabled, widowed, divorced, and HIV positive*.

Meeting someone online in any context is fraught with dangers—from physical safety to fraudulent financial dealings to deceptions of greater and lesser magnitude [26, 58]. The perils of dating websites are well known (see [14, 22, 86]). Vulnerable individuals operating more or less solo are often taken advantage of [45].

Such vulnerability has not historically been a problem in India, where people have lived in co-located joint families of three to four generations taking part in shared activities [16, 69]. These activities include arranging marriages; the extended family and friends participate in all stages of the matrimonial process, from spousal search to the wedding, and even beyond as the couple adjusts to a new life. However, urbanization and influences from other cultures have transformed Indian family structure, with a decreasing number of joint families and an increasing number of nuclear families [69]. As families engage in less daily interaction, there are fewer opportunities for the extended family to take part in the matrimonial process [4, 69]. Matrimonial websites open the pool of potential spouses to those beyond the family’s immediate social network, a network that shrinks as the Indian diaspora grows.

We use the concept of safe space from the work of Scheuerman et al. [67] who studied safe spaces for transgender people. They defined a safe space as a “conceptual space

... to denote safety from any emotional harm and othering (being treated as abnormal or alien)". We use the work of Karusala and Kumar [38] who studied women's safety in India. They emphasized the role of the *social network* in providing safety by observing that women felt safe when *family or friends were present and concerned about their safety* [38]. These broad concepts of safety go beyond the specific populations these authors studied.

Safety and inclusivity are related: if a person is excluded from a social space, online or offline, the absence of like-minded others reduces the chances of finding help in unsafe situations and in preventing unsafe situations from arising in the first place. The presence of social support creates an inclusive space, providing safety to form relationships. For example, the internet affords a safe space for queer people to explore their sexuality in the presence of sympathetic others [11, 67]. We define a safe space as an environment where the presence of a social network has the capacity to create safety, both social and psychological.

A key motivation for our study is to respond to Al-Dawood et al.'s [5] point that "[The] HCI literature has chiefly focused on how technology is used in cultures where premarital relationships ... such as dating, flirting, and mixed-gender gatherings are the norms and accepted." Indian matrimonial websites were introduced in the 1990s, and have been used extensively [53], yet they have not been studied very much. For example, since 2006, over 26 million people made use of Matrimony.com [81], but HCI research scarcely touches on these websites. To the best of our knowledge, this paper is the first HCI study to explore the features and services of matrimonial sites and how they operate as a safe space. We ask the following research questions:

RQ1: How do matrimonial websites foster safety and inclusivity?

RQ2: How to foster safety and inclusivity on social networking and dating sites?

We discuss how Indian matrimonial websites build on traditional cultural values of Indian arranged marriages rather than disrupting them. We explore how tradition and history can be values in design. Blevis et al. [12] note that, "As designers we are up against a culture of planned obsolescence...that [fails to] recall and sustain history—sometimes very ancient history." We investigate safety and inclusivity through an empirical examination of matrimonial sites and analysis of interviews with users. This paper has multiple contributions: (a) to understand how digital technology supports a widely practiced form of marriage; (b) to understand how matrimonial websites have carefully designed technical affordances and social supports for promoting safety that may be useful in other contexts; and, (c) to promote reflective HCI that critiques the way we conduct and approach research impacting people globally (see [21, 78]).

2 Related Work

We discuss research related to safe spaces in three topical areas: children's use of the internet, online queer communities, and online dating.

2.1 Online Platforms for Children

The increase in children's use of the internet has raised questions regarding safety, and the literature has provided foundational work that informs our own. The HCI community has studied parents' concerns and involvement in sharing their children's information online [7, 19, 29, 48, 87]. Online safety measures for children include regular communication between parents and children [27], direct parental participation in children's internet use [32], blocking software and filters [19], and community education [77]. Ammari et al. [7] note that parents follow *preventive strategies* such as telling family members their preferences for sharing their children's content, and creating separate profiles for the children. Parents use *corrective strategies* such as insisting others remove content related to their children [7] and *parental disclosure management* such as deciding with their partner what child-related content to share online [7]. However, parents may post about their children's behavior, development, and appearance [48]. It is not always clear when parents freely share and when they attempt to limit their children's online exposure.

2.2 Online Queer Communities

Members of the queer community face challenges offline including social exclusion [64], bullying [57], harassment [57, 90], threats [57], verbal taunts [90], and mental distress [64]. They may be subjected to disapproval and derogation [41]. Thus, many turn to the internet for a measure of safety. Sometimes anonymity allows them to explore and discuss their sexuality [55]. The self-selected nature of online communities allows queer people to find others who will be accepting [67]. Woodland [88] observes the formation of virtual queer spaces to "provide safe(r) spaces for queer folk to gather." Fraser [28] notes that "Websites designed by or for queer youth ... [provide a] safe space devoid of homophobia ... [to] explore sexuality, find information, and make friends."

Roy [65] observes that the internet has become an essential part of the Indian queer movement, noting that in the 1990s, the internet provided a safe space when offline contact among members was impossible [47]. Bhattacharjya and Ganesh [11] argue that the internet helps the Indian queer community by buttressing transnational queer rights movements [11], noting that "the need for [a] safe space is probably the single most important factor that underlies the formation of digital queer spaces" [11]. The presence of peer support in queer communities is a crucial part of safety, and we build on this observation in our formulation of space spaces with respect to arranged marriage.

2.3 Online Dating

The most obvious comparison to matrimonial sites is dating websites, so we review the literature on this topic. Dating websites enable people to meet without implying that marriage will be of interest [6]. Philips and Morrissey [58] wryly observe: "[T]he online world is not [entirely] a safe place and the internet is not necessarily a super-highway to love." Anonymity allows people to behave differently than they would in real life [25, 34]. They may create an "ideal self" which is not authentic [24, 30]. They may misrepresent information about physical appearance, age, criminal history, and

marital status [25, 34, 84]. Serious misrepresentations reduce safety, giving rise to harassment [45], romance scams [14], and identity fraud [86]. Online dating may result in financial loss, blackmailing, and exploitation of a participant's vulnerable emotional state [22].

Masden and Edwards [45] note that harassment is a common issue. Smith and Duggan [73] report that 42% of female participants and 17% of male participants experienced harassment on dating websites. Witty [86] highlights identity fraud including creating profiles with stolen pictures, declaring love at a very early stage, and requesting to move the relationship offline in order to financially deceive. Safety in online dating is a complex and evolving concern [60]. Daters are aware of at least some of the pitfalls. They may try to overcome them by reading signals and deconstructing cues [82] such as email addresses [20], personal homepage links [40], and the messages' timing [85]. Ellison et al. [24] underline the importance of even small cues in assessing a potential date, such as spelling and the way messages are presented.

3 Background

To understand the context of this paper, basic information about practices of Indian arranged marriage and the working of matrimonial sites is needed. Much of this information may be unfamiliar to many of our readers and will be useful in interpreting our findings.

3.1 Arranged Marriage in India

Historically, the process of finding a spouse in India involved long discussions between family members that eventuated in unanimous agreement [17]. This pattern still holds and has not changed despite many other changes in Indian society [59]. Marriage is not merely the union of two individuals [69], but an alliance between two families [8]. Marriage thus has a huge impact on families' everyday lives, and its arrangement requires meticulous attention [63]. Marriage seekers' relatives and neighbors discreetly (even secretly), perform background checks on potential spouses and the potential spouse's family, examining matters such as infidelity and criminal activity.

