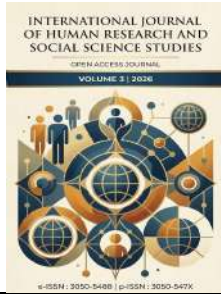
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Perceived Partner Responsiveness as A Mediator of Technoference and Marital Satisfaction: The Hurt of Phubbing among Dual-Earner Couples

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ABSTRACT: Phubbing, the act of snubbing a conversation partner by focusing on one's phone, has emerged as a pervasive relational threat in contemporary couples, particularly among dual-earner couples who navigate multiple competing demands on their time and attention. This quantitative study examines the mediating role of perceived partner responsiveness in the relationship between technoference (technology interference, including phubbing) and marital satisfaction among dual-earner couples in Ghana. Using a dyadic, cross-sectional survey design, data were collected from 312 dual-earner couples (N = 624 individuals) through stratified random sampling across five regions of Ghana. Validated instruments measured technoference (Technoference Scale), perceived partner responsiveness (Perceived Partner Responsiveness Scale), and marital satisfaction (Couples Satisfaction Index). Actor-Partner Interdependence Mediation Model (APIMeM) analysis using structural equation modelling revealed significant actor effects: technoference was negatively associated with perceived partner responsiveness ($\beta = -0.32$, $p < .001$) and marital satisfaction ($\beta = -0.28$, $p < .001$), and perceived partner responsiveness was positively associated with marital satisfaction ($\beta = 0.41$, $p < .001$). Perceived partner responsiveness significantly mediated the actor effect of technoference on marital satisfaction (indirect effect $\beta = -0.13$, 95% CI [-0.18, -0.08]). Partner effects were also significant: an individual's technoference negatively predicted their partner's perceived responsiveness ($\beta = -0.11$, $p = .004$) and marital satisfaction ($\beta = -0.09$, $p = .008$). The dyadic indirect effect through partner perceived responsiveness was also significant ($\beta = -0.04$, 95% CI [-0.07, -0.02]). Gender moderated these relationships, with the actor effect of technoference on perceived responsiveness being stronger for wives ($\beta = -0.36$) than for husbands ($\beta = -0.28$). The findings extend the Technoference Framework and Interdependence Theory by demonstrating the dyadic and mediating mechanisms through which phubbing affects marital satisfaction in dual-earner couples. Implications for couple therapy, workplace policies, and digital wellbeing interventions are discussed.

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KEYWORDS:
Phubbing, technoference, perceived partner responsiveness, marital satisfaction, dual-earner couples, actor-partner interdependence model, Ghana

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I. INTRODUCTION

The smartphone has become an indispensable companion in modern life, accompanying individuals into every domain of daily existence including the intimate moments that sustain romantic relationships. Yet this constant connectivity comes at a cost. The phenomenon of "phubbing" the act of snubbing a conversation partner by focusing on one's phone (Roberts & David, 2016) has emerged as a significant threat to relationship quality. When partners phub each other, they communicate devaluation, disinterest, and prioritisation of the digital world over the present relationship. The hurt of phubbing is not merely an annoyance; it strikes at the core of what makes relationships fulfilling: the experience of being seen, heard, and valued by one's partner.

For dual-earner couples, the challenge of phubbing may be particularly acute. Dual-earner couples where both partners are employed represent a growing demographic in Ghana, driven by economic necessity, women's increasing workforce participation, and changing gender norms. These couples face unique stressors: competing work demands, limited time together, and the constant

juggling of professional and domestic responsibilities. In this context, technology serves as both a tool for managing work and family demands and a source of interference in the limited time partners have for connection. The hurt of phubbing may be magnified when time together is scarce and precious.

The experience of being phubbed by one's partner is fundamentally about perceived partner responsiveness, the extent to which individuals feel that their partner is attentive, understanding, and validating of their needs and feelings (Reis et al., 2004; Reis & Clark, 2013). Perceived partner responsiveness is a cornerstone of relationship satisfaction. When partners phub each other, they signal unresponsiveness: "What is on my phone is more important than what you are saying." This signal of unresponsiveness may be the mechanism through which phubbing harms marital satisfaction. Yet, the dyadic nature of these processes how one partner's phubbing affects both partners' perceptions and satisfaction remains poorly understood.

In Ghana, where traditional gender roles and extended family networks have historically structured marital relationships, the emergence of dual-earner couples represents a significant social transformation. Couples are navigating new challenges: balancing careers, sharing domestic responsibilities, and maintaining connection amid competing demands. The role of technology in these relationships has not been systematically examined. This study addresses this gap by investigating the mediating role of perceived partner responsiveness in the relationship between technoference (technology interference, including phubbing) and marital satisfaction among dual-earner couples in Ghana, using a dyadic analytical approach.

II. STATEMENT OF THE PROBLEM

Despite growing recognition of phubbing as a significant relational threat, several critical gaps remain in the empirical literature.

First, the dyadic nature of phubbing in couples has been inadequately examined. Most studies on phubbing and technoference have used individual-level data, failing to account for the interdependence of partners' experiences in romantic relationships. When one partner phubs the other, both partners are affected: the phubbed partner experiences hurt and reduced satisfaction, and the phubbing partner may experience guilt, relationship deterioration, or reciprocal disengagement. Understanding these dyadic dynamics is essential for developing effective couple interventions.

