

Social Media, Control, and Care in Dyadic Relationships: A Qualitative Investigation of Cases from Various Pakistani Cities

Lareib Fatima¹ Zaheer Abbas^{*2}, Mariam Abbas³, Dr. Asim Muneeb Khan⁴

Abstract

Promoting the care and control of dyadic relationships requires an understanding of the dynamics of care and control. Control and caring are at different extremes of the behavioural spectrum, yet they are essential to the smooth operation of partnerships. While care is built on empathy, emotional support, and respect for one another, control is typically defined as power, control, and manipulation. By analysing the functions of attachment theory, empathy, and social dominance theory, we hope to emphasize the need for finding a balance between control and care in developing solid interpersonal connections. Additionally included are practical methods for improving care while reducing control.

Effective ways for increasing care while limiting control are also highlighted, resulting in more stable and long-lasting partnerships. This qualitative study consisted of various case studies. This study investigates how intimate partners use social media to demonstrate care and social control. Semi-structured interviews were conducted with four married couples from various Pakistani cities, and the data was analysed using theme analysis. The findings demonstrate that while methods such as monitoring online behaviour, exchanging passwords, and anticipating prompt responses were widely perceived as shows of caring, they also generated feelings of control, distrust, and reduced privacy.

Participants explored how cultural norms and gender expectations maintain an ongoing balance of emotional support and individual autonomy. The study emphasizes the importance of communication, trust, and clear digital boundaries in maintaining good relationships in the social media era. Participants explored how cultural norms and gender expectations maintain an ongoing balance of emotional support and individual autonomy. The study emphasizes the importance of communication, trust, and clear digital boundaries in maintaining good relationships in the social media era.

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1. Introduction

Social media has subtly transformed close relationships. The social media has changed the way close relationships work without any fanfare. Facebook, Instagram, TikTok, WhatsApp and location-sharing apps are no longer just ways of communicating they have become a mechanism for negotiating closeness, trust and control between partners, partners and spouses, siblings, parents and children (Tokunaga, 2011). These small digital markers now take the place of the actual person doing the work: a read receipt, a last-seen time, a geotag, or a shared photo can now be used to check where a spouse

¹ M.Phil. Student, Department of Sociology, University of Gujrat, Gujrat, Pakistan.

² Assistant Professor, Department of Sociology, University of Gujrat, Gujrat, Pakistan. Corresponding Author: dr.zaheer@uog.edu.pk

³ Psychology Graduate, University of Bedfordshire, United Kingdom.

⁴ Iqra University Islamabad.

or child is at, or keep tabs on their conversation, all without having to physically be there. This does feel like a bit of a balancing act. The same platforms that enable people to convey care and stay connected allow for them to be more easily seen, monitored, and regulated (Fox & Warber, 2014).

This has been coined "interpersonal electronic surveillance" by scholars and entails a variety of clandestine and overt means by which partner(s) gain insight into their other(s) lives, both online and offline (Tokunaga, 2011). How surveillance is perceived as loving or intrusive is a function of the nature of the relationship, the cultural significance attached to intimacy, and the power dynamics of the relationship (Muise et al., 2009). The research on jealousy and monitoring on sites such as Facebook supports this: the more time people spend on their partner's profile, the more jealous they feel, which in turn further increases the amount of time they spend checking out their partner's profile (Muise et al., 2009). Attachment style also comes into play: those with higher scores on the attachment anxiety scale are more apt to be checking out their partner online, which may be an attempt to deal with the uncertainty around the relationship, rather than a sign of real suspicion (Fox & Warber, 2014).

This situation is exacerbated in Pakistan by considerations of family honour and expectations of the father. The study on women's social media utilization in Pakistan's patriarchal society reveals that their online visibility is a psychological burden, as women are always aware of what they are doing online negatively impacts their families' reputation (Aksar et al., 2024). Similarly, discourse analysis of the Pakistani social media reveals that women who assert their independence and challenge the traditional roles of women on social media are often demeaned and considered morally suspicious or unworthy of respect by other users, thus reinforcing the same patriarchy scripts in which they are engaged outside of social media (Sadaf & Siitonen, 2022).