If both families find a potential match desirable, they move ahead with the next stage in which the marriage seekers meet, talk, and exchange life histories, goals, and desires [69]. These meetings take place in a formal setting, in the families' presence [59]. If the potential spouses like each other, they confirm their consent to marry. An exchange of gifts between the families then marks the commencement of the new relationship, followed by the marriage ceremony [59].

Xiaohe and Whyte [89] note that arranged marriages may be misconceived as forced marriages. However, arranged marriage typically requires the informed consent of the future spouses [79]. In South Asian countries including India, Pakistan, Indonesia, and Bangladesh [50, 56, 59], as well as most Middle Eastern countries [5, 56], arranged marriages are the most common means of finding a spouse. Penn [56] remarks that arranged marriages, "[practiced by] half of the world's population ... will become more pervasive in the future since they predominate in countries with high rates of population growth."

3.2 Indian Matrimonial Websites

Most users of matrimonial websites in India utilize three websites: Shaadi.com, Bharatmatrimony.com, and Jeevansathi.com [83]. Business has grown dramatically as the sites provide efficient spousal search when conventional methods of locating a spouse are not working [37]. They allow users to create profiles within regional, religious, community-specific, and linguistic sub-sites [83]. For instance, a marriage seeker can create a profile on Shaadi.com’s regional sub-site, Tamilmatrimony.com.



Fig. 1. Profile creation on Shaadi.com

Matrimonial websites allow the marriage seeker and friends and family to create and contribute to an extensive online profile with rich information about the potential spouse (Fig. 1). Such information is consistent with typical Indian practices of thoroughly evaluating potential spouses. For example, the mother of a marriage seeker might begin a search by setting up an online profile for her son. She specifies his personal information such as age, weight, and marital status, as well as his preferences for food, alcohol, and smoking. Profiles specify caste, geographic location, native language, the number of siblings, parents’ occupations, and time and place of the marriage seeker’s birth for horoscope matching [76]. Profiles include education and career-related information such as the marriage seeker’s salary and employer, hobbies and photos [76]. The profile shows the profile creator and the marriage seeker’s relationship (Fig. 2). The profile creator examines the profiles of potential spouses and shortlists them based on compatibility with the marriage seeker. Everyone involved, including the marriage seeker, discusses the profiles to further narrow down the selection. Once everyone approves the profiles, the profile creator sends connection requests to potential spouses. A connection request is similar to a friend request on Facebook, with a brief personal note including a greeting and contact information. Although there are a few Indian-produced dating websites for casual dating, people use only matrimonial websites when there is a serious intent of marrying.

Here is a typical marriage seeking scenario taken from the “Marriage Success Stories” section of Jeevansathi.com. Vasudha, a 31-year-old woman, describes her matrimonial experience:

When [my family and I were searching for a potential spouse] I received a request from [a] Delhi guy named Gaurav ... [Our] parents spoke to each other and found it fine to take [the relationship] forward ... We spoke on calls for around two months and then we met ... After around 6 months our parents met, everybody was fine to take it forward ... We got engaged on 26th Nov 2017 and finally married on 11th Dec 2017.

In June 2016, the Ministry of Communication and Information Technology mandated that matrimonial websites authenticate users with proof of identity and address [80]. It is compulsory that “Service providers should make a declaration that the website is strictly for matrimonial purposes and not a dating website and should not be used for posting obscene material” [49]. The government requires records of IP addresses: “Matrimonial websites should store the IP address of the profile creator for one year from the date of activation” [49]. The mandate advised matrimonial websites to prominently and regularly display their safety measures and to “[caution] users against possible fraudsters who asks for favors, money, etc.” [80].

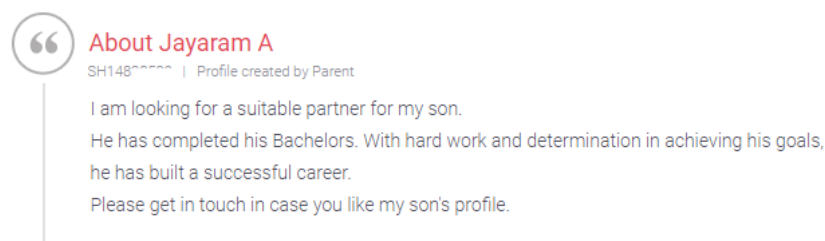


Fig. 2. Profile creator and marriage seeker’s relationship shown on Shaadi.com

The government requires that matrimonial websites not allow login until the company has verified the phone number and email address of the profile creator. Verification is performed through One-Time Password, valid for one login. Then the website staff screens the profile before it goes live. After an initial screening, every time the user updates the profile, the staff screens again. The websites explicitly state on their homepages that they provide services only to marriage seekers. For example, Jeevansathi.com says: “Jeevansathi is only meant for users with a bonafide [sic] intent to enter into a matrimonial alliance and is not meant for users interested in dating only.” Once documents are uploaded and verified, the websites provide trust badges. For example, Bharatmatrimony.com provides five trust badges: an identity badge that requires uploading a government-issued ID, a professional badge to upload certificates of education, a social badge to link Facebook or LinkedIn profiles, a reference badge to add personal or professional references, and an employment badge to upload a pay slip or proof of employment.

Matrimonial websites take verification very seriously. Staff verify the marriage seeker’s identity and address by checking public documents such as the driver’s license and passport. Because the websites are supervised by a government agency, the Cyber Crime Investigation Cell, the sites have access to official records. Jeevansathi.com checks the credibility of a profile by an in-person visit to the marriage seeker’s address. A “relationship executive” phones within 48 hours of profile creation and schedules a visit, collecting copies of the official documents to confirm the date of birth, address, highest educational qualification, occupation, income, and marital status. In case of a

discrepancy between the information on the profile and the documents, the websites suspend the profile until clarifications can be obtained.

The websites also provide easy reporting of threats to the security team. For example, here are few threats that a marriage seeker can report on Shaadi.com:

1. “Fake/Misleading profile: incorrect profile information, the phone number is incorrect/unreachable, more than one profile, photo belongs to someone else.”
2. “Member is already married/engaged: I know this person, told by a member over chat/phone, found through social media/acquaintance.”

Some matrimonial websites are responsive to diverse life circumstances as people seek suitable marriage prospects. For example, they provide services to the divorced and widowed, and people whose marriages have been annulled. The marriage seeker selects the marital statuses acceptable to him or her while creating a profile. For example, Jeevansathi.com has these statuses: “Never Married”, “Awaiting Divorce”, “Divorced”, “Widowed”, and “Annulled”. Once the marriage seeker creates the profile, the website does not allow a change in the marital status in order to protect the integrity of the information. Other sites have branched out to other demographics, e.g., 40plus-matrimony.com caters to those over 40. Matrimonial websites reach out to people who are not English literate, who do not have access to digital services, or who may not be digitally literate enough to use such services. The websites have “matrimony bureaus”, which are local agencies with human mediators to assist in the online process [54]. A relationship executive meets with the marriage seeker and helps set up a profile. The executive navigates through potential spouses’ profiles and describes the profile information to the marriage seeker who notes the details of profiles they like. Later the marriage seeker shares the information with the family for shortlisting. The executive continues to be available until the last stage of marriage.