Second, the mechanism through which phubbing affects marital satisfaction has not been fully specified. Perceived partner responsiveness the experience of feeling seen, heard, and valued is a plausible mediator: phubbing communicates unresponsiveness, and reduced perceptions of responsiveness lead to lower marital satisfaction. However, this mediation pathway has not been empirically tested in the context of phubbing and technoference.

Third, dual-earner couples represent a population with unique vulnerabilities to phubbing and technoference. The demands of dual careers may increase technology use (for work purposes) and reduce available time for couple connection. However, dual-earner couples have not been specifically examined in the phubbing literature.

Fourth, the Ghanaian context has been absent from research on phubbing, technoference, and marital relationships. Ghanaian couples are navigating rapid social and economic changes, including the rise of dual-earner arrangements and the proliferation of smartphones. Cultural factors including collectivist values, extended family involvement, and evolving gender norms may shape the experience and consequences of phubbing in distinctive ways.

Fifth, gender dynamics in phubbing and marital satisfaction remain under-examined. The hurt of phubbing may be experienced differently by men and women, given gender differences in relational expectations, communication patterns, and emotional expressiveness. Women may be more attuned to and hurt by signals of partner unresponsiveness, while men may respond differently to phubbing.

This study addresses these gaps by examining the mediating role of perceived partner responsiveness in the relationship between technoference and marital satisfaction among dual-earner couples in Ghana, using a dyadic analytical approach that accounts for actor and partner effects and gender differences.

III. PURPOSE OF THE STUDY

The purpose of this study is to examine the mediating role of perceived partner responsiveness in the relationship between technoference and marital satisfaction among dual-earner couples in Ghana, using a dyadic Actor-Partner Interdependence Mediation Model (APIMeM).

IV. OBJECTIVES OF THE STUDY

General Objective

To examine the actor and partner effects of technoference on marital satisfaction, and the mediating role of perceived partner responsiveness, among dual-earner couples in Ghana.

Specific Objectives

1. To assess the levels of technoference, perceived partner responsiveness, and marital satisfaction among dual-earner couples in Ghana.

2. To examine the actor effect of technoference on marital satisfaction (an individual's technoference predicting their own satisfaction).
3. To examine the partner effect of technoference on marital satisfaction (an individual's technoference predicting their partner's satisfaction).
4. To examine the actor effect of technoference on perceived partner responsiveness (an individual's technoference predicting their own perception of partner responsiveness).

V. LITERATURE REVIEW

Theoretical Review

This study is guided by four complementary theoretical frameworks: the Technoference Framework (McDaniel & Coyne, 2016), Interdependence Theory (Kelley & Thibaut, 1978), the Responsiveness Model (Reis et al., 2004; Reis & Clark, 2013), and Gender Role Theory (Eagly, 1987).

Technoference Framework. The Technoference Framework, developed by McDaniel and Coyne (2016), posits that technology use can interfere with interpersonal interactions and relationships, negatively affecting relationship quality, satisfaction, and wellbeing. The framework identifies several mechanisms through which technoference operates: (a) displacement (technology replaces face-to-face interaction), (b) distraction (technology diverts attention from ongoing interactions), (c) intrusion (technology interrupts interactions), and (d) competition (technology competes for limited attentional resources). Phubbing represents a specific form of technoference where technology use directly snubs a conversation partner. The framework provides the theoretical basis for examining the direct effects of technoference on marital satisfaction.

Interdependence Theory. Interdependence Theory (Kelley & Thibaut, 1978; Rusbult & Van Lange, 2003) provides a framework for understanding dyadic processes in relationships. The theory posits that partners in close relationships are interdependent each partner's outcomes depend on the other's actions, and each partner's actions affect the other's outcomes. In the context of phubbing, Interdependence Theory predicts that one partner's phubbing behaviour affects both partners' perceptions and satisfaction. The Actor-Partner Interdependence Model (APIM) (Kenny et al., 2006) provides the analytical framework for testing these dyadic effects: actor effects (how an individual's behaviour affects their own outcomes) and partner effects (how an individual's behaviour affects their partner's outcomes).

Responsiveness Model. The Responsiveness Model (Reis et al., 2004; Reis & Clark, 2013) posits that perceived partner responsiveness the belief that one's partner is attentive, understanding, and validating is a fundamental mechanism through which close relationships affect wellbeing. Responsiveness is experienced when individuals feel that their partner "sees" and "knows" them, understands their needs and feelings, and values them as a person. Perceived partner responsiveness is a robust predictor of relationship satisfaction, trust, and commitment. In the context of phubbing, the model predicts that phubbing reduces perceived partner responsiveness (by signalling inattention and devaluation), which in turn reduces marital satisfaction. This provides the theoretical basis for examining perceived partner responsiveness as a mediator.

Gender Role Theory. Gender Role Theory (Eagly, 1987; Eagly & Wood, 2012) posits that gender differences in behaviour and experience arise from social roles and expectations. Women are socialised to be more relationally oriented, emotionally expressive, and attentive to interpersonal cues. Men are socialised to be more independent and less emotionally expressive. In the context of phubbing, Gender Role Theory predicts that women may be more attuned to and hurt by signals of partner unresponsiveness, as relationships and emotional connection are more central to their gender role. Men may be less affected by phubbing or may respond differently.

Integration of Frameworks. These four frameworks are complementary and together provide a comprehensive framework for understanding the relationships under investigation. The Technoference Framework explains the phenomenon of technology interference, Interdependence Theory explains the dyadic nature of the effects, the Responsiveness Model explains the mediating mechanism, and Gender Role Theory explains gender differences. The integration of these frameworks allows for a nuanced understanding of how phubbing affects marital satisfaction in dual-earner couples through perceived partner responsiveness.