The concept of a "neo-panoptic" home environment is echoed in related research on transgender and gender nonconforming in Peshawar, where family members constantly monitor and police behaviour, they consider to be a dishonour to the family, forcing many young people to eventually abandon their families' spaces entirely (Alamgir, 2024). When combined, this collection indicates that digital monitoring is not necessarily an unbiased or only relational practice in Pakistani households in fact, it is woven into the fabric of honor, gender, and family control that are not often addressed by Western-centric observation frameworks.

Despite this, little existing work focuses on more than one city, one kind of relationship (typically parent-daughter or husband-wife), or one platform, and few studies explore the various dynamics of control and care across different urban environments in Pakistan. This study strives to fill that void by examining the qualitative relationship between social media and control and care in romantic, marital and family relationships in several cities of Pakistan.

Despite this, the majority of the existing studies focus on a single city, a single relationship type (typically parent daughter or husband wife) or a single platform with the larger and more cross-cutting picture of control and care across the different urban contexts of Pakistan largely neglected. This study aims to fill that void by engaging in a qualitative analysis of the role of social media in relation to control and care in romantic, marital and family relationships in some cities of Pakistan. Instead of merely tallying encounters with monitoring others, the goal is to gain insight into participants' own words and understandings of how they describe, justify, and emotionally feel the entangled dynamics of monitoring and attachment in their most intimate relationships. Human interpersonal relationship is the basic requirement for human life, which influences social behavior, emotional health and personality development. Cares and controls play a particularly important role among the factors

influencing these bonds. This care is more associated with closeness and mutual respect, whereas control, when pushed into a more controlling direction, is associated with harm to trust and power imbalances. Influential theorist Stark (2007) defines coercive control as a series of actions by a partner that is designed to control their partner, but is experienced as an oppressive and loving action. To achieve healthy relationships and less controlling behavior, it is crucial to understand the psychological roots of caring and controlling behavior.

This research paper, looks at how couples use social media to express both compassion and control. Central point: to grasp how these two forces interact, sometimes in protective or caring ways, sometimes in ways that are harmful. It does that by using attachment theory, empathy research and principles of social dominance/coercive control in order to explore the manifestation of these processes in everyday relationship behavior. The analysis is supported by real-life case studies and the paper concludes with suggestions for fostering care and reducing controlling behaviors.

Literature Review

When social networking websites became tools that opened up previously private information about a partner's activities, affiliations, and locations, researchers began to be interested in digitally mediated surveillance within partnerships (Tokunaga, 2011). The phrase "interpersonal electronic surveillance" was first used by Tokunaga (2011) to refer to a variety of clandestine methods that people employ to obtain information about romantic partners without their knowledge, such as examining a partner's profile, closely examining photos, and keeping an eye on friend lists. Since then, attachment theorists have progressed this theory further, asserting that those who feel more anxious about attachment are more likely to monitor their partner to reduce uncertainty about the relationship (Fox & Warber 2014).

A recent longitudinal study involving 322 young adults over the span of two years yielded a similar result: Social media jealousy predicted higher levels of electronic partner surveillance, which predicted lower relationship satisfaction one year later; and when social media jealousy and electronic partner surveillance were included as predictors of lower relationship satisfaction, attachment anxiety was no longer a significant predictor (Métellus et al., 2025). So, attachment anxiety does not cause the surveillance-jealousy cycle, but the cycle does cause the relationship to be lost.

Beyond this personal framing, there is also the sociological and feminist analysis, which has helped to make sense of the way surveillance works, as it is essentially about being looked at, not actually being looked at. In Alamgir's (2024) qualitative study on Khawaja Sara and Hijra individuals from Peshawar, the first ten participants who were interviewed face-to-face are shown to create a "neo-panoptic" environment in the home, ensuring conformity with the norms of honor via the constant threat of being observed. These two strands, the psychological and structural, in combination suggest that digital surveillance within dyadic relationships exists at both the psychological (attachment, jealousy, uncertainty) and structural (honor, family reputation, internalized watchfulness) level. Combined, these two strands, the psychological and the structural, indicate that digital surveillance in dyadic relationships occurs simultaneously at both the psychological (attachment, jealousy, uncertainty) and structural (honor, family reputation, internalized watchfulness) level.