4 Methods

We interviewed 20 people including eight men and 12 women. Participants ranged in age from 25 to 60. We interviewed two parents, three siblings, a married couple, 11 prospective spouses, and two matrimony bureau personnel. 15 participants were living in India, one in Canada, and four in the United States at the time of the interviews. The families of those in the U.S. and Canada and their potential spouses were living in India. Participants were from the Hindu religious community which comprises 80% of India’s population [36]. We recruited participants using personal contacts, snowball sampling, and by posting recruiting messages on social media. Recruiting and interviewing took place from February–April 2018.

The first author interviewed people over the phone in English, one of the official languages of India and spoken widely [9]. We chose telephone interviews because participants were living in various locations. Each interview took between 45-60 minutes and was audio-recorded. All participants were anonymized in transcripts. We have included grammatical errors in interview segments quoted in the Findings. We asked participants about their online matrimony process, for reflections on their experiences, and what they think of the safety measures that matrimonial websites provide.

We studied Shaadi.com, Bharatmatrimony.com, and Jeevansathi.com, analyzing their affordances and some user posts. We created dummy profiles because profiles were not accessible without registration. We did not personally contact anyone on the sites. Names used in the paper are pseudonyms. We followed a grounded theory approach [18] to analyze interviews. The authors met weekly for five months, first reading through the data and performing coding at the sentence level, iterating multiple times. We used codes such as “social network presence”, “government involvement”, “policy implementation”, and “technical affordances”. Then we grouped the codes into higher level categories such as “inclusivity”, “safety”, “trust”, “empowerment”, and “credibility”. Out of these, we formed higher-level themes. We then found quotes in which participants’ thoughts clearly expressed their ideas and feelings on the topics we present in Findings. The different stakeholders’ perspectives—marriage seekers, parents, siblings, and matrimony bureau personnel—were all considered to provide validity to our work.

5 Findings

We discuss how matrimonial websites provide safety to marriage seekers. Our participants compared dating websites to their use of matrimonial websites. We discovered that matrimonial websites not only provide measures of safety to all who use them but also open new marital possibilities of inclusion for people with disabilities and for inter-caste marriages.

5.1 Alternatives to Dating Websites

We found three principal features of Indian matrimonial sites that foster safety: (1) They support the involvement of family and friends in the search for a spouse; (2) They provide detailed information for selecting a spouse, integral to the process of finding a spouse in an arranged marriage; and, (3) They perform careful profile verification to protect users from deception and shady practices. These three features stand in contrast to dating websites which do not provide detailed information, do not support the family’s participation, and do not provide information verification.

Our interview participants reported that on dating websites a person cannot be sure about another person’s intentions. For example, Aarti, a 27-year-old woman working as a software engineer in Bangalore, said:

“I have been on Tinder, but my motive to be on Tinder was definitely not to find a life partner. I used Tinder because I moved to a new city where I did not know anyone. So, I thought that it would be a good way to connect with new people and to get to know the city a little better. But I personally have never thought about these dating websites as an avenue for exploring [and searching] life partner. I think it is the general perception around these dating websites. Obviously, people also have very different motives on these dating websites. Due to such things, one does not consider them [for searching spouse] ... [A matrimonial website] I think is a formal platform and you know that there will be high chances that only people who are interested to get married would be present on the platform ... [because it is] only dedicated to the purpose where guys and girls meet so that they can get married.”

Aarti told us that on matrimonial websites if she feels unsafe or if someone threatens her *“I can at least ... contact the website administrators. I can report the issue [or threat].”* She mentioned that on dating websites *“[Y]ou cannot do this ... you have nowhere [and no one] to reach out [in case of a threat].”*

Interviewees stressed that matrimonial sites facilitate the involvement of family and friends unlike the complete lack of such involvement on dating sites. Simran, a 29-year-old with a business degree, worked in human resources at Fidelity Investments in Bangalore. Her parents lived near New Delhi. She told us that *“[My] parents created [my] profile on Jeevansathi.com, Shaadi.com, and Bharatmatrimony.com ... [My parents and I] were active on these websites. If someone has shown interest in [my] profile, I would go and check the profile. If I like it ... I will discuss it with my parents. Similarly, if my parents like a profile, they will tell me about it and I would go through [the profile].”* She mentioned that *“I started using [matrimonial websites] around 2013 ... It took [me] two and a half year to find [a] spouse ... So, everything was finalized in 2015 ... Before that, I met at least 20-25 [prospective spouses].”* She ended up meeting her husband on Jeevansathi.com. After the marriage, Simran moved to Connecticut with her husband who works at Infosys as a software engineer. Simran compared dating sites and matrimonial sites:

“[W]hen your family is out of the scene, deep down you know it is a bit dicey and you cannot rely on [a dating website] ... if I meet someone through Tinder, I don’t know whether to trust that person. In matrimonial websites, generally, my parents would contact a prospective mate’s parents. So, they would have spoken to each other. We have the parents’ number and the potential mate’s number. So, if something does not go well, we know where to contact the parents.”

Simran further added that dating websites do not provide crucial details required for arranging a marriage: *“In India, there is a lot of emotions around marriage ... [Through dating websites] I might know just one side of [the person]. It is not possible that I would know about his parents, siblings, background, how [he] behaves at home, with [his] parents or with the extended family members.”*

Yashika, a 25-year-old studying for a Ph.D. in Economics in New Zealand, explained how her sister had found her husband through a family member, emphasizing the importance of the social network. She said *“We knew my brother-in-law’s uncle. He was a close family friend ... [M]y brother-in-law’s mom is a relative of my Aunt ... [M]y mom and dad went to my brother-in-law’s house [and] they liked the family. They liked him. After a few meetings, they said the family is cultured and educated and then we went ahead with the proposal.”* She noted the presence and involvement of her parents and family when her sister was seeking a spouse. At the time of the interview, Yashika’s family was searching for a spouse for her on matrimonial websites as she had not similarly met anyone in her family’s social network. She told us that in India, *“Marriage is between two families not between two individuals.”* Therefore, the family’s presence and involvement throughout the process is essential. She added:

“I am seeking for seriousness in the relationship, rather than just dating or being in a relationship ... I feel that dating websites are more or less for a time pass [because your family is not involved]. It’s like no strings attached kind of policy on dating websites.”

Typically, in arranged marriage, the marriage seeker's family employs multiple methods for assessing the credibility of a potential spouse's information. Though marriage seekers may now use matrimonial websites, they still cross-verify the information offline. Matrimonial websites have eased the cross-checking. For example, Aarti said:

"On matrimonial websites, you have information about the family, ... the educational, professional background of the family and the potential spouse, ... the place where the [potential spouse] works or the field in which this person works, how much he earns, and where he lives. So, it's much more credible because you want to run an [offline] background check which becomes...easier.

Sheila, a 52-year-old mother in Chennai, found her daughter-in-law through a website. Her son worked as a civil engineer in a construction firm in Los Angeles. The daughter-in-law was employed at a software firm in Bangalore. After the marriage, she moved with her husband to California and found a job as a software engineer. Sheila explained how the process of verifying the potential spouse's information worked:

"[For my son,] after we selected the [potential spouse's] profile, we told our relatives who were living in the same area to check [her] background. If everything is fine, then only we [will proceed] ... [We found that] her father [was] related to my nephew. We contacted [my nephew], and he said it is a very good family and everything is fine. Then we moved ahead [with] the process."