Conceptual Review

Technoference and Phubbing. Technoference is defined as the interference and interruption of technology use in interpersonal interactions and relationships (McDaniel & Coyne, 2016). Phubbing, a portmanteau of "phone" and "snubbing," is defined as the act of snubbing a conversation partner by focusing on one's phone (Roberts & David, 2016). In the couples context, phubbing occurs when one partner uses their phone during interactions with the other, signalling disinterest and devaluing the relationship. The Technoference Scale (McDaniel & Coyne, 2016) measures both general technoference and specific phubbing behaviours in romantic relationships.

Perceived Partner Responsiveness. Perceived partner responsiveness is defined as the belief that one's partner is attentive, understanding, and validating of one's needs and feelings (Reis et al., 2004; Reis & Clark, 2013). Key dimensions include: (a) understanding (feeling known and understood by the partner), (b) validation (feeling that one's feelings and perspectives are valued),

and (c) caring (feeling that the partner cares about one's wellbeing). The Perceived Partner Responsiveness Scale (Reis et al., 2004; Maisel & Gable, 2009) operationalises perceived partner responsiveness as a multidimensional construct.

Marital Satisfaction. Marital satisfaction is defined as the subjective evaluation of the quality of one's marital relationship (Fincham & Bradbury, 1987). It encompasses: (a) emotional satisfaction (feelings of love, affection, and closeness), (b) communication quality (perception of open, supportive communication), (c) conflict resolution (perception of effective problem-solving), and (d) overall relationship evaluation. The Couples Satisfaction Index (CSI) (Funk & Rogge, 2007) operationalises marital satisfaction with strong psychometric properties.

Dual-Earner Couples. Dual-earner couples are defined as couples in which both partners are employed, either full-time or part-time, and contribute to household income. Dual-earner couples face unique challenges: (a) competing work demands, (b) limited time for couple connection, (c) role strain and work-family conflict, (d) the need for domestic division of labour, and (e) the management of technology that facilitates work but intrudes into family life.

Empirical Review

Phubbing and Marital Satisfaction. Research on phubbing and relationship satisfaction has grown rapidly. Roberts and David (2016) introduced the concept of phubbing and found that it was associated with lower relationship satisfaction and higher conflict in a sample of 308 adults. The effects were mediated by perceived partner attention and responsiveness. The study found that phubbing was more strongly associated with relationship outcomes than general technology use, suggesting that the interpersonal snubbing aspect is particularly damaging.

McDaniel and Coyne (2016) found that technoference including phubbing predicted lower relationship satisfaction in romantic relationships. The study, conducted with 442 parents, found that technoference predicted lower relationship satisfaction even after controlling for general technology use. The effect was stronger for parent-child relationships than for partner relationships, but partner technoference was still a significant predictor of satisfaction.

McDaniel et al. (2018) conducted a daily diary study with couples and found that technoference on one day predicted lower relationship satisfaction and higher conflict on subsequent days, suggesting a cumulative effect. The effects were bidirectional: relationship dissatisfaction also predicted increased technoference, creating a cycle of disconnection.

Technoference and Perceived Partner Responsiveness. Studies examining the relationship between technoference and perceived partner responsiveness are limited. However, research on related constructs provides support. In a study of smartphone use during couple interactions, Kushlev and Dunn (2015) found that smartphone presence reduced the quality of couple interactions and decreased feelings of connection. The study suggested that technology use during interactions signals unresponsiveness and devaluation.

In a qualitative study, Miller-Ott and Kelly (2016) found that participants perceived partner phone use during interactions as a sign of disinterest and disrespect. Participants reported feeling hurt, ignored, and less satisfied when partners used phones during conversations. These findings suggest that technoference negatively affects perceived partner responsiveness.

Perceived Partner Responsiveness and Marital Satisfaction. A robust literature demonstrates the association between perceived partner responsiveness and relationship satisfaction. Reis and colleagues (2004) found that perceived partner responsiveness predicted relationship satisfaction, trust, and commitment in a series of studies. The effects were robust across different relationship types and cultural contexts.

Maisel and Gable (2009) found that perceived partner responsiveness predicted relationship satisfaction over time in a longitudinal study. The effect was partially mediated by relationship closeness and trust. Selcuk et al. (2012) found that perceived partner responsiveness was a stronger predictor of relationship satisfaction than partner-reported responsiveness, suggesting that perceptions not just objective responsiveness drive satisfaction.

Dyadic Studies of Relationship Processes. Studies using dyadic analytical approaches have revealed important interdependence effects in relationships. Kenny and colleagues (2006) demonstrated the importance of modelling both actor and partner effects in couple research. In the context of technology use, McDaniel et al. (2018) found both actor and partner effects of technoference on relationship satisfaction in a daily diary study.

Dual-Earner Couples. Research on dual-earner couples has examined the challenges of balancing work and family demands. Greenhaus and Beutell (1985) identified work-family conflict as a significant stressor for dual-earner couples. Carlson et al. (2018) found that work-family conflict predicted lower marital satisfaction in dual-earner couples, with the effect mediated by partner support.

In the Ghanaian context, research on dual-earner couples is limited. However, studies on family structure and gender roles in Ghana have documented the increasing prevalence of dual-earner arrangements and the challenges couples face in balancing careers and family responsibilities (Badasu, 2017; Agyei, 2018). Technology use in Ghana has grown rapidly, particularly among young adults (Pew Research Center, 2021), but no published studies have examined phubbing or technoference in dual-earner couples in Ghana.