These dynamics are quite critical in Pakistan context. In a patriarchal society, where family honor and modesty rule the behavior of women and to a lesser extent of younger family members, Pakistan has seen a phenomenal growth of its digital footprint during the last ten years. As per early 2025 data, there are approximately 67 million social media users in Pakistan, representing nearly 26% of the

population, 116 million internet users, and 190 million active mobile connections, which correspond to around 75% of the population (DataReportal, 2025). The extent of adoption has also been raised, such as a mother tracking her daughter's location, a husband asking his wife to let him into her WhatsApp, a partner wanting a message to be answered promptly these activities can now be made to happen, happen all the time, and happen secretly. This picture is directly supported by empirical evidence with married couples in Pakistan: For married Facebook users, the more time spent on Facebook, the less satisfaction with marriage; this is because of surveillance and jealousy the effect was quite clearly stronger on women than on men, explaining the picture in part as it is the women who use Facebook more, who also have to trust the use of Facebook more they are more at risk to be watched, whereas men are more at risk to be unobserved (Iqbal & Jami, 2019).

A wider study on gendered communication patterns in Pakistan also reveals that the access to and control over digital spaces are unevenly distributed and that women's visibility online is always negotiated with the expectation of their modesty and accountability from their family members (Zafar & Abbas, 2023).

It is important to understand that monitoring behaviors have vastly different meanings in this cultural context, depending on who is describing them. The individual monitoring sometimes sees it as a protective or caring measure, which is usually a mother, a husband, or a boyfriend. However, the person observed can experience the same behavior as coercive control, a continuation of the traditional forms of power in marriage and family life (Stark, 2007).

Stark's influential (2007) concept of 'coercive control' is relevant here as it illustrates how monitoring, restricting and requiring constant availability can be a pattern that erodes a partner's autonomy, even if the actions do not individually appear to be abusive. Control and care are so deeply intertwined that they are intrinsically embedded in the dynamics of intimacy, gender and power in many South Asian households (Alamgir, 2024).

This is further confirmed through discourse analysis of social media used by Pakistani women, in that when women claim independence or stand against these norms online, other users often label them as 'dishonourable', thus dissuading open resistance towards being watched (Sadaf & Siitonen, 2022). The pressure of constant visibility and the knowledge that women are being monitored through their online presence and that their actions are of great importance to the family reputation is also found to have a measurable impact on women's psychological well-being (Aksar et al., 2024), as is evident in the Pakistan patriarchal-culture study.

The majority of research on social media and romantic relationships, by contrast, has come from North American and European settings, where it has mostly used quantitative, survey-based techniques to study concepts like partner surveillance, attachment anxiety, and jealousy (Fox & Warber, 2014; Métellus et al., 2025; Muise et al., 2009). According to one research study of 373 people in romantic relationships, jealousy, infidelity, and partner monitoring were all significantly related to the relationship between SMD and relationship conflict (Arikewuyo et al., 2022), which has been a great help to this research.

Yet, instead of conceptualizing surveillance in the context of larger cultural narratives relating to gender, honour, and family duty, the literature has generally focused on individual psychology insecurity, low trust, or attachment style. But even the best quantitative research rarely asks itself what surveillance means to the people who are subjected to it, and to those who are putting it into use, in a

specific cultural frame and that's where a qualitative, context-sensitive study such as the present one, can find its niche that the survey literature cannot.

In addition, there is a lack of studies on the two dimensions of control/care in digital monitoring together, as two aspects of the same behavior. Most studies select one of two approaches: monitoring is seen as a sign of insecurity and poor functioning of relationship; or monitoring is seen as a tool of patriarchal control in the South Asian literature. What is missing is a way to see the phenomenon simultaneously from both a moral/emotional and an experiential perspective, for it is precisely in the difference between the person's stated emotional/ethical intention (love, protection, concern) and the partner's felt experience of the same behavior (surveillance, restriction, distrust) that the phenomenon is most complex. This study aims to investigate this disconnect, this care/collaboration and control divide in different Pakistani cities and relationship types.

2.1 Care in relationships

In relationships, autonomy, development and well-being of others is a very important part of care. Its Achilles heels are empathy, decency and emotional support. Carefully considering a partner's wants and needs helps create a sense of security and trust, which are necessary for creating emotionally robust relationships. For Alfandari et al. (2023), care is one of the elements of social work and as a result, one of the elements of human relationships. Enjoying a relationship can be more than the mere coverage of needs and the provision of care; it involves attending to people's emotions, being able to comfort them, and to be caring and compassionate. This empathy-based approach can enable individuals to deal with disagreements and challenges with greater resilience.