Abhishek, a 32-year-old managing an IT firm in Hyderabad, met his wife through Jeevansathi.com. He used the website for two and a half years. He told us:

"[When] things got serious, I tried to do some background verification through my own links. Someone I know in that particular city. It is not difficult to find someone who can probably help you to figure out if a person is the same as what the person claims to be."

Abhishek himself searched for his spouse. He told us he did not involve his parents until he conducted a background check and was sure the profile was authentic. He emphasized that the detailed information on matrimonial websites is very important because "[M]arriage is about whether another person can fit into your family." The information helps in assessing the spouses' compatibility compared to, as he said, "a dating website where a person is writing about hobbies, life's motto."

Sheila and Abhishek's accounts indicate the importance of human verification for assessing the credibility of the potential spouse's information. Building on this understanding, matrimonial websites provide an in-person verification service through the relationship executive. Raghav, a 31-year-old with an MBA working in human resources in an IT firm in New Delhi, explained:

"[The officials from a matrimonial website] will visit your house ... [and] check whether you are a real person who has registered with that website. Once they visit and check then they put an authentication badge that this profile has been verified by us."

Sheila told us:

"In my brother's case, actually he appointed some person [for profile verification] ... He told me [that] if you want, that service can be provided by the matrimony website itself. He used this service and he got all the information [verified]."

Matrimonial websites perform thorough verification technically and through human mediators. The detailed information generated, and involvement of family, create a safe space to marriage seekers as they perform a matrimonial search.

5.2 Safe Spaces for People with Disabilities

Matrimonial websites offer a socially and psychologically safe space for people with disabilities. This safety is a social breakthrough in India because people with disabilities face antipathy and social rejection offline [2, 3]. A person with a disability is often shunned from social gatherings [3, 72]. People fear that a disabled person might become a burden on the family [2, 3] if they cannot perform household chores and because they often seek practical and/or financial assistance [2]. Disabled persons are often perceived as asexual [46], sexually deviant [2], infertile [3], incompetent to raise children [3], and unsuitable for marriage [74]. Such stereotypes reduce marital prospects [2]. Sivanandan [72] comments that parents feel pressure about their disabled child's future settlement, security, and care.

Ashok, a 37-year-old man with a physical disability and a singer by profession, whom we interviewed, told us:

“[D]isability reduces your market value to a drastic extent [offline]. If I did not have a disability I would be, probably, worth more ... You think a guy walking with a crutch, living a low life can approach a girl and say hi? ... There is no freaking way I would ever stand a chance to go approach some random girl or her parents and say I am interested in your daughter. That would have never worked out at all. People consciously avoid [me] in the social gatherings.”

For disabilities that are not immediately visible, such as infertility, the family tries to hide the marriage seeker's condition to the extent possible [2, 72]. Though the Hindu Marriage Act permits the annulment of a marriage when a spouse's disability is concealed before marriage, such concealment still occurs [2, 72]. Even though these marriages usually result in annulment [72], parents may still act out of desperation and hope that in their child's case, the marriage will succeed. For visible disabilities such as impaired mobility, a woman may marry a much older or divorced man [2], while a man usually marries a woman from a poorer community or from a lower caste [2].

The affordances of matrimonial websites improve the situation a great deal. Disabled persons do not have to conceal impairments. When a potential spouse accepts a connection request, the disability has already been made known because it is part of the information in the profile. For instance, Ashok told us:

“[Matrimonial websites] have opened up that minuscule window of opportunity that a man or a woman who has created his own profile can now connect to [profiles across] the country and maybe they meet someone there, who knows.”

Ashok began by creating matrimonial profiles for his cousin, which then encouraged him to create his own profile. He explained:

“A couple of years ago I reached out to one girl through the matrimonial website. She was working in IT. Her parents were unbelievably good. They responded to my request.”

I mentioned that I have a disability and they said they know [because it was mentioned on the matrimonial profile] but they don't want to judge me on that basis. They gave me the email address of their daughter and said talk to her and if you guys get along with each other we will talk further."

Although Ashok and the young woman did not end up together, the matrimonial site provided an opportunity to find a desirable potential spouse and facilitated connection.

Ramesh, a 55-year-old man with a disabled daughter, shared his experience of finding his daughter a spouse on Abilitymatrimony.com, a sub-site of Bharatmatrimony.com. Here is the fragment of what Ramesh wrote on Abilitymatrimony.com:

"One fine evening I was having my tea, a surprise call came from Delhi and the person asked [whether he could marry my daughter]. I said yes but who are you and [what do you do?] He detailed [that] he was [disabled] like my daughter and they [the marriage seeker and his family] were from Bihar and the same caste [as ours]. I asked when they can come to their village [as they were living somewhere else because] I would like to meet [them]. Within a month they came. I visited their home, met with [the] boy and we agreed about marriage ... Now both [my daughter and son-in-law] are [living happily]."

Challenged	None	Physically - From b...	Physically - Due to ...	Mentally - From birth	Mentally - Due to a...
Nature of Handicap	Cripple	Hearing Impaired	Visually Impaired	Speech Impaired	Others
HIV+?	Yes	No			

Fig. 3. Representation of marriage seeker's disability on Jeevansathi.com

Ashok, born with cerebral palsy, lived in Chennai. He used Tinder and OkCupid for more than two years. He compared dating to matrimonial websites and discussed the drawbacks of Tinder and OkCupid:

"In my opinion ... dating sites such as Tinder or OkCupid ... have [not] worked out to be great [for me] ... Tinder kind of works, but it does not work for ordinary [and disabled] people. It only works for highly attractive male and female [persons]... [On dating

websites] there were a lot of people that have reached out to me and were surprised when I met them in person. So, after all of these years of having unpleasant surprises I have made this explicitly clear to mention in the very first sentence of my description on the profile that I have a physical disability ... I make sure that they know that they are talking to a person with a disability."

While dating websites provide free form text boxes for personal information, they have not yet normalized the ability spectrum with fields to mention and categorize disability. It thus becomes a somewhat awkward burden and marginalizing experience for the disabled person to explain.

While parents may try to hide a marriage seeker's disability, the matrimonial websites normalize disability through the affordances of the user interface. Fig. 3 shows a typical example. Jeevansathi.com has five options to categorize disability: "Physically-From birth", "Physically-Due to accident", "Mentally-From birth", "Mentally-Due to accident", and "None". A marriage seeker can select the nature of disability: "Cripple", "Speech Impaired", "Hearing Impaired", "Visually Impaired", and "Others". The website also provides options to represent HIV status (Fig. 3). These categories bring disability into the open, indicating that it is merely part of a profile like education, personal preferences, or occupation.

5.3 Safe Spaces for Inter-caste Marriage

Matrimonial websites foster safe spaces for inter-caste marriage. In India, around 1200 BC [23], caste, i.e., social distinctions based on occupations [10, 66], originated as part of the social order. People preferred marrying within the caste because of similar culture and economic interests [8]. However, over time, caste grew into a rigid hierarchy that has led to social exclusion [8]. Even now, many people feel they want to marry within their caste [8, 37]. But some have started to accept inter-caste marriage because of growing egalitarian perspectives owing to social and demographic changes such as education, reduction in gender segregation, changing work patterns, and the rising age of marriage [39].

