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Coworker Phubbing and Links to the Psychosocial Work Environment Among Electricians in Sweden

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ABSTRACT

"Phubbing" (phone snubbing) has been consistently associated with negative intra- and interpersonal outcomes across various social contexts. However, the potential impact of phubbing on horizontal workplace relationships has not been extensively explored. The present study aimed to examine associations between coworker phubbing during breaks and social support and community, horizontal trust, and organizational commitment among electricians in Sweden. An auxiliary aim was to adapt and validate a coworker phubbing scale. In Studies 1a and 1b, confirmatory factor analysis was used to assess and validate the coworker phubbing scale in two samples. In Study 2, structural equation modeling was used to examine the relationship between phubbing and included psychosocial work environment measures. Exposure to phubbing from coworkers was associated with lower perceived support and community, trust, and commitment. The associations were stronger for more severe phubbing behaviors. Engaging in phubbing others was not considerably linked to the psychosocial measures. Younger participants reported engaging in more phubbing and lower perceived exposure to more severe phubbing. Smartphone habits at work may have implications for the psychosocial work environment and, by extension, important outcomes such as well-being, job satisfaction, performance, and turnover.

1 | Introduction

Being absorbed by one's smartphone in the presence of others—referred to as *phubbing*—is a common behavior across various social contexts, including the workplace (Al-Saggaf and MacCulloch 2019). Phubbing has implications for the quality of social relationships and, consequently, may negatively impact workplace interactions and relationships. Horizontal relational aspects of the psychosocial work environment, including collegial support, community, and trust, are important for both employees and organizations. At the employee level, the quality of collegial relationships influences mental and physical well-being (Chou 2015; Dimotakis et al. 2011; Rydstedt et al. 2012), job satisfaction (Simon et al. 2010), motivation (Bakker and Demerouti 2017), and career development (Ehrhardt and Sharif 2019). Positive workplace relationships are also important in relation to organizational goals, such as lower turnover intention (Namin et al. 2021), reduced absenteeism (Undén 1996), and improved performance (Chiaburu and Harrison 2008). Phubbing has been consistently linked to negative interpersonal outcomes (e.g., impaired relationship satisfaction, quality of communication, and trust) in various other relational contexts (Nuñez and Radtke 2024). However, despite the importance of collegial relationships, little is yet known about the potential impact of phubbing behaviors among coworkers.

The present article consists of two studies. Study 1 aimed to adapt and validate a coworker phubbing scale, mainly based

Summary

- A scale was adapted and validated across two samples to assess both exposure to and engagement in coworker phubbing.
- Exposure to phubbing was negatively associated with all included psychosocial work environment outcomes. Associations were stronger for active phubbing behaviors.
- Engaging in phubbing behavior was not considerably associated with any of the outcomes.
- Older participants engaged in fewer phubbing behaviors and reported higher exposure to active phubbing.

on Roberts and David's (2017) boss phubbing scale. Scale validation was conducted in two substudies: a sample of mixed occupations (Study 1a) and the main sample of installation electricians (Study 1b). Study 2 targets the core aim of exploring the associations between phubbing and the psychosocial work environment in the form of social support from colleagues, sense of community at work, horizontal trust, and organizational commitment. Specifically, study 2 focuses on installation electricians in Sweden, analyzing phubbing during work breaks.

Among installation electricians in Sweden, it is common to work at a specific location (e.g., a construction site) alongside colleagues and to take communal breaks at regular intervals. Compared with occupations which involve telework, irregular or unfixed schedules, solitary work and/or breaks, or the possibility to check one's phone behind a closed office door, installation electricians are thus a group whose work conditions should be favorable for exploring break time phubbing. Communal work breaks, such as lunch and coffee breaks, provide not only an opportunity for recovery but also for informal social interaction. Commenting on the often overlooked role of informal workplace interactions, Valo and Mikkola (2020) state that "it is indeed through interpersonal communication that people become aware of each other, build connections to other people, construct and maintain relations with them, and develop a sense of belonging to the same social system" (4). Although research on the social functions of work breaks is scarce, there are indications that communal breaks are linked to increases in the relational psychosocial work environment factors of social connection, collegial support, and trust among coworkers (Berthelsen et al. 2011; von Dreden and Binnewies 2017). It is likely that the opportunity for casual socializing is a necessary building block for the formation of positive workplace relationships and that breaks may provide an important forum for such interactions. If phubbing disrupts these interactions, workplace social dynamics may be affected. The psychosocial work environment is a broad concept involving a range of individual, relational, and organizational aspects, such as quantitative demands, role clarity, social support, stress, and work life conflict (Berthelsen et al. 2020). As phubbing relates to interpersonal outcomes, this study focuses on aspects of the psychosocial work environment which directly pertain to horizontal relationships, i.e., social support from colleagues, sense of community at work, and horizontal trust. Additionally, organizational commitment, which concerns the individual's relationship toward the organization and is influenced by workplace social dynamics, was included.