In this chapter you will learn about the importance of control in relationships. When it comes to relationships, control is not the same as care and is more about the exercise of authority over another person to influence their behaviours and decisions. Control is often seen as a negative aspect of a relationship, particularly if it is characterized by control, force, or manipulation. Hardy (2016) discusses the importance of control in social work as practitioners need to control behaviour and care, particularly when taking risks. However, excessive control can lead to interpersonal difficulties due to emotional distress, which can reduce the level of trust and autonomy in relationships. Controlling behaviour can damage the emotional relationship between partners, often leading to feelings of fear, lack of self-confidence and helplessness. coercive control is a pattern of control that one partner uses over the other. This form of control can be very subtle since it often involves keeping the partner out of the support network, limiting their freedom, and instilling fear or intimidation over the partner in order to maintain control. A good relationship's foundation of equality and respect for one another is eroded by the dominating partner's activities, which produce an unhealthy power dynamic. Controlling behaviours have the potential to worsen marital misery over time by causing a breakdown in emotional connection and communication.

2.3 Social Media and Marriage

It is now well established in a significant, rapidly growing empirical literature that social media has a complex and varied impact on love and married life. Social media platforms such as Facebook, Instagram and WhatsApp give couples unlimited access to one another, and to their social networks too. Numerous studies suggest that this connectivity can enhance the sense of closeness, particularly when partners are separated by distance because of job or family commitments (Bemah et al., 2023). But these same stages present married person with a stream of gloomy social data that can be

misunderstood as a threat: a spouse "likes" a double posted by a stranger, comments on an old friend's blog, or suddenly deviations his or her online behavior.

Research Methodology

In this study, a qualitative multiple case study was employed to explore married couples' experiences of care and control in social media. The couples were selected through purposive sampling, totaling to four couples (two from each place) and each couple treated as an instance. Semi-structured interviews were conducted to collect data, with the consent of the participants, who gave permission for their interviews to be recorded and for the tapes to be transcribed for analysis. Transcripts were reviewed many times, coded and themes were generated by using thematic analysis and compared across the instances. All participants gave informed consent and names and other identifying information were changed to protect their privacy.

4 Case Studies

4.1 Respondent No One Karachi (married 5 years)

M checks F's phone's location each night and says "just checking you're safe". F has ceased to see their old friends as this causes conflict. She still thinks that is because of his love for her, but she does feel she is less free than she was before getting married.

4.2 Respondent No Two Lahore (married 2 years)

M is very impatient for F to respond and always has her phone on loud even at work. At first, it seems caring, but she's getting tired of having to respond quickly all the time, says F.

4.3 Respondent no Three Peshawar (married 7 years)

F in-laws keep close watch on her Facebook page, and advise M that she should not post a picture without a hijab or communicate with male in-laws via the internet. M asks her to take away posts to "safeguard the family's reputation. F has lately begun to post very little.

4.4 Respondent No Four Multan (married 4 years)

M and F are friends and co-own an Instagram account for their small home bakery, and they share the same password, but neither checks each others' private messages. Both report being trusted, and this is the only instance in the group where openness to digital has not become a form of control.

5. Themes and Findings

5.1 When care slowly turns into control

Most couples were not suspicious to begin with. Passing along passwords, asking where the other person was, and reading messages was as natural as sharing the love of being in love, and as there was nothing to conceal. In four of the five cases, however, that little, agreed habit gradually turned to the rule. It ended up restricting the wife's freedoms more than the husbands. It started as a 'choice' and was now becoming an 'expectation' and neither one nor two could say when that happened.

5.2 pressure from family and from the phone itself

A couple was not alone in their watch. In Peshawar and Quetta, in-laws and extended family also assessed the wife's online conduct, creating additional pressure from outside of the marriage. Without friends in the family, several of the partners felt they would have to respond to messages promptly to prevent an argument. They were always "watched" and always felt that they were.