In the interviews, participants noted that though they would be open to inter-caste marriage, offline it is difficult to connect to potential spouses outside one's caste because usually people from different castes do not socialize. For example, Ashok belonged to an orthodox Brahmin family but was open to inter-caste marriage. He said:

"[I]f you reach out to people [offline] outside your caste, the response rate from not belonging to your caste, regardless of [whether] they are from the higher or lower class, seems to be poor. Even if there is a response, culturally [and] lifestyle-wise you [both] don't seem to kind of get along or go along that well ... I have engaged with people outside of my caste [offline] ... [and] things have never worked out."

However, Ashok noted that the potential spouses he contacted offline were still seeking intra-caste marriages. The matrimonial sites open up a bigger, different pool of potential spouses by including those who are open to inter-caste marriage. Raghav, who met his wife through a matrimonial website, emphasized the importance of the wider pool:

“I frankly wanted to register to these websites because I wanted to keep my options open. I was not inclined to selecting only a girl [from my caste]. So, finally, I married a girl [from outside my caste] ... So, it has been an inter-caste arranged marriage for me. So, I never wanted to focus on a specific [caste] which happens [in an offline search]. I wanted to be open and meet a person whom I like not [necessarily in] the [caste] ... [These websites] have [provided] a very helpful platform in terms of formalizing the process [and] giving you more options.”

Aarti, Raghav’s wife, told us that both the families were open to inter-caste marriage. Her mother saw Raghav’s profile and sent a connection request. Raghav liked Aarti’s profile and accepted the request. Raghav lived with his parents in Delhi. Aarti’s parents lived in Delhi, but she lived in Bangalore. Both sets of parents first talked over the phone. The families met and liked each other. Raghav then visited Aarti. They liked each other. Then they got married. Both well-educated families were unconcerned about a potential spouse’s caste. Aarti said:

“We did not have any filter based on the [caste] as such. In fact, my husband is not from my own [caste] and it is an arranged marriage through [a matrimonial website] ... Both, my husband and I were not fixated on the [caste] part. I am sure there are people who think this way that they can find [a potential mate] from their own [caste]. But we did not have any such filter.”

Raghav and Aarti told us that they liked each other because they shared common interests and each had the attributes the other was looking for. Raghav said that for him to select a spouse the “*very important factor was that [I have] ... a basic level of liking,...[and] basic level of chemistry [with her] ... I was looking for someone who is well-educated and comes from a decent family background ... I wanted to marry someone who is a little bit creative. So, [by] looking at the description of the profile I could judge that the person is creative.*” He mentioned that he liked Aarti because “*Her [profile] description was a little bit different. So, that piqued my interest. So, then I contacted her.*” Matrimonial websites provide a place of inclusion to marriage seekers like Raghav and Aarti seeking marital horizons beyond caste.

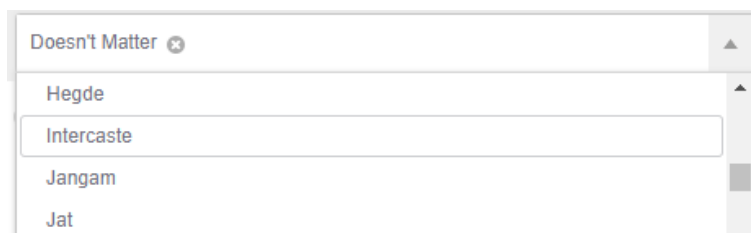


Fig. 4. Drop-down menu showing castes that the marriage seeker can select

Rahul, a 30-year-old with an MBA, worked at Oracle in Canada. His parents lived in India. His family conducted an extensive spousal search offline within their caste. They wanted to find a spouse whose education was on par with Rahul’s but they could

not find a suitable match. The family belonged to the Barber caste which tends to have a lower level of education. Rahul said:

“I come from a Barber [caste] which is a low caste in India ... there are not too many girls [in this caste] who are that much educated. At least in our vicinity. My relatives could not help me find a suitable match since three-four years”

Rahul’s family shifted to matrimonial websites for a bigger pool of spouses. At the time of the interview, Rahul and his family were still searching. Rahul told us that through matrimonial websites he was getting a bigger and better pool of potential spouses.

Fig. 4 shows the attribute to select acceptable castes. Marriage seekers can select specific castes from the drop-down menu or select “Intercaste”. The default is “Does not matter”. When a marriage seeker selects “Intercaste”, the search result shows potential spouses from castes other than that of the marriage seeker. For “Does not matter” the search shows potential spouses within and outside the marriage seeker’s caste.

6 Discussion

We discuss design implications to foster online safety and inclusivity broadly.

6.1 Designing for Online Safety

Dating websites, often rife with deception [25], would be more useful if they provided a measure of safety. Obada-Obieh and Somayaji [52] emphasize that “[D]ating websites, are not adequately served by standard security practices.” Our study found that, by contrast, security practices are a key part of Indian matrimonial websites, with their detailed information about prospective spouses, profile screening, easy reporting of threats, links to social and professional media profiles, and human services of in-person verification. Some of these services could be useful on dating websites. Obada-Obieh and Somayaji [52] argue that dating websites such as Tinder, Match.com, and Plenty of Fish should “verify the users they recommend” through means similar to credit card verification or security clearances. They should conduct background checks of the users to ensure profiles’ credibility [52].

An important means of ensuring safety on Indian matrimonial websites is the involvement of the national government. This involvement was very important to our participants. Shivam, a 29-year-old man who worked as an IT engineer told us:

“The rule that government imposed on matrimonial websites shows that the government is interested in the citizens online safety and will take proper actions if our safety is breached. This makes the matrimonial websites safer because we know if anything wrong happens, we can easily report to the police without any second thought.”

Gray [31], an attorney, points out that American dating websites are subject to no laws whatsoever to protect users from fraud and misrepresentation. If there is a problem, a user must search on their own for the perpetrator, a difficult and often futile task [31]. We agree with Gray that a policy along the lines of what the Indian government implemented could foster online safety. The government’s interest could help avoid the problems that plague dating websites today.

Safety is one of the few truly universal values we can point to. The creation and maintenance of safety (online and offline) require social and financial investments. If we do not make such investments, how serious are we about safety? The HCI community is slowly paying more attention to policy [33]. Shneiderman et al. [70] say that “[HCI] can influence education, commerce, healthcare, and government.” We emphasize that we can also influence policies regarding online safety. As the virtual world expands, what policies should be implemented to foster safety? This is a big question and one we hope the HCI community will continue to study.

We might reasonably ask how much of the safety of matrimonial websites is attributable to Indian cultural values and how much to the design of the websites. Clearly, it is some of both. Indian culture embeds safety in the matrimonial process through the involvement of family and the social network. But the design of matrimonial websites has also played a role through a carefully considered set of affordances and practices such as verification.

While the sites build on the traditional safety of family involvement in the matrimonial process, at the same time, matrimonial websites have challenged other traditional Indian values through designs that foster safety for marginalized groups: the disabled, divorced, widowed, HIV-positive. The government has gone even further than traditional culture in mandating safety as a value by making it legally actionable. This development is especially important in the context of changing residential patterns where nuclear families have less ready access to the resources of the extended family. If Indian matrimonial websites can provide effective technical affordances and human services to foster online safety, it seems likely that we can learn from them, and do a better job at online safety in other venues.