The importance of social aspects of work have long been emphasized in theories on occupational well-being, including the demands-support-control model (Karasek and Theorell 1990), the effort-rewards imbalance model (Siegrist 1996), and the job demands-resources model (Bakker and Demerouti 2007; Demerouti et al. 2001). Although these models differ in their scope and proposed mechanisms, a shared tenet is that positive collegial relationships are seen to mitigate job strain and provide motivation which goes above and beyond nonsocial components of the work. This argument has been supported by empirical findings (Oldham and Hackman 2010). Social support concerns behaviors which provide emotional, instrumental, informational and/or appraisal aid, all of which are of relevance in collegial relationships (House 1981). Sense of community concerns the degree to which employees experience a sense of belonging and being important to each other (McMillan and Chavis 1986). Horizontal trust concerns the extent to which coworkers trust each other, which facilitates processes like teamwork, knowledge sharing and innovation (Kmieciak 2021). Together, these factors should provide substantial insight into the quality of collegial relationships. Furthermore, organizational commitment has been defined as "a psychological state that (a) characterizes the employee's relationship with the organization and (b) has implications for the decision to continue or discontinue membership in the organization" (Meyer and Allen 1991, 67). While not a measure of horizontal relationships, organizational commitment is influenced by the quality of collegial relationships at work (Church et al. 2018; Kim et al. 2017). Thus, if phubbing impacts horizontal workplace relationships, it may also affect organizational commitment.

During the past decade, a growing body of research has examined the now pervasive phenomenon of phubbing (from "phone" and "snubbing"), or the act of ignoring present people in favor of one's phone. Two main perspectives have been explored in the phubbing literature: exposure to phubbing ("being phubbed") and engaging in phubbing ("being the phubber"). The present study considers both perspectives in relation to psychosocial work environment outcomes.

Social exchange theory, expectancy violations theory, and the social displacement hypothesis provide a theoretical foundation for examining both exposure to and engaging in phubbing in the coworker context. For a conceptual overview, see Figure 1. Briefly, social exchange theory posits that relationships require the reciprocal transaction of some sort of perceived value (e.g., social, economic, emotional) to be established and upheld (Emerson 1976). According to Emerson (1976), social exchange theory is best understood as "a frame of reference within which many theories [...] can speak to one another" (336). Here, social exchange theory is suggested to be the connecting mechanism between expectancy violations and social displacement on one hand, and psychosocial work environment outcomes on the other.

Expectancy violations theory (Burgoon 1993) postulates that individuals have cognitive schemas of appropriate or anticipated

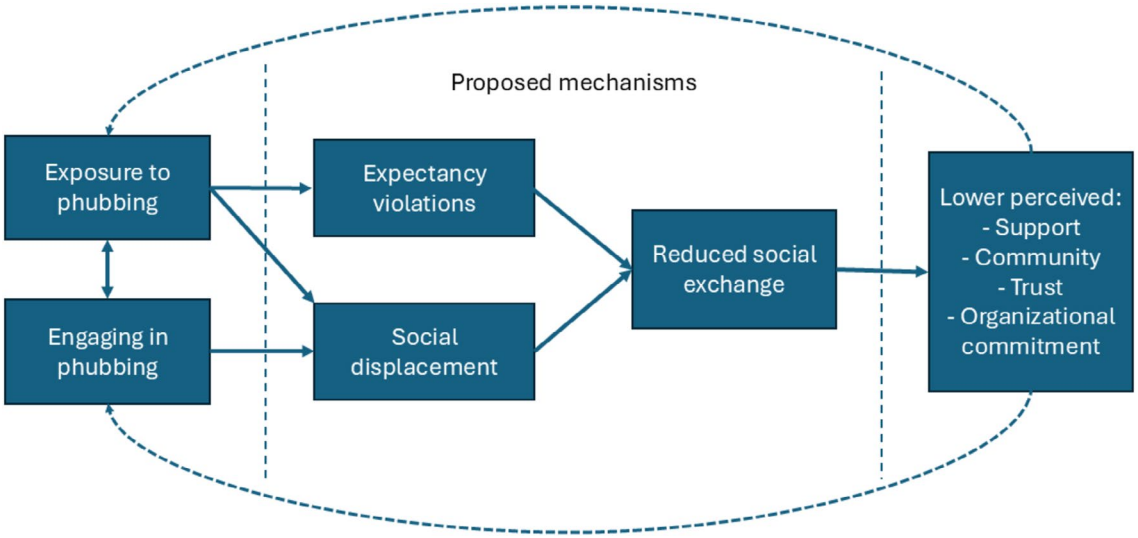

FIGURE 1 | Conceptual framework.