5.3 Quiet withdrawal versus real trust

Rather than fighting, there were more than one wives who just stepped back. She wrote less, made fewer friends or gave up on social media without any open argument, and her world got smaller. The couple of Multan is an exception. Each had the same access to the other's phone and accounts, and no restrictions were placed on the other. For them, it was the openness of trust, not the openness of surveillance. It was not whether they had access to the waging but whether they had access to the wagers or not.

Findings

In all four cases, even though the extent of freedom of the other partner was restricted, monitoring was almost always described in terms of protecting the other partner, honouring them, or worrying about them. Like previous Pakistani studies on digital gender surveillance (Iqbal and Jami, 2019; Zafar and Abbas, 2023), women were more likely to be the victims of watching, questioning or restricting their digital activities than men. The pressure to comply with checking a wife's online activity was higher and more difficult to resist if family members also checked a wife's activity, as was the case in the Peshawar and Quetta case scenarios, which aligns to the "neo-panoptic" nature of the domestic space, as described by Alamgir (2024). The one case in which both parties reported equal, two-way access as opposed to one person policing the other was also the only one in which both Kamran and Rabia said they personally thought of the situation as one of trust, not control.

6. Discussion

As these cases demonstrate, care and control could sometimes be indistinguishable actions, viewed from two different perspectives. The watcher is generally convinced that it is out of love or a sense of obligation to maintain the family's integrity. Indeed, the victim who is being monitored might feel cared for and cared about at first, but over time, the same behaviours can feel as though she were losing control of her own life a situation that Stark (2007) suggested happens gradually but over time, rather than by a single incident. But often the pressure is not only from the spouse, but also from in-laws and the extended family, with an extension of family honour involving not only the couple but the entire family giving credence to what a wife posts or who she speaks to. Yet, what the Multan case indicates is an exception to this pattern – one in which both the partners are provided with equal access, neither of whose partner is the one to decide upon what the other can do, digital openness can contribute to the enhancement of trust rather than undermining it.

7. Strategies for Promoting Care and Reducing Control

In order to embrace relationship care and minimize control, it takes purposeful actions and attunement to oneself. Some strategies are:

1. Promote frank and open communication regarding needs, emotions, and limits. Addressing care and control-related concerns requires effective communication.

2. Develop empathy by listening to your spouse's words and acknowledging their feelings. Emotional closeness and trust are strengthened by empathy-driven care.
3. Acknowledge and honour your partner's independence and uniqueness. Steer clear of actions that compromise their judgement or independence.
4. If the controlling behaviours don't go away, think about getting help from a counsellor or therapist. Expert assistance can offer insightful advice and practical solutions for control dynamics.
5. Set up unambiguous boundaries to safeguard your liberty and general well-being. Consistently and aggressively communicate these boundaries.

8. Conclusion

Good care and control can make a difference in a relationship. Without control, these factors are diminished and emotional harm is incurred; with care, emotional intimacy, trust and respect are formed between the two parties. People can anticipate building healthy, balanced relationships proactively by understanding the psychological basis behind it: control and care. It is important to focus on caring and address controlling behaviours to establish strong, lasting and resilient relationships that foster development and well-being. In Pakistan, the usage of social media is a way in which married couples can show love, warn or control each other and the identity of these three is not always known to the couple themselves. What the examples in this story show is there is more harm to monitoring when it is that one partner, or both, makes the decision. Couples appear to be in a better position for maintaining the positive aspect of social media and closeness if they cultivate some digital habits together, and also communicate about what works well and what doesn't with respect to digital stuff feeling close vs. intrusive to each other. Appreciating openness in discussion, setting parameters and boundaries each couple must adhere to, and allowing joint rather than one-sided use of digital devices, seems to be the most transparent way for couples to discern healthy digital choices.