6.2 Designing for Online Inclusion

Designing for inclusion consists of designing, building, and managing a common space where people from varying communities participate [13]. Hourcade and Bullock-Rest [35] note that “When designing [for diverse populations] there is a need to connect to people’s needs, abilities, context, and daily realities.” This kind of design is not easy. How can we cater to the needs and capabilities of certain communities, and in doing so not exclude other communities? Ulrich and Eppinger [51] argue that inclusive design “[Is] very difficult [as]...providing access to [a certain group of users]...can make the [design] significantly more difficult to use by [general users].” Al-Dawood et al. [5] faced this issue in designing a Saudi Arabian matrimonial website. They observe that their design may not be applicable to all communities, and may favor certain value systems. They ask, “How do we avoid marginalizing a group of users with design?”

Indian matrimonial websites address the question by providing services for as many groups as possible, serving people with disabilities, the divorced or widowed, those with annulled marriages, older adults, HIV positive persons, and those seeking inter-caste marriages. The design fosters safety for various groups by reaching out to them in the context of emerging values (and markets for matrimonial products) in Indian society. It is no accident that the websites have made significant investments in understanding safety, designing for inclusion, and taking some risks by including those who are often excluded in traditional Indian society.

But matrimonial websites also leverage the shared traditional cultural value of Indian arranged marriage. In the West it is received wisdom that digital technology must be “disruptive” [68], encouraging people to discard what they have and replace it with something new. Industry manufactures products with the intent of having customers replace what they have just bought, and uses advertising to persuade consumers that their current products are obsolete and outdated [15]. Blevins et al. [12] argue that “To serve its own interests, our economic system produces incessant moments of disorder and disruption rather than graceful performative luxury, and tells us this is a good thing.” In Indian society, however, this pattern of consumption does not hold. People prefer and know the value of repair and renewal [43]. Indian matrimonial websites have taken care not to disrupt the whole culture. As we design technology, we should question the idea that disruption is always the better outcome.

Matrimonial websites have been financially successful by honoring traditional cultural values and disrupting only certain values. The sites’ annual growth is 130% compared to 88% for dating websites [1]. Over 12 million Indians use matrimonial websites each year to search for and connect to potential spouses [1]. Noticing the success of the sites, major U.S. firms have invested in them, e.g., Yahoo and Venture Capital invested \$8.5 million in Bharatmatrimony.com [69]. The HCI community can take a cue from these websites, building technologies that reinforce positive cultural values, and making some calculated risks in replacing certain values with better counterparts, just as the matrimonial websites have.

Indian matrimonial websites take inclusion seriously by providing in-person assistance through human mediators. Such mediation is important in many places where people have trouble using digital services for various reasons. In African and Asian countries, with a combined population of 4.8 billion people, only 1 in 5 have access to digital services [62]. In India, out of 1.3 billion people, only 50 million are English literate [61], though most digital services are in the English language [44]. Matrimonial websites overcome problems of access and language through human mediation, setting a good example for all of us who want to take inclusion seriously.

Although arranged marriage may sound exotic or even backward to many in the West, half of the world practices arranged marriage [56]. The many studies of dating websites we have are interesting and useful, but they are not especially relevant to half the world. We have a tendency in the HCI community to consider research in the West as applicable to or representative of the global population. Kou et al. [42] argue that “[The HCI community] favors the idea that studies conducted in Western countries such as the U.S. and the U.K. are more likely to produce ‘normal’ and putatively universally applicable knowledge ... [Whereas] studies of non-Western countries ... are expected to produce exotic, highly contextualized knowledge that does not travel beyond their borders.” Arranged marriage is not an exotic practice, and it is certain to become even more prevalent because of the higher rates of population growth in the countries where it is practiced [56].

Rastogi et al. [62] note that the next billion users of digital technology will come from the Global South, especially from India and China. Srinivasan [75] highlights that “[W]eb technologies [are usually] produced, designed, and built for Western audiences.” He argues that “The digital world need not solely be conceived in Western, elite

terms, but instead can and should be re-envisioned as a space that empowers the values, priorities, and ontologies held by global users from the ‘margins’, within the developing world [because these] users ... hold the potential to dramatically influence research on digital cultures, particularly around the question of whose voices drive the architectures, algorithms, and languages of new media” [75]. We argue, with Al-Dawood et al. [5], that HCI should normalize and encourage research in societies with different cultural values and practices. Shneiderman and Hochheiser [71] note that “[D]iversity promotes quality. The challenge of designing for experts and novices, English and non-English speakers, low-motivated users, users with disabilities, elderly users or children promotes creative thinking that leads to better solutions for all users.” We propose to shift from how we better design for inclusion to how we approach research in a way that honors inclusion more broadly. We hope to see more research that is itself inclusive of varying cultures and societies.

7 Conclusion and Future Work

We presented a qualitative study of how Indian matrimonial websites foster online safety and inclusivity. We argued the importance of the presence of the social network, government involvement, technical affordances, and human services in promoting online safety and inclusivity. We found that matrimonial websites have opened marital possibilities for people in marginalized communities of India, and for inter-caste marriages. Safety and inclusivity are broad and subjective values. Designing to foster these values for a particular group, considering its needs and capabilities, may exclude other groups. In our future work, we would like to explore contradictions that arise when the needs of different groups are in play, and how we can manage them for fairness and social good. We hope this study inspires prosocial work, creating and promoting safe spaces for diverse communities that cater to positive cultural values.

Acknowledgements. We would like to thank the reviewers for their constructive feedback. We thank Stacy Branham, Kevin Storer, and Meena Devii Muralikumar for their valuable feedback and encouragement.

References

1. Future trend of online matrimony industry in india medium. <https://medium.com/@solutionswebomania/future-trend-of-online-matrimony-industry-in-india-b0a2c34fd417> (2017), (Retrieved on 01/07/2019)
2. Addlakha, R.: How young people with disabilities conceptualize the body, sex and marriage in urban india: Four case studies. *Sexuality and disability* **25**(3), 111–123 (2007)
3. Adhikari, A.: Perception of general public towards sexuality of persons with disabilities. *Paripex-Indian Journal of Research* **7**(4) (2018)
4. Agrawal, A.: Cyber-matchmaking among indians: Re-arranging marriage and doing ‘kin work’. *South Asian Popular Culture* **13**(1), 15–30 (2015)
5. Al-Dawood, A., Abokhodair, N., El Mimouni, H., Yarosh, S.: Against marrying a stranger: Marital matchmaking technologies in saudi arabia. In: *Proceedings of DIS’17*. pp. 1013–1024. ACM (2017)