Gender Differences. Research on gender differences in relationship processes has found that women tend to be more relationally oriented and more attentive to interpersonal cues than men (Eagly, 1987; Eagly & Wood, 2012). Studies have found that women

report higher levels of relationship satisfaction when they perceive high partner responsiveness, and that the association between responsiveness and satisfaction may be stronger for women than for men (Reis et al., 2004).

In the context of technology use, McDaniel and Coyne (2016) found that the effect of technoference on relationship satisfaction was stronger for women than for men. The study suggested that women may be more sensitive to signals of partner attention and responsiveness, making them more vulnerable to the negative effects of phubbing.

VI. METHODOLOGY

Research Design

This study employed a quantitative, cross-sectional dyadic survey design. Dyadic designs are essential for examining interpersonal phenomena, as they capture the interdependence of partners' experiences in romantic relationships (Kenny et al., 2006). The Actor-Partner Interdependence Mediation Model (APIMeM) was used to analyse actor and partner effects.

Research Approach

A deductive, hypothesis-testing approach was adopted, guided by the theoretical frameworks and operationalised through validated instruments. The study used structural equation modelling to estimate actor and partner direct and indirect effects.

Study Setting

The study was conducted in five regions of Ghana: Greater Accra, Ashanti, Western, Central, and Eastern Regions. These regions were selected to ensure geographic and cultural diversity. Data collection occurred through workplaces, community centres, and recruitment networks.

Study Population

The study population comprised dual-earner couples in Ghana. Inclusion criteria were: (a) both partners aged 22-45 years (Gen Z and Millennial age range), (b) both partners currently employed (full-time or part-time) for at least 20 hours per week, (c) married or cohabiting for at least one year, (d) both partners own and use smartphones, (e) both partners agree to participate, and (f) capacity to provide informed consent. Exclusion criteria included: (a) diagnosed psychological disorder requiring treatment, (b) current separation or divorce proceedings, and (c) one or both partners working from home exclusively (to maintain focus on dual-earner couples with external workplaces).

Sampling Technique

A stratified random sampling technique was employed. The stratification variables were region and occupation type (professional, service, technical). Within each stratum, couples were recruited through workplace networks, community organisations, and snowball sampling. The sample size was determined using power analysis for dyadic data (Kenny et al., 2006), which recommended a minimum of 250 couples for detecting small-to-medium actor and partner effects (power = 0.80, $\alpha = 0.05$). An oversampling of 25% was conducted, yielding a target sample of 312 couples.

Sample Size and Participant Characteristics

A total of 312 couples (N = 624 individuals) participated. Participant characteristics are presented in Table 1.

Table 1: Demographic Characteristics of Participants (N = 312 couples, 624 individuals)

Characteristic	Husbands/ Male Partners (n=312)	Wives/ Female Partners (n=312)
Age (years)	34.2 (SD = 6.8)	31.8 (SD = 6.2)
Age Range	22-45 years	22-44 years
Marriage Duration (years)	6.4 (SD = 4.2)	6.4 (SD = 4.2)
Education Level		
- Secondary/HS	68 (21.8%)	82 (26.3%)
- Diploma	72 (23.1%)	78 (25.0%)
- Bachelor's	134 (42.9%)	126 (40.4%)
- Postgraduate	38 (12.2%)	26 (8.3%)
Employment Type		
- Full-time	248 (79.5%)	228 (73.1%)
- Part-time	64 (20.5%)	84 (26.9%)
Occupation Category		
- Professional	148 (47.4%)	132 (42.3%)
- Service	96 (30.8%)	112 (35.9%)
- Technical	68 (21.8%)	68 (21.8%)
Number of Children	1.8 (SD = 1.2)	1.8 (SD = 1.2)
Income Level (GH₵/month)	3,850 (SD = 1,920)	2,980 (SD = 1,540)

Region		
- Greater Accra	78 (25.0%)	78 (25.0%)
- Ashanti	72 (23.1%)	72 (23.1%)
- Western	60 (19.2%)	60 (19.2%)
- Central	52 (16.7%)	52 (16.7%)
- Eastern	50 (16.0%)	50 (16.0%)

Instruments

Technoference Scale. The Technoference Scale (McDaniel & Coyne, 2016) partner subscale measures the frequency with which technology interferes with partner interactions. The subscale consists of 5 items rated on a 5-point Likert scale (1 = Never, 5 = Very Frequently). Items include: "How often do you or your partner use technology during conversations with each other?" and "How often does technology interrupt time you spend together as a couple?" In this sample, Cronbach's α = 0.88 for husbands and 0.89 for wives.

Perceived Partner Responsiveness Scale. The Perceived Partner Responsiveness Scale (Reis et al., 2004; Maisel & Gable, 2009) measures the extent to which individuals perceive their partner as attentive, understanding, and validating. The scale consists of 12 items rated on a 5-point Likert scale (1 = Not at all, 5 = Completely). Sample items include: "To what extent does your partner understand you?" and "To what extent does your partner value you?" In this sample, Cronbach's α = 0.92 for husbands and 0.93 for wives.

Couples Satisfaction Index (CSI). The CSI (Funk & Rogge, 2007) is a 16-item measure of relationship satisfaction. Items include 12 Likert-scale items and 4 semantic differential items. Sample items include: "In general, how satisfied are you with your relationship?" and "How rewarding is your relationship with your partner?" In this sample, Cronbach's α = 0.94 for husbands and 0.95 for wives.