behaviors in a given situation. When others do not act in accordance with those schemas, the individual experiences a state of uncertain arousal, seeking to understand and react to the behavior. This process is influenced by perceived characteristics of the "violator", the relationship, and the context (Burgoon 1993). Being phubbed may violate social expectations, as it entails a lack of social cues associated with engagement and interest, e.g., eye contact, attentive body language, and timely responses (Aagaard 2016). As the theory concerns individuals' responses to the behavior of others, it follows that expectancy violations theory is applicable to the experience of being phubbed but not to being the phubber.

The central tenet of the social displacement hypothesis is simple: time spent using technology reduces the time available for interactions with physically present people. The hypothesis was first formulated long before the advent of modern smartphones and focused on computer-based internet use (Kraut et al. 1998; Nie 2001), but has more recently been revived in the phubbing literature (e.g., Halpern and Katz 2017; Sun and Samp 2021; Wang et al. 2017). Both being phubbed and being the phubber effectively displace the limited time colleagues have for mutual interaction during breaks. Furthermore, the theory is neutral on whether phubbing constitutes an expectancy violation. Even if individuals are content engaging with their phones instead of each other, the absence of social interaction may hinder the formation and maintenance of relationships where support, community, and trust can develop.

Taken together, the social displacement hypothesis, expectancy violations theory, and social exchange theory provide a theoretical lens for examining coworker phubbing. Both exposure to and engagement in phubbing behaviors may displace social interaction, and exposure to phubbing may trigger expectancy violations. In turn, the perceived transactional value of collegial relationships may be reduced, as fundamental relational functions such as emotional support, social belonging, and sense of coherence are diminished. This may then manifest as reductions in social support, sense of community, horizontal trust, and organizational commitment.

Empirical research shows that exposure to phubbing is associated with various negative intra- and interpersonal outcomes, such as lower relationship satisfaction (Roberts and David 2016), depressive symptoms (McDaniel and Coyne 2016), and impaired interaction quality (Chotpitayasunondh and Douglas 2018a). A meta-analysis of 83 studies concluded that "being phubbed was consistently and adversely associated with emotional and cognitive, social, and behavioral consequences" (Nuñez and Radtke 2024, 1305), while also demonstrating that some outcomes (e.g., perceived competence and warmth of the "phubber", fundamental needs satisfaction, affect, and relational concord) are particularly strongly negatively associated with being phubbed.

Although the majority of the phubbing research has examined phubbing in private life (Arenz and Schnauber-Stockmann 2024; Nuñez and Radtke 2024), a growing body of literature is drawing attention to supervisor phubbing. Being exposed to supervisor phubbing has been linked to outcomes such as lower perceived trust, job satisfaction, work engagement, and performance (e.g., Roberts and David 2017, 2020; Yasin et al. 2023; Yousaf et al. 2022). Few studies have targeted exposure to coworker phubbing. Among the research that has been conducted, findings suggest that exposure to coworker phubbing is moderately linked to higher levels of collegial conflict and work-related negative affect, and weakly linked to counterproductive work behavior and lower perceived quality of social connections (Alagarsamy et al. 2024; Koçak 2021). In an interview study, Martinsson and Thomée (2025) found that exposure to phubbing by coworkers was perceived as negatively affecting the duration, frequency, and quality of workplace interactions. Thus, a reasonable assumption is that exposure to phubbing may also influence social dynamics at work, and the following hypothesis is proposed:

H1. *Exposure to phubbing is negatively associated with social support and sense of community (H1a), horizontal trust (H1b), and organizational commitment (H1c).*

Engaging in phubbing behaviors has typically been investigated in terms of potential predictors. In a meta-analysis,

Arenz and Schnauber-Stockmann (2024) found that smartphone, internet, and social media use—particularly when problematic or addictive—were the strongest predictors of phubbing behavior. Social factors, e.g., exposure to phubbing and perceived normative acceptance of phubbing, were also found to considerably predict engaging in phubbing. To the best of our knowledge, only one study has examined engaging in coworker phubbing, linking it to fear of missing out, general uncivil behaviors, and exhaustion (Tandon et al. 2022). Regardless of its predictors (e.g., individual phone habits, addictive tendencies, or social factors), frequently resorting to one's smartphone during work breaks may lead to the displacement of social interaction. Thus, the following hypothesis is proposed:

H2. *Engaging in phubbing is negatively associated with social support and sense of community (H2a), horizontal trust (H2b), and organizational commitment (H2c).*

Being phubbed is associated with the tendency to phub others (Nuñez and Radtke 2024). The notion that smartphone habits are socially contagious has been suggested by other researchers (Finkel and Kruger 2012; Maglieri et al. 2021), and it has been argued that reciprocation of phubbing may be understood as a coping strategy to maintain social balance (Henriksen et al. 2020; Miller-Ott and Kelly 2017). Based on the above, the following hypothesis is proposed:

H3. *Exposure to phubbing and engaging in phubbing are positively associated.*

Younger individuals use their phones more frequently than older individuals (Andone et al. 2016; Olson et al. 2022). Age may also be of relevance when considering phubbing specifically. In Arenz and Schnauber-Stockmann's (2024) meta-analysis of phubbing predictors, age was the only demographic variable to significantly (although modestly) correlate with engaging in phubbing behaviors. Additionally, generational norms may affect perceptions of phubbing, in that older individuals are more likely to view phubbing as a violation of social expectations (Kadylak 2020; Kadylak et al. 2018; Martinsson and Thomée 2025), thus making the experience of being phubbed more salient. Conversely, it has been argued that phubbing may be perceived as less disruptive among younger individuals due to greater integration of digital communication into daily life (Field 2024). Based on the above, the following hypotheses are proposed:

H4. *Younger employees are more likely to engage in phubbing.*

H5. *Older employees report higher perceived exposure to phubbing.*

H6. *The association between exposure to phubbing and support and community, trust, and commitment is stronger among older individuals than among younger individuals.*

H7. *The association between engaging in phubbing and support and community, trust, and commitment is stronger among older individuals than among younger individuals.*

The present study seeks to enhance understanding of the associations between coworker phubbing and social dynamics at work among installation electricians in Sweden. Specifically, it contributes to the literature by examining how phubbing and being phubbed in nondyadic, horizontal workplace relationships is related to perceived collegial support, sense of community at work, horizontal trust, and organizational commitment. An improved understanding of how smartphone practices relate to the social dynamics at work could provide insights for fostering positive workplace relationships and a supportive psychosocial work environment.

2 | Study 1: Scale Adaptation and Validation

The aim of Study 1 was to develop and validate the coworker phubbing scale (CWPS). Validation was carried out in two substudies using different samples. A literature review was conducted to gain an overview of previous phubbing scales. At the time of this review in 2020, no scale regarding coworker phubbing was identified. Five phubbing scales were found: phubbing scale (Karadağ et al. 2015), partner phubbing scale (Roberts and David 2016), boss phubbing scale (Roberts and David 2017), generic scale of phubbing, and generic scale of being phubbed (Chotpitayasunondh and Douglas 2018b).

Roberts and David's (2017) boss phubbing scale (BPS) was selected as the basis for adaptation. The choice of the BPS was based on three key factors: (1) its explicit focus on workplace interactions, (2) its measurement of observable relational behaviors rather than subjective mental states, meaning that items could be readily adapted to assess both engaging in phubbing and exposure to phubbing, and (3) its conciseness. Two items from the BPS were omitted in the adaptation: item 7 for redundancy and item 8 for specificity to work meetings. To enhance construct validity and ensure broader coverage of possible phubbing behaviors in the coworker context, two additional items were adapted and included in the CWPS: one (CWPS item 4) from the partner phubbing scale (Roberts and David 2016), addressing phone use during conversational lulls, and one (CWPS item 5) from the generic scale of being phubbed (Chotpitayasunondh and Douglas 2018b), capturing phone absorption. The wording of each item was modified to ensure suitability for nondyadic social situations in the work context. Throughout the scale development process, regularly scheduled meetings were held with representatives from the union and employer's confederation in the electrical trade. One of the purposes of these meetings was to ensure that the measurements were relevant and appropriate.

Before Study 1, the survey was reviewed by a panel ($n = 19$) consisting of the above-mentioned union ($n = 2$) and employer's confederation ($n = 2$) representatives, as well as a convenience sample of individuals with varied occupations ($n = 15$). The panel was instructed to make the following assessments for each question: (1) Is the question comprehensible? (2) Is the question relevant to your work context? (3) Is it possible to answer the question? and (4) Is there an answer option that suits your assessment of the question? Participants were encouraged to leave free-form comments about how they perceived

the items. Following input from the panel review, no changes were made to the phubbing items as such, although the option to answer "I don't know" was added.