6. Al-Saggaf, Y.: Males' trust and mistrust of females in muslim matrimonial sites. *Journal of Information, Communication and Ethics in Society* **11**(3), 174–192 (2013)
7. Ammari, T., Kumar, P., Lampe, C., Schoenebeck, S.: Managing children's online identities: How parents decide what to disclose about their children online. In: *Proceedings of CHI'15*. pp. 1895–1904. ACM (2015)
8. Ansari, A.: Inter religion marriages and its challenges: an introspection. *Research journal of Social Sciences* **9**(7) (2018)
9. Azam, M., Chin, A., Prakash, N.: The returns to english-language skills in india. *Economic Development and Cultural Change* **61**(2), 335–367 (2013)
10. Berreman, G.D.: Race, caste, and other invidious distinctions in social stratification. *Race* **13**(4), 385–414 (1972)
11. Bhattacharjya, M., Ganesh, M.I.: Negotiating intimacy and harm: Female internet users in mumbai. *EROTICS: Sex, rights and the internet* p. 66 (2011)
12. Blevis, S.A., Blevis, E., Nardi, B.: All the tea in china interaction design inspiration. In: *Proceedings of CC'19*. ACM (2019)
13. Britain, G.: *Inclusion by Design: Equality, Diversity and the Built Environment*. Commission for Architecture and the Built Environment (2008)
14. Buchanan, T., Whitty, M.T.: The online dating romance scam: causes and consequences of victimhood. *Psychology, Crime & Law* **20**(3), 261–283 (2014)
15. Bulow, J.: An economic theory of planned obsolescence. *The Quarterly Journal of Economics* **101**(4), 729–749 (1986)
16. Chadda, R.K., Deb, K.S.: Indian family systems, collectivistic society and psychotherapy. *Indian journal of psychiatry* **55**(Suppl 2), S299 (2013)
17. Chowdhury, F.I., Trovato, F.: The role and status of women and the timing of marriage in five asian countries. *Journal of Comparative Family Studies* pp. 143–157 (1994)
18. Corbin, J., Strauss, A.: *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2008)
19. Dombrowski, S.C., LeMasney, J.W., Ahia, C.E., Dickson, S.A.: Protecting children from online sexual predators: technological, psychoeducational, and legal considerations. *Professional Psychology: Research and Practice* **35**(1), 65 (2004)
20. Donath, J.S.: Identity and deception in the virtual community. In: *Communities in cyberspace*, pp. 37–68. Routledge (2002)
21. Dourish, P., Finlay, J., Sengers, P., Wright, P.: Reflective hci: Towards a critical technical practice. In: *Proceedings of Alt-CHI'04*. vol. 24, pp. 1727–1728. Citeseer (2004)
22. Edmunds, S.: *Scammers & online dating fraud: 2015 trends and tactics*. New York: Global Dating Insights (2015)
23. Elliott, A.: Caste system in india postcolonial studies. <https://scholarblogs.emory.edu/postcolonialstudies/2014/06/20/caste-system-in-india/> (2017), (Retrieved on 05/08/2019)
24. Ellison, N., Heino, R., Gibbs, J.: Managing impressions online: Self-presentation processes in the online dating environment. *Journal of CMC* **11**(2), 415–441 (2006)
25. Ellison, N.B., Hancock, J.T., Toma, C.L.: Profile as promise: A framework for conceptualizing veracity in online dating self-presentations. *new media & society* **14**(1), 45–62 (2012)
26. Fiore, A.T., Donath, J.S.: Homophily in online dating: when do you like someone like yourself? In: *Alt-CHI'05*. pp. 1371–1374. ACM (2005)
27. Fleming, M., Rickwood, D., et al.: Teens in cyberspace: Do they encounter friend or foe? *Youth Studies Australia* **23**(3), 46 (2004)
28. Fraser, V.: Queer closets and rainbow hyperlinks: the construction and constraint of queer subjectivities online. *Sexuality research and social policy* **7**(1), 30–36 (2010)

29. Ghosh, A.K., Badillo-Urquiola, K., Guha, S., LaViola Jr, J.J., Wisniewski, P.J.: Safety vs. surveillance: What children have to say about mobile apps for parental control. In: Proceedings of CHI'18. p. 124. ACM (2018)
30. Gibbs, J.L., Ellison, N.B., Heino, R.D.: Self-presentation in online personals: The role of anticipated future interaction, self-disclosure, and perceived success in internet dating. *Communication Research* **33**(2), 152–177 (2006)
31. Gray, T.E.: Internet dating websites: A refuge for internet fraud. *Fla. Coastal L. Rev.* **12**, 389 (2010)
32. Greenfield, P.M.: Inadvertent exposure to pornography on the internet: Implications of peer-to-peer file-sharing networks for child development and families. *Journal of Applied Developmental Psychology* **25**(6), 741–750 (2004)
33. Grimpe, B., Hartswood, M., Jirotko, M.: Towards a closer dialogue between policy and practice: responsible design in hci. In: Proceedings of CHI'14. pp. 2965–2974. ACM (2014)
34. Hancock, J.T., Toma, C., Ellison, N.: The truth about lying in online dating profiles. In: Proceedings of CHI'07. pp. 449–452. ACM (2007)
35. Hourcade, J.P., Bullock-Rest, N.E.: Universal interactions: challenges and opportunities. *Interactions* **18**(2), 76–79 (2011)
36. Jaiswal, T.: Indian arranged marriages: A social psychological perspective, vol. 79. Routledge (2014)
37. Joshi, K., Kumar, S.: Matchmaking using fuzzy analytical hierarchy process, compatibility measure and stable matching for online matrimony in india. *Journal of Multi-Criteria Decision Analysis* **19**(1-2), 57–66 (2012)
38. Karusala, N., Kumar, N.: Women's safety in public spaces: Examining the efficacy of panic buttons in new delhi. In: Proceedings of CHI'17. pp. 3340–3351. ACM (2017)
39. Kaur, R.: Across-region marriages: Poverty, female migration and the sex ratio. *Economic and political weekly* pp. 2595–2603 (2004)
40. Kibby, M.: Sex, identity and the home page. *Media International Australia* **84**(1), 39–45 (1997)
41. Kosciw, J.G., Greytak, E.A., Giga, N.M., Villenas, C., Danischewski, D.J.: The 2015 national school climate survey: The experiences of lesbian, gay, bisexual, transgender, and queer youth in our nation's schools. GLSEN (2016)
42. Kou, Y., Gray, C.M., Toombs, A., Nardi, B.: The politics of titling: The representation of countries in chi papers. In: Alt-CHI'18. p. alt16. ACM (2018)
43. Kumar, H., Bhaduri, S.: Jugaad to grassroot innovations: understanding the landscape of the informal sector innovations in india. *African Journal of Science, Technology, Innovation and Development* **6**(1), 13–22 (2014)
44. Kumar, N.: Facebook for self-empowerment? a study of facebook adoption in urban india. *New Media & Society* **16**(7), 1122–1137 (2014)
45. Masden, C., Edwards, W.K.: Understanding the role of community in online dating. In: Proceedings of CHI'15. pp. 535–544. ACM (2015)
46. Milligan, M.S., Neufeldt, A.H.: The myth of asexuality: A survey of social and empirical evidence. *Sexuality and disability* **19**(2), 91–109 (2001)
47. Mitra, R., Gajjala, R.: Queer blogging in indian digital diasporas: A dialogic encounter. *Journal of Communication Inquiry* **32**(4), 400–423 (2008)
48. Morris, M.R.: Social networking site use by mothers of young children. In: Proceedings of CSCW'14. pp. 1272–1282. ACM (2014)
49. Mukherjee, R.: Govt to matrimonial sites: Check id proof & store ip addresses - medianama. <https://www.medianama.com/2016/06/223-government-matrimonial-sites-id-proof/> (06 2016), (Retrieved on 03/14/2018)