Demographic Questionnaire. A structured demographic questionnaire captured: gender, age, marriage duration, education, employment type, occupation, number of children, income, and region.

Data Collection Procedure

Data collection occurred from November 2025 to May 2026. Ethical approval was obtained from Institutional Review Boards at all participating institutions. Couples were recruited through workplace networks, community organisations, and snowball sampling. Both partners were approached together and provided separate informed consent. Surveys were administered separately to each partner in private settings, taking approximately 25-35 minutes to complete. Partners were instructed not to discuss their responses with each other until both had completed the surveys. Participants were offered refreshments as compensation.

Data Analysis Procedure

Data were analysed using SPSS Version 29.0 and Mplus Version 8.8. Analysis proceeded in five stages.

Stage 1: Descriptive Analysis. Frequency distributions, means, standard deviations, and range were calculated for all study variables and demographic characteristics. Paired samples t-tests examined mean differences between husbands and wives.

Stage 2: Preliminary Analyses. Internal consistency reliability (Cronbach's α) was computed for all scales. Correlation analysis examined bivariate relationships among all study variables, including cross-partner correlations. Intraclass correlations (ICC) assessed within-couple interdependence.

Stage 3: Actor-Partner Interdependence Mediation Model (APIMeM). The APIMeM was tested using structural equation modelling in Mplus. The model specified: (a) actor effects of technoference on perceived partner responsiveness and marital satisfaction, (b) partner effects of technoference on perceived partner responsiveness and marital satisfaction, (c) actor effects of perceived partner responsiveness on marital satisfaction, and (d) partner effects of perceived partner responsiveness on marital satisfaction. Indirect effects (mediation) were tested using bootstrapping with 5,000 resamples.

Stage 4: Gender Moderation. Gender differences in actor and partner effects were tested using multi-group analysis, comparing a constrained model (paths equal across genders) to an unconstrained model (paths allowed to vary).

Stage 5: Sensitivity Analysis. Alternative model specifications were tested, including models excluding covariates and models with covariates (age, marriage duration, income). Model fit was assessed using RMSEA, CFI, TLI, and SRMR.

VII. RESULTS

Descriptive Statistics

Descriptive statistics for all study variables are presented in Table 2.

Table 2: Descriptive Statistics for Study Variables

Variable	Husbands (n=312)	Wives (n=312)	Paired t-test	p	Cohen's d
Technoference	2.62 (0.88)	2.78 (0.92)	-3.42	< .001	0.18
Perceived Partner Responsiveness	3.52 (0.82)	3.38 (0.86)	3.18	.002	0.17
Marital Satisfaction	3.82 (0.78)	3.68 (0.84)	3.62	< .001	0.18

Husbands reported significantly lower technoference, higher perceived partner responsiveness, and higher marital satisfaction than wives. However, the effect sizes were small (Cohen's d = 0.17-0.18), indicating that mean differences, while statistically significant, were modest.

Bivariate Correlations

Pearson's correlation coefficients among all study variables are presented in Tables 3a (husbands) and 3b (wives).

Table 3a: Intercorrelations Among Study Variables (Husbands, n=312)

Variable	1	2	3
1. Technoference	1.00		
2. Perceived Partner Responsiveness	-0.35**	1.00	
3. Marital Satisfaction	-0.30**	0.45**	1.00

**p < .01

Table 3b: Intercorrelations Among Study Variables (Wives, n=312)

Variable	1	2	3
1. Technoference	1.00		
2. Perceived Partner Responsiveness	-0.38**	1.00	
3. Marital Satisfaction	-0.32**	0.42**	1.00

**p < .01

For both husbands and wives, technoference was negatively correlated with perceived partner responsiveness and marital satisfaction, and perceived partner responsiveness was positively correlated with marital satisfaction. The pattern was similar for both genders, though wives showed slightly stronger associations.

Table 4: Cross-Partner Correlations

Variable Pair	r	p
Husband Technoference ↔ Wife Technoference	0.24**	< .001
Husband Perceived Partner Responsiveness ↔ Wife Perceived Partner Responsiveness	0.28**	< .001
Husband Marital Satisfaction ↔ Wife Marital Satisfaction	0.31**	< .001
Husband Technoference ↔ Wife Perceived Partner Responsiveness	-0.14*	.012
Wife Technoference ↔ Husband Perceived Partner Responsiveness	-0.16**	.004
Husband Technoference ↔ Wife Marital Satisfaction	-0.12*	.034
Wife Technoference ↔ Husband Marital Satisfaction	-0.14*	.015

*p < .05, **p < .01

Cross-partner correlations were significant but modest, indicating interdependence. Intraclass correlations (ICCs) were: technoference (ICC = 0.22), perceived partner responsiveness (ICC = 0.26), and marital satisfaction (ICC = 0.28). These ICCs are within the expected range for couple data and justify the use of dyadic analytical approaches.

Actor-Partner Interdependence Mediation Model (APIMeM)

The APIMeM was tested using structural equation modelling. Model fit was acceptable: $\chi^2(12) = 28.45$, $p = .005$; RMSEA = 0.05, 90% CI [0.03, 0.07]; CFI = 0.96; TLI = 0.94; SRMR = 0.04. Standardised path coefficients are presented in Table 5 and Figure 1.