2.1 | Study 1a

2.1.1 | Method

2.1.1.1 | Participants and Procedure. A convenience sample of 322 participants was recruited via a range of Swedish workplaces (Table 1) between September 2020 and March 2022. Managers or HR representatives were contacted, informed about the study, and asked to take part by distributing a link to the survey to employees. In a few cases, the researchers sent out the link directly to employees at a specific workplace.

The survey was constructed and distributed using Qualtrics, and contained questions about demographics and workplace context, exposure to phubbing, engaging in phubbing, workplace policies surrounding phubbing, social support from colleagues, sense of community at work, horizontal trust, and organizational commitment. In the e-mail containing a link to the survey, participants were informed about the purpose of the study, data collection, and terms of participation, including that participation was voluntary and could be withdrawn at any point before completing the survey.

TABLE 1 | Demographic information about participants.

	Study 1a		Study 1b & 2	
	n	%	*n*	%
Age group				
18 to 24 years	18	5.7	68	8.4
25 to 34 years	79	24.9	182	22.5
35 to 44 years	68	21.5	186	23.0
45 to 54 years	65	20.5	171	21.2
55 to 64 years	81	25.6	185	23.0
65+ years	6	1.9	14	1.7
Not reported	5	1.6	2	0.2
Gender				
Men	144	44.7	762	94.3
Women	176	54.7	40	5.0
Other	2	0.6	3	0.4
Job industry				
Electrical trade	107	33.2	807	100
Healthcare	98	30.4		
Dental care	32	9.9		
Manufacturing	31	9.6		
Education	28	8.7		
Retail	22	6.8		
Other/unspecified	4	1.2		
Total	322	100	807	100

2.1.1.2 | Measures

2.1.1.2.1 | Coworker Phubbing Scale. The coworker phubbing scale (CWPS) included nine core items intended to capture varying degrees of coworker phubbing. Participants were asked to report both exposure to and engaging in phubbing, resulting in a total of 18 items (i.e., nine items in each perspective). For an overview of the items and descriptive statistics, see Table 2. For item correlations, see Table 3.

2.1.1.3 | Data Analysis. All statistical analyses were conducted in R, version 4.2.2 (R Core Team 2022). Confirmatory factor analyses (CFAs), structural equation modeling (SEM), and invariance testing were conducted using the lavaan package, version 0.6–9 (Rosseel 2012), and the semTools package, version 0.5-6 (Jorgensen et al. 2022). The scales of the latent factors were set by constraining the loading of the first item per factor to 1.0. The robust maximum likelihood estimator was used for all analyses due to multivariate non-normality. Although sensitivity analysis revealed that there were no meaningful differences between robust and nonrobust maximum likelihood estimation or fit indices in terms of the substantial results, the robust versions were used and reported. Reported goodness-of-fit indices were the scaled chi-squared statistic (χ^2), using the Satorra-Bentler correction (Satorra and Bentler 2001), with its degrees of freedom (df), the robust comparative fit index (CFI), the robust Tucker-Lewis index (TLI), the standardized root mean square residual (SRMR), and the robust root mean square error of approximation (RMSEA). As the χ^2 measure is highly sensitive in large samples (Kline 2016), particular consideration was given to the alternative fit indices CFI, TLI, RMSEA, and SRMR. While no definitive cut-off values exist, it has been suggested that CFI and TLI above 0.90, SRMR below 0.08, and RMSEA (including the upper limit of its 90% confidence interval) below 0.08 are indications of an acceptable fit (Marsh et al. 2004).

2.1.1.4 | Missing Data. Thirty-four (10.6%) of the cases contained missing values in at least one CWPS item. The prevalence of missing data for each individual item ranged between 0.3% and 3.4%. Full information maximum likelihood was used to address the missing values due to its ability to provide accurate estimation of model parameters (Enders and Bandalos 2001).

2.1.2 | Results

As the majority of the scale was adapted from Roberts and David's (2016, 2017) boss and partner phubbing scales, a one-factor structure in accordance with those scales was initially assessed for exposure to phubbing and engaging in phubbing separately (model 1). However, this structure displayed less than satisfactory model fit in our data (exposure to phubbing: $\chi^2 = 292.48$ (df = 27), $p < 0.001$, CFI = 0.83, TLI = 0.78, SRMR = 0.07, RMSEA = 0.199 [0.179–0.219]; engaging in phubbing: $\chi^2 = 134.36$ (df = 27), $p < 0.001$, CFI = 0.92, TLI = 0.89, SRMR = 0.05, RMSEA = 0.122 [0.102–0.143]). Other models were

TABLE 2 | CWPS items including descriptive statistics from Study 1.