50. Myers, J.E., Madathil, J., Tingle, L.R.: Marriage satisfaction and wellness in india and the united states: A preliminary comparison of arranged marriages and marriages of choice. *Journal of Counseling & Development* **83**(2), 183–190 (2005)
51. Newell, A.F., Gregor, P.: user sensitive inclusive design search of a new paradigm. In: *Proceedings on the 2000 conference on Universal Usability*. pp. 39–44. ACM (2000)
52. Obada-Obieh, B., Somayaji, A.: Can i believe you?: Establishing trust in computer mediated introductions. In: *Proceedings of the 2017 New Security Paradigms Workshop on ZZZ*. pp. 94–106. ACM (2017)
53. Pal, J.K.: Social networks enabling matrimonial information services in india. *International Journal of LIS* **2**(4), 54–64 (2010)
54. Pal, J.K.: Review on matrimonial information systems and services—an indian perspective. *International Research Journal of LIAS* **1**(4), 126–135 (2011)
55. Pascoe, C.J.: Resource and risk: Youth sexuality and new media use. *Sexuality Research and Social Policy* **8**(1), 5–17 (2011)
56. Penn, R.: Arranged marriages in western europe: Media representations and social reality. *Journal of Comparative Family Studies* pp. 637–650 (2011)
57. Pereira, G.C., Baranauskas, M.C.C.: Supporting people on fighting lesbian, gay, bisexual, and transgender (lgbt) prejudice: a critical codesign process. In: *Proceedings of the IHC-XVI*. p. 46. ACM (2017)
58. Philips, F., Morrissey, G.: Cyberstalking and cyberpredators: A threat to safe sexuality on the internet. *Convergence* **10**(1), 66–79 (2004)
59. Polzenhagen, F., Frey, S.: Are marriages made in heaven? a cultural-linguistic case study on indian-english matrimonials. In: *Advances in Cultural Linguistics*. Springer (2017)
60. Ramirez, A., Walther, J.B., Burgoon, J.K., Sunnafrank, M.: Information-seeking strategies, uncertainty, and computer-mediated communication. *Human communication research* **28**(2), 213–228 (2002)
61. Rao, S.S.: Bridging digital divide: Efforts in india. *Telematics and informatics* **22**(4), 361–375 (2005)
62. Rastogi, R., Cutrell, E., Gupta, M., Jhunjhunwala, A., Narayan, R., Sanghal, R.: Connecting the next billion web users. In: *Proceedings of WWW '11 Companion*. pp. 329–330. ACM (2011)
63. Regan, P.C., Lakhapal, S., Anguiano, C.: Relationship outcomes in indian-american love-based and arranged marriages. *Psychological reports* **110**(3), 915–924 (2012)
64. Robinson, K.H., Bansel, P., Denson, N., Ovenden, G., Davies, C.: Growing up queer: Issues facing young Australians who are gender variant and sexuality diverse. *Young and Well Cooperative Research Centre* (2014)
65. Roy, S.: From khush list to gay bombay. *Mobile cultures: New media in queer Asia* p. 180 (2003)
66. Sana, A.: The caste system in india and its consequences. *International Journal of Sociology and Social Policy* **13**(3/4), 1–76 (1993)
67. Scheuerman, M.K., Branham, S.M., Hamidi, F.: Safe spaces and safe places: Unpacking technology-mediated experiences of safety and harm with transgender people. *Proceedings of CSCW'18* **2**(CSCW), 155 (2018)
68. Schumpeter, J.A.: *Capitalism, socialism and democracy*. Routledge (2010)
69. Seth, N.: Online matrimonial sites and the transformation of arranged marriage in india. In: *Virtual Communities: Concepts, Methodologies, Tools and Applications*. IGI Global (2011)
70. Shneiderman, B., Card, S., Norman, D.A., Tremaine, M., Waldrop, M.M.: Chi@ 20: fighting our way from marginality to power. In: *Alt-CHI'02*. pp. 688–691. ACM (2002)
71. Shneiderman, B., Hochheiser, H.: Universal usability as a stimulus to advanced interface design. *Behaviour & Information Technology* **20**(5), 367–376 (2001)

72. Sivanandan, V.: Marital status of persons with disabilities in india-an analysis. *Journal of Disability Management and Special Education* **1**(2), 25 (2018)
73. Smith, A., Duggan, M.: Online dating & relationships. pew research centers internet & american life project (2013)
74. Spratt, J.M.: A deeper silence: The unheard experiences of women with disabilities and their sexual and reproductive health experiences: Kiribati, the solomon islands and tonga fiji. Suva, Fiji: United Nations Population Fund Pacific Sub-Regional Office (2013)
75. Srinivasan, R.: Re-thinking the cultural codes of new media: The question concerning ontology. *New Media & Society* **15**(2), 203–223 (2013)
76. Stanco, M.: Indiascapes. images and words from globalised india. *Rivista di letteratura moderne e comparate* **64**(1), 90–93 (2011)
77. Stanley, J., et al.: Child abuse and the internet. *Journal of the Home Economics Institute of Australia* **9**(1), 5 (2002)
78. Stolterman, E., Croon Fors, A.: Critical hci research: a research position proposal. *Design Philosophy Papers* **1** (2008)
79. Stopes-Roe, M., Cochrane, R.: Citizens of this country: the Asian-British, vol. 68. *Multilingual matters* (1990)
80. Sudhanshu, R.K.: Matrimony.pdf. <http://wcd.nic.in/sites/default/files/Matrimony.pdf>, (Retrieved on 05/16/2018)
81. Sushma: Matrimony.com is raking in big profits despite the popularity of dating apps like tinder and woo quartz india. <https://qz.com/india/1269345/matrimony-com-is-raking-in-big-profits-despite-the-popularity-of-dating-apps-like-tinder-and-woo/> (05 2018), (Retrieved on 04/23/2019)
82. Tidwell, L.C., Walther, J.B.: Computer-mediated communication effects on disclosure, impressions, and interpersonal evaluations: Getting to know one another a bit at a time. *Human communication research* **28**(3), 317–348 (2002)
83. Titzmann, F.M.: Changing patterns of matchmaking: The indian online matrimonial market. *Asian Journal of Women's Studies* **19**(4), 64–94 (2013)
84. Toma, C.L., Hancock, J.T.: Reading between the lines: linguistic cues to deception in online dating profiles. In: *Proceedings of CSCW'10*. pp. 5–8. ACM (2010)
85. Walther, J.B., Tidwell, L.C.: Nonverbal cues in computer-mediated communication, and the effect of chronemics on relational communication. *Journal of Organizational Computing and Electronic Commerce* **5**(4), 355–378 (1995)
86. Whitty, M.T.: The scammers persuasive techniques model: Development of a stage model to explain the online dating romance scam. *Journal of Criminology* pp. 665–684 (2013)
87. Wisniewski, P., Ghosh, A.K., Xu, H., Rosson, M.B., Carroll, J.M.: Parental control vs. teen self-regulation: Is there a middle ground for mobile online safety? In: *Proceedings of CSCW'17*. pp. 51–69. ACM (2017)
88. Woodland, R.: Pagan statues gay/lesbian identity and the construction of. *The cybercultures reader* p. 416 (2000)
89. Xiaohe, X., Whyte, M.K.: Love matches and arranged marriages: A chinese replication. *Journal of Marriage and the Family* pp. 709–722 (1990)
90. Ybarra, M.L., Mitchell, K.J., Palmer, N.A., Reisner, S.L.: Online social support as a buffer against online and offline peer and sexual victimization among us lgbt and non-lgbt youth. *Child abuse & neglect* **39**, 123–136 (2015)