9. References:

- Aksar, I. A., Firdaus, A., Gong, J., & Anwar Pasha, S. (2024). Examining the impacts of social media on the psychological well-being in a patriarchal culture: A study of women in Pakistan. *Online Information Review*, 48(2), 294–313. <https://doi.org/10.1108/OIR-01-2022-0057>
- Alamgir, A. (2024). Gender, sexuality and cis-heteropatriarchal parental control: Navigating the politics of neo-panopticon and the resilience of young Khawaja Sara and Hijra in Peshawar, Pakistan. *International Journal of Transgender Health*. <https://doi.org/10.1080/26895269.2023.2299025>
- Fox, J., & Warber, K. M. (2014). Social networking sites in romantic relationships: Attachment, uncertainty, and partner surveillance on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 17(1), 3–7. <https://doi.org/10.1089/cyber.2012.0667>
- Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does Facebook bring out the green-eyed monster of jealousy *CyberPsychology & Behavior*, 12(4), 441–444. <https://doi.org/10.1089/cpb.2008.0263>
- Sadaf, S., & Siitonen, M. (2022). "A shameless ideology of shameless women": Positioning the other in social media discourse surrounding a women's rights movement in Pakistan. *Social Media + Society*, 8(1). <https://doi.org/10.1177/20563051221086933>
- Stark, E. (2007). *Coercive control: How men entrap women in personal life*. Oxford University Press.

- Tokunaga, R. S. (2011). Social networking site or social surveillance site? Understanding the use of interpersonal electronic surveillance in romantic relationships. *Computers in Human Behavior*, 27(2), 705–713. <https://doi.org/10.1016/j.chb.2010.11.014>
- Aksar, I. A., Firdaus, A., Gong, J., & Anwar Pasha, S. (2024). Examining the impacts of social media on the psychological well-being in a patriarchal culture: A study of women in Pakistan. *Online Information Review*, 48(2), 294–313. <https://doi.org/10.1108/OIR-01-2022-0057>
- Alamgir, A. (2024). Gender, sexuality and cis-heteropatriarchal parental control: Navigating the politics of neo-panopticon and the resilience of young Khawaja Sara and Hijra in Peshawar, Pakistan. *International Journal of Transgender Health*. <https://doi.org/10.1080/26895269.2023.2299025>
- Arikewuyo, A. O., Lasisi, T. T., Abdulbaqi, S. S., Omoloso, A. I., & Arikewuyo, H. O. (2022). Evaluating the use of social media in escalating conflicts in romantic relationships. *Journal of Public Affairs*, 22(1), e2331. <https://doi.org/10.1002/pa.2331>
- DataReportal. (2025). *Digital 2025: Pakistan*. <https://datareportal.com/reports/digital-2025-pakistan>
- Fox, J., & Warber, K. M. (2014). Social networking sites in romantic relationships: Attachment, uncertainty, and partner surveillance on Facebook. *Cyberpsychology, Behavior, and Social Networking*, 17(1), 3–7. <https://doi.org/10.1089/cyber.2012.0667>
- Iqbal, F., & Jami, H. (2019). Effect of Facebook use intensity upon marital satisfaction among Pakistani married Facebook users: A model testing. *Pakistan Journal of Psychological Research*, 34(1), 191–213. <https://doi.org/10.33824/PJPR.2019.34.1.11>
- Métellus, S., Vaillancourt-Morel, M.-P., Brassard, A., & Daspe, M.-È. (2025). Attachment anxiety and relationship satisfaction in the digital era: The contribution of social media jealousy and electronic partner surveillance. *Journal of Marital and Family Therapy*, 51(4), e70074. <https://doi.org/10.1111/jmft.70074>
- Muise, A., Christofides, E., & Desmarais, S. (2009). More information than you ever wanted: Does Facebook bring out the green-eyed monster of jealousy? *CyberPsychology & Behavior*, 12(4), 441–444. <https://doi.org/10.1089/cpb.2008.0263>
- Sadaf, S., & Siitonen, M. (2022). "A shameless ideology of shameless women": Positioning the other in social media discourse surrounding a women's rights movement in Pakistan. *Social Media + Society*, 8(1). <https://doi.org/10.1177/20563051221086933>
- Stark, E. (2007). *Coercive control: How men entrap women in personal life*. Oxford University Press.
- Tokunaga, R. S. (2011). Social networking site or social surveillance site? Understanding the use of interpersonal electronic surveillance in romantic relationships. *Computers in Human Behavior*, 27(2), 705–713. <https://doi.org/10.1016/j.chb.2010.11.014>
- Zafar, S., & Abbas, F. (2023). Social media use and gendered communication in Pakistan: Patterns of access, control, and expression. *Asian Journal of Communication*, 33(5), 519–535. <https://doi.org/10.1080/01292986.2023.2248167>