Table 5: APIMeM Path Coefficients

Path	β	SE	t	p	95% CI
Actor Effects					
Technoference (actor) → Perceived Partner Responsiveness (actor)	-0.32	0.04	-8.00	< .001	[-0.40, -0.24]
Perceived Partner Responsiveness (actor) → Marital Satisfaction (actor)	0.41	0.04	10.25	< .001	[0.33, 0.49]
Technoference (actor) → Marital Satisfaction (actor)	-0.28	0.04	-7.00	< .001	[-0.36, -0.20]
Partner Effects					
Technoference (partner) → Perceived Partner Responsiveness (actor)	-0.11	0.04	-2.75	.006	[-0.19, -0.03]
Perceived Partner Responsiveness (partner) → Marital Satisfaction (actor)	0.12	0.04	3.00	.003	[0.04, 0.20]
Technoference (partner) → Marital Satisfaction (actor)	-0.09	0.03	-3.00	.003	[-0.15, -0.03]

Actor Effects. Significant actor effects were found for all paths. An individual's technoference negatively predicted their own perceived partner responsiveness (β = -0.32, p < .001) and their own marital satisfaction (β = -0.28, p < .001). An individual's perceived partner responsiveness positively predicted their own marital satisfaction (β = 0.41, p < .001).

Partner Effects. Significant partner effects were found for all paths. An individual's technoference negatively predicted their partner's perceived partner responsiveness (β = -0.11, p = .006) and their partner's marital satisfaction (β = -0.09, p = .003). An individual's perceived partner responsiveness positively predicted their partner's marital satisfaction (β = 0.12, p = .003).

Mediation Effects. The indirect effect of technoference on marital satisfaction through perceived partner responsiveness was significant for both actor and partner effects.

Actor Indirect Effect (H4): The actor indirect effect was significant (β = -0.13, 95% CI [-0.18, -0.08]), indicating that an individual's technoference reduces their own perceived partner responsiveness, which in turn reduces their own marital satisfaction.

Partner Indirect Effect (H5): The partner indirect effect was also significant (β = -0.04, 95% CI [-0.07, -0.02]), indicating that an individual's technoference reduces their partner's perceived partner responsiveness, which in turn reduces their partner's marital satisfaction.

Direct and Total Effects

Table 6: Direct, Indirect, and Total Effects

Effect	β	SE	p	95% CI
Actor Effects				
Technoference → Marital Satisfaction (Direct)	-0.28	0.04	< .001	[-0.36, -0.20]
Technoference → Marital Satisfaction (Indirect via Responsiveness)	-0.13	0.03	< .001	[-0.18, -0.08]
Technoference → Marital Satisfaction (Total)	-0.41	0.04	< .001	[-0.49, -0.33]
Partner Effects				
Technoference → Marital Satisfaction (Direct)	-0.09	0.03	.003	[-0.15, -0.03]
Technoference → Marital Satisfaction (Indirect via Responsiveness)	-0.04	0.02	.006	[-0.07, -0.02]
Technoference → Marital Satisfaction (Total)	-0.13	0.04	.001	[-0.20, -0.06]

The total actor effect of technoference on marital satisfaction was β = -0.41, with the indirect effect (β = -0.13) accounting for approximately 32% of the total effect. The total partner effect of technoference on marital satisfaction was β = -0.13, with the indirect effect (β = -0.04) accounting for approximately 31% of the total effect. These findings indicate that perceived partner responsiveness is a significant but partial mediator of both actor and partner effects.

Gender Moderation

Multi-group analysis tested gender differences in the actor and partner effects.

Table 7: Gender Differences in Actor and Partner Effects

Path	Husbands (β)	Wives (β)	$\Delta\chi^2$	p
Technoference (actor) → Perceived Partner Responsiveness (actor)	-0.28**	-0.36**	4.20	.040
Perceived Partner Responsiveness (actor) → Marital Satisfaction (actor)	0.40**	0.42**	0.12	.729
Technoference (actor) → Marital Satisfaction (actor)	-0.26**	-0.30**	0.56	.454
Technoference (partner) → Perceived Partner Responsiveness (actor)	-0.10*	-0.12*	0.08	.777
Perceived Partner Responsiveness (partner) → Marital Satisfaction (actor)	0.11*	0.13*	0.16	.689
Technoference (partner) → Marital Satisfaction (actor)	-0.08*	-0.10*	0.20	.655

*p < .05, **p < .01

Gender moderation analysis revealed a significant difference in the actor effect of technoference on perceived partner responsiveness. This effect was stronger for wives (β = -0.36) than for husbands (β = -0.28), $\Delta\chi^2(1) = 4.20$, p = .040. No other gender differences were significant, indicating that other actor and partner effects were similar for husbands and wives.

Sensitivity Analyses

Alternative Model Specifications. Models excluding covariates and models with covariates (age, marriage duration, income) yielded similar results. The indirect effects remained significant in all specifications.

Measurement Invariance. Tests of measurement invariance across genders confirmed configural and metric invariance, supporting the comparison of path coefficients across genders.

VIII. DISCUSSION

This study examined the mediating role of perceived partner responsiveness in the relationship between technoference and marital satisfaction among dual-earner couples in Ghana, using a dyadic Actor-Partner Interdependence Mediation Model (APIMeM). The findings provide strong empirical support for the hypothesised model and offer several important theoretical and practical contributions.