Exposure to phubbing								Engaging in phubbing							
		Study 1a			Study 1b					Study 1a			Study 1b		
#	Item	*n*	*M*	SD	*n*	*M*	SD	#	Item	*n*	*M*	SD	*n*	*M*	SD
During a typical communal break...															
ExP1	...one or more coworkers pull out and check their cell phone	318	4.15	0.94	799	4.52	0.72	EnP1	...I pull out and check my cell phone	321	3.19	1.08	806	3.52	1.00
ExP2	...one or more coworkers place their cell phone where they can see it	311	3.88	0.99	775	4.09	0.97	EnP2	...I place my cell phone where I can see it	321	2.65	1.26	802	2.97	1.21
ExP3	...one or more coworkers keep their cell phone in their hands	315	3.74	0.97	794	4.07	0.85	En3	...I keep my cell phone in my hand	321	2.32	0.98	803	2.67	1.03
ExP4	...one or more coworkers check their cell phone if there is a lull in the conversation	315	3.69	0.98	790	3.97	0.87	En4	...I check my cell phone if there is a lull in the conversation	320	2.51	1.04	801	2.71	1.00
ExP5	...one or more coworkers are absorbed in their cell phone	316	3.36	1.11	792	3.66	1.00	En5	...I am absorbed in my cell phone	317	2.03	0.95	800	2.23	0.90
ExP6	...one or more coworkers pull out their cell phone if it beeps, vibrates, or rings, even if we are in the middle of a conversation	312	3.48	1.15	794	3.95	0.90	En6	...I pull out my cell phone if it beeps, vibrates, or rings, even if we are in the middle of a conversation	321	2.72	1.17	803	3.06	1.17
ExP7	...one or more coworkers glance at their cell phone while we are talking	316	3.01	1.04	780	3.19	0.97	En7	...I glance at my cell phone while we are talking	319	1.90	0.87	800	2.01	0.86
ExP8	...I feel like one or more coworkers pay more attention to their cell phone than to me	314	2.61	1.05	774	2.91	1.02	En8	...I pay more attention to my cell phone than to my coworkers	317	1.76	0.85	792	1.84	0.82
ExP9	...one or more coworkers are constantly on their cell phone	314	3.05	1.15	787	3.33	1.10	En9	...I am constantly on my cell phone	318	1.83	0.91	800	2.01	0.91

Note: Response alternatives; 1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always. There was also an option to respond "I don't know," which was coded as NA.
Abbreviations: EnP, engaging in phubbing; ExP, exposure to phubbing.

TABLE 3 | Correlation matrix of all CWPS items in Study 1a (upper diagonal) and Study 1b (lower diagonal).

	ExP1	ExP2	ExP3	ExP4	ExP5	ExP6	ExP7	ExP8	ExP9	EnP1	EnP2	EnP3	EnP4	EnP5	EnP6	EnP7	EnP8	EnP9
ExP1	—	0.65	0.71	0.68	0.63	0.40	0.42	0.39	0.50	0.34	0.16	0.23	0.26	0.14	0.05	0.04	0.09	0.15
ExP2	0.46	—	0.69	0.60	0.52	0.49	0.44	0.39	0.48	0.18	0.30	0.24	0.15	0.10	0.13	0.11	0.06	0.14
ExP3	0.64	0.51	—	0.75	0.71	0.42	0.48	0.48	0.62	0.30	0.19	0.36	0.32	0.22	0.10	0.11	0.20	0.25
ExP4	0.56	0.44	0.62	—	0.74	0.50	0.58	0.55	0.62	0.27	0.20	0.28	0.31	0.22	0.10	0.11	0.19	0.27
ExP5	0.54	0.37	0.65	0.63	—	0.53	0.62	0.62	0.75	0.19	0.13	0.21	0.22	0.27	0.05	0.08	0.19	0.26
ExP6	0.31	0.25	0.32	0.35	0.45	—	0.67	0.55	0.51	0.18	0.21	0.20	0.13	0.17	0.35	0.20	0.24	0.21
ExP7	0.45	0.33	0.53	0.56	0.60	0.48	—	0.75	0.60	0.09	0.13	0.18	0.14	0.18	0.13	0.29	0.26	0.21
ExP8	0.38	0.25	0.44	0.49	0.60	0.47	0.68	—	0.67	0.04	0.11	0.19	0.10	0.19	0.09	0.28	0.33	0.25
ExP9	0.47	0.30	0.55	0.51	0.69	0.45	0.62	0.64	—	0.14	0.09	0.20	0.12	0.21	0.08	0.07	0.24	0.33
EnP1	0.25	0.16	0.21	0.19	0.10	−0.02	0.02	−0.07	0.01	—	0.45	0.58	0.65	0.52	0.41	0.32	0.41	0.50
EnP2	0.13	0.32	0.18	0.17	0.07	−0.07	0.04	−0.07	−0.01	0.52	—	0.53	0.45	0.42	0.43	0.43	0.38	0.42
EnP3	0.17	0.19	0.29	0.21	0.16	0.00	0.12	0.04	0.09	0.65	0.57	—	0.70	0.65	0.42	0.51	0.56	0.63
EnP4	0.21	0.14	0.20	0.29	0.16	0.03	0.16	0.03	0.10	0.60	0.41	0.59	—	0.67	0.40	0.52	0.52	0.57
EnP5	0.18	0.12	0.26	0.27	0.28	0.05	0.15	0.12	0.17	0.55	0.39	0.62	0.52	—	0.43	0.52	0.61	0.67
EnP6	0.02	0.00	0.06	0.07	0.03	0.26	0.06	−0.05	0.03	0.29	0.17	0.28	0.34	0.29	—	0.45	0.39	0.41
EnP7	0.14	0.16	0.21	0.21	0.14	0.07	0.29	0.14	0.15	0.42	0.39	0.48	0.48	0.51	0.37	—	0.63	0.51
EnP8	0.15	0.12	0.23	0.24	0.22	0.04	0.21	0.22	0.20	0.41	0.32	0.47	0.45	0.59	0.29	0.60	—	0.68
EnP9	0.15	0.15	0.24	0.21	0.22	0.10	0.17	0.15	0.26	0.42	0.39	0.54	0.41	0.57	0.29	0.47	0.56	—