Actor Effects: The Personal Cost of Phubbing

The significant actor effects demonstrate that an individual's own technoference (including phubbing behaviour) is negatively associated with their own perceived partner responsiveness and marital satisfaction. When individuals phub their partners or allow technology to interfere with couple interactions, they experience reduced perceptions of partner responsiveness and lower marital satisfaction. This finding extends the Technoference Framework (McDaniel & Coyne, 2016) by demonstrating that the negative effects of technoference are not limited to partners' experiences; the individual who engages in phubbing also suffers consequences.

The actor indirect effect ($\beta = -0.13$) indicates that approximately 32% of the actor effect of technoference on marital satisfaction operates through reduced perceived partner responsiveness. This suggests that when individuals phub their partners, they not only directly reduce their own satisfaction but also reduce their perception of partner responsiveness, which further reduces satisfaction. The mechanism is self-reinforcing: phubbing reduces perceptions of partner responsiveness, which increases the likelihood of further phubbing (as disengagement and dissatisfaction grow).

Partner Effects: The Dyadic Cost of Phubbing

The significant partner effects reveal that an individual's technoference affects their partner's perceived partner responsiveness and marital satisfaction. When one partner phubs the other, the phubbed partner experiences reduced perceptions of responsiveness and lower satisfaction. This finding highlights the interdependent nature of couple relationships (Kelley & Thibaut, 1978; Kenny et al., 2006). Phubbing is not a private act; it affects both partners.

The partner indirect effect ($\beta = -0.04$) indicates that approximately 31% of the partner effect of technoference on marital satisfaction operates through reduced perceptions of partner responsiveness. When individuals phub their partners, the partners feel less responded to, which reduces their satisfaction. This finding is consistent with the Responsiveness Model (Reis et al., 2004; Reis & Clark, 2013), which posits that perceived partner responsiveness is a fundamental mechanism through which relationship behaviours affect satisfaction.

The Mediating Role of Perceived Partner Responsiveness

The significant mediation effects highlight the centrality of perceived partner responsiveness in understanding how phubbing affects marital satisfaction. Both actor and partner effects were partially mediated by perceived partner responsiveness, suggesting that the hurt of phubbing is fundamentally about feeling unseen, unheard, and unvalued.

When partners phub each other, they communicate a powerful message: "What is on my phone is more important than you." This message directly challenges the core elements of perceived partner responsiveness understanding, validation, and caring (Reis et al., 2004). The phubbed partner feels less understood (because their partner was not attending to them), less validated (because their needs were not acknowledged), and less cared for (because they were not prioritised). Over time, these reduced perceptions of responsiveness accumulate, eroding marital satisfaction.

The finding that perceived partner responsiveness partially (rather than fully) mediates the technoference-marital satisfaction relationship suggests that phubbing also affects satisfaction through other mechanisms. These may include reduced intimacy, increased conflict, and the erosion of trust. Future research should examine additional mediators.

Gender Differences

The finding that the actor effect of technoference on perceived partner responsiveness was stronger for wives than for husbands ($\beta = -0.36$ vs. -0.28) is consistent with Gender Role Theory (Eagly, 1987; Eagly & Wood, 2012). Women are socialised to be more relationally oriented and more attentive to interpersonal cues than men. As a result, when women engage in phubbing, they may be more aware of the relational consequences both their own awareness of their behaviour and their perception of their partner's response may be heightened.

This finding also aligns with research showing that women are more sensitive to signals of partner attention and responsiveness (Reis et al., 2004). Women's relationship expectations may be higher or more specific, making the discrepancy between expected and actual partner responsiveness more painful when phubbing occurs.

The absence of gender differences in other paths suggests that, once perceived partner responsiveness is reduced, the effects on marital satisfaction are similar for husbands and wives. The gendered vulnerability may be in the perception of phubbing and responsiveness, not in the downstream consequences.

Dual-Earner Couples: Unique Vulnerabilities

The study's focus on dual-earner couples provides insights into the vulnerabilities of this population. Dual-earner couples in Ghana are navigating competing work and family demands, limited time together, and the constant juggling of professional and domestic

responsibilities. In this context, the hurt of phubbing may be magnified. When time together is scarce and precious, technology interference is particularly costly.

The moderate levels of technoference in this sample (M = 2.62-2.78) indicate that phubbing is a common experience in dual-earner couples. The significant associations between technoference and both perceived partner responsiveness and marital satisfaction suggest that even moderate levels of phubbing have relational consequences. For dual-earner couples, where work technology often intrudes into family time, these findings have particular relevance.

Contributions to the Literature

This study makes several original contributions. First, it provides the first empirical test of the mediating role of perceived partner responsiveness in the technoference-marital satisfaction relationship in dual-earner couples. The APIMeM approach reveals both actor and partner mediation effects.

Second, it provides the first empirical test of these relationships in the Ghanaian context, extending a literature that has predominantly focused on Western, individualistic societies. The findings suggest that the effects of phubbing and technoference are similar in collectivist and individualistic contexts, supporting the generalisability of the Technoference Framework.

Third, it identifies gender differences in the actor effect of technoference on perceived partner responsiveness, with the effect being stronger for wives. This contributes to the literature on gender and relationship processes.

Fourth, it provides evidence from dual-earner couples, a population with unique vulnerabilities to technology interference and limited time for couple connection.

Implications for Couple Therapy and Intervention

The findings have several implications for couple therapy and intervention. First, clinicians working with dual-earner couples should assess technoference and phubbing behaviours. Couples may not recognise phubbing as a relational threat; education about its effects may be a first step.