Note: Study 1a correlations are in the upper diagonal and Study 1b correlations are in the lower diagonal.
Abbreviations: EnP, engaging in phubbing; ExP, exposure to phubbing.

assessed following theoretical and statistical considerations. A two-factor structure (model 2), where the first four items loaded on the first factor and the last five items loaded on the second factor, provided a reasonable model fit (exposure to phubbing: $\chi^2 = 183.44$ (df = 26), $p < 0.001$, CFI = 0.91, TLI = 0.87, SRMR = 0.06, RMSEA = 0.152 [0.131–0.173]; engaging in phubbing: $\chi^2 = 95.99$ (df = 26), $p < 0.001$, CFI = 0.95, TLI = 0.93, SRMR = 0.04, RMSEA = 0.099 [0.078–0.121]).

The first factor was theorized to represent subtle or unobtrusive ("passive") phubbing behaviors, whereas the second factor represented more obvious or intrusive ("active") phubbing behaviors. However, item five demonstrated cross-loadings of similar strength on both factors (model 3). It was therefore excluded, resulting in a two-factor model with items 1 through 4 loading on the first factor and items 6 through 9 loading on the second factor (model 4). This model displayed largely satisfactory goodness-of-fit for both exposure to phubbing ($\chi^2 = 106.80$ (df = 19), $p < 0.001$, CFI = 0.94, TLI = 0.91, SRMR = 0.05, RMSEA = 0.130 [0.107–0.155]) and engaging in phubbing ($\chi^2 = 77.34$ (df = 19), $p < 0.001$, CFI = 0.95, TLI = 0.92, SRMR = 0.04, RMSEA = 0.106 [0.082–0.132]). It should be noted that the RMSEA, CFI, and TLI have been shown to produce estimates indicating a worse fit in smaller samples and smaller models (Kenny et al. 2015; Shi et al. 2019). For an overview of the structure, factor loadings, and model fit indices, see Table 4. Note that the fit indices of model 4 cannot be compared directly with those of models 1, 2, and 3, as the exclusion of item five means that it is not nested within the other models.

2.2 | Study 1b

Study 1b followed the design of Study 1a and sought to replicate its findings in the main sample of Swedish installation electricians. Thus, the measures and data analysis were identical to those in Study 1a.

2.2.1 | Method

2.2.1.1 | Participants and Procedure. The sample consisted of 807 participants (Table 1). A link to the survey was sent to 13,476 installation electricians via the Swedish Electricians' Union's e-mail distribution system. A reminder was sent out nine days after the first e-mail. As 492 e-mail addresses were invalid, the survey reached a total of 12,984 recipients' inboxes, of which 1028 started the survey. Additionally, the Swedish Electricians' Union posted a link to the survey on its webpage and Facebook page. Five respondents were excluded due to not meeting the inclusion criterion of working 10 h or more per week. Additionally, 216 participants were excluded from analyses due to not completing the survey, as consenting to take part required completing the last page. The final response rate was low, at 6.2% of the initial sampling frame.