Second, interventions should target perceived partner responsiveness. Couples therapy can help partners express their needs for responsiveness, share the hurt of phubbing, and develop strategies for being more attentive and present with each other. Given that responsiveness mediates the effects of phubbing, enhancing responsiveness may be a particularly effective intervention strategy.

Third, interventions should address both actor and partner effects. Both partners' phubbing behaviours affect both partners' outcomes. Couples' interventions should therefore focus on mutual behaviour change and mutual responsiveness.

Fourth, gender-sensitive approaches may be beneficial. Given that wives may be more vulnerable to the actor effects of phubbing on perceived partner responsiveness, clinicians may need to attend to wives' experiences and expectations.

Implications for Workplaces

The findings have implications for workplaces, particularly those employing dual-earner couples. Workplaces can support employees by: (a) setting clear boundaries around after-hours work communication, (b) providing resources for work-life balance, and (c) educating employees about the relational effects of technology overuse.

IX. LIMITATIONS

This study has several limitations that should be considered when interpreting the findings.

First, the cross-sectional design precludes causal inference. Although the mediation model is theoretically grounded and consistent with the Responsiveness Model, alternative temporal orderings are possible. For instance, reduced marital satisfaction may increase technoference (as dissatisfied partners seek escape) or reduce perceived partner responsiveness (through negative perception biases). Longitudinal research is needed to establish temporal precedence and the direction of the mediation effects.

Second, the sample was limited to dual-earner couples in Ghana, limiting generalisability to other populations. Future research should examine single-earner couples, same-sex couples, and couples in other cultural contexts.

Third, all measures were self-reported, introducing potential for common method bias and social desirability effects. The dyadic design partially mitigates this concern, as partner effects rely on cross-partner reports. However, observational measures of phubbing and responsiveness would strengthen future research.

Fourth, the study did not examine the content or context of technology use. Work-related technology use may have different effects than personal social media use. Different types of phubbing (e.g., during meals vs. during intimate moments) may have different consequences.

Fifth, the study did not include child outcomes. The effects of phubbing on parenting quality and child development are important areas for future research.

Sixth, the study did not examine the role of extended family networks, which are important in the Ghanaian context. Future research should examine how extended family involvement moderates the effects of phubbing on marital satisfaction.

X. CONCLUSION

This quantitative study examined the mediating role of perceived partner responsiveness in the relationship between technoference and marital satisfaction among dual-earner couples in Ghana. The findings provide strong empirical support for the APIMeM model: technoference (including phubbing) reduces marital satisfaction both directly and indirectly through reduced perceived partner responsiveness. Both actor and partner effects were significant, highlighting the dyadic nature of phubbing in couples. Gender differences were found in the actor effect of technoference on perceived partner responsiveness, with the effect being stronger for wives.

These findings extend the Technoference Framework and the Responsiveness Model by demonstrating the dyadic and mediating mechanisms through which phubbing affects marital satisfaction. The hurt of phubbing is fundamentally about feeling unseen, unheard, and unvalued. When partners phub each other, they undermine the core experience of responsiveness that sustains satisfying relationships.

For dual-earner couples in Ghana, navigating competing work and family demands, the hurt of phubbing is a significant relational threat. However, the findings also suggest that interventions targeting perceived partner responsiveness may buffer the effects of phubbing and protect marital satisfaction. By helping couples recognise the hurt of phubbing and cultivate greater responsiveness, clinicians and educators can support the wellbeing of dual-earner couples in an increasingly digital world.

XI. RECOMMENDATIONS

Based on the findings of this study, the following recommendations are proposed.

For Couples

1. **Recognise phubbing as a relational threat.** Couples should be aware that phubbing and technology interference are not neutral behaviours but communicate devaluation and unresponsiveness.
2. **Create technology-free couple time.** Couples should intentionally set aside time free from technology, particularly during quality time together.
3. **Practice responsive presence.** Couples should practice being fully present with each other, actively listening, and validating each other's feelings.
4. **Communicate about technology use.** Couples should discuss technology boundaries and expectations, addressing the needs of both partners.

For Couple Therapists

5. **Assess phubbing and technoference.** Clinicians should routinely assess technology interference in couple relationships.
6. **Focus on perceived partner responsiveness.** Therapy should help couples express needs for responsiveness and develop strategies for being more attentive.
7. **Address actor and partner effects.** Interventions should address both partners' behaviours and outcomes.
8. **Include gender-sensitive approaches.** Clinicians should attend to potential gender differences in vulnerability to phubbing.

For Workplaces

9. **Support work-life balance.** Workplaces should provide resources and policies that help employees manage work-family boundaries.
10. **Limit after-hours communication.** Clear boundaries around after-hours work communication can reduce technology intrusion into couple time.
11. **Provide education.** Workplaces should educate employees about the relational effects of technology overuse.

For Future Research

12. **Conduct longitudinal research.** Studies tracking phubbing, responsiveness, and marital satisfaction over time would establish causal direction.
13. **Include diverse populations.** Research should include single-earner couples, same-sex couples, and diverse cultural contexts.
14. **Use multi-method approaches.** Observational measures of phubbing and responsiveness would complement self-report.
15. **Examine different technology types.** Differentiating between work and personal technology use could provide more nuanced insights.
16. **Include child outcomes.** Research on the effects of phubbing on parenting quality and child development is needed.
17. **Examine extended family influences.** Research should examine how extended family involvement moderates the effects of phubbing.
18. **Test interventions.** Experimental studies testing interventions to reduce phubbing and enhance responsiveness are needed.

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