A vast majority (94.3%) of the participants were male, and 97.8% reported working 30 h or more per week. Almost all (99.4%) reported using a mobile phone in their work, and 85.6% reported having been provided with a phone by their employer. The most frequent work-related uses were phone calls, text messages, apps (e.g., for blueprints), and e-mail.

2.2.1.2 | Missing Data. Ninety (11.1%) of the cases contained missing values, and the prevalence of missing data for individual items ranged from 0.9% to 4.1%. Again, full information maximum likelihood was used to address missing values due to its ability to provide accurate estimation of model parameters (Enders and Bandalos 2001).

2.2.2 | Results

CFAs were conducted for exposure to phubbing and engaging in phubbing separately to assess whether the structure found in Study 1a was replicable in the sample of electricians. To replicate the procedure, (1) a one-factor solution was initially evaluated, followed by (2) a two-factor solution, (3) a two-factor solution where item five is allowed to load on both factors, and finally (4) a two-factor solution excluding item five (Table 5). Model 4 was not nested within the other models and cannot be directly compared with them.

As in Study 1a, a two-factor structure (models 2–4) provided a markedly improved model fit compared with a one-factor structure. Additionally, as observed in Study 1a, item 5 exhibited cross-loading once again in Study 1b. Thus, item 5 was excluded from further analyses in the present study. Again, a structure where the first four items loaded on the "passive phubbing" factor and the last four on the "active phubbing" factor was supported.

All alternative fit indices (i.e., CFI, TLI, RMSEA, SRMR) indicated better fit than in Study 1a. CFI, TLI, and SRMR indicated good fit, whereas RMSEA indicated adequate fit for exposure to phubbing ($\chi^2 = 78.24$ (df = 19), $p < 0.001$, CFI = 0.98, TLI = 0.96, SRMR = 0.03, RMSEA = 0.069 [0.054–0.086]) and borderline satisfactory fit for engaging in phubbing ($\chi^2 = 105.73$ (df = 19), $p < 0.001$, CFI = 0.96, TLI = 0.94, SRMR = 0.03, RMSEA = 0.081 [0.066–0.096]).

In conclusion, the CWPS demonstrated satisfactory psychometric properties among Swedish electricians. Study 1a supported its validity in a more heterogeneous group, but further validation in a broader working population needs to be conducted in the future.

3 | Study 2: Associations Between Phubbing and Psychosocial Variables

After validating the factor structure of the coworker phubbing scale (CWPS) in two samples, the next step was to examine the associations between passive and active phubbing and social support, sense of community at work, horizontal trust, and organizational commitment. Furthermore, associations between exposure to phubbing and engaging in phubbing were explored, along with age differences in phubbing and its links to the included psychosocial work environment measures. For details on participants, procedures, and the coworker phubbing scale measure, see Study 1.

TABLE 4 | Factor structures, loadings, and fit indices for CWPS items, Study 1a.

	Exposure to phubbing								Engaging in phubbing							
	Factor structure, std.loadings								Factor structure, std.loadings							
Model #	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]
1	1: 0.74	—	27	292.48***	0.83	0.78	0.07	0.199 [0.179–0.219]	1: 0.68	—	27	134.36***	0.92	0.89	0.05	0.122
	2: 0.69	—							2: 0.59	—						[0.102–0.143]
	3: 0.83	—							3: 0.82	—						
	4: 0.85	—							4: 0.80	—						
	5: 0.87	—							5: 0.81	—						
	6: 0.63	—							6: 0.55	—						
	7: 0.72	—							7: 0.66	—						
	8: 0.70	—							8: 0.73	—						
	9: 0.79	—							9: 0.78	—						
2	1: 0.80	—	26	183.44***	0.91	0.87	0.06	0.152 [0.131–0.173]	1: 0.71	—	26	95.99***	0.95	0.93	0.04	0.099
	2: 0.75	—							2: 0.60	—						[0.078–0.121]
	3: 0.89	—							3: 0.85	—						
	4: 0.86	—							4: 0.84	—						
	—	5: 0.86							—	5: 0.82						
	—	6: 0.67							—	6: 0.54						
	—	7: 0.78							—	7: 0.68						
	—	8: 0.78							—	8: 0.78						
	—	9: 0.83							—	9: 0.81						
3	1: 0.80	—	25	141.40***	0.93	0.90	0.05	0.133 [0.112–0.155]	1: 0.71	—	25	86.46***	0.95	0.93	0.04	0.094
	2: 0.74	—							2: 0.59	—						[0.072–0.117]
	3: 0.89	—							3: 0.85	—						
	4: 0.86	—							4: 0.84	—						
	5: 0.47	5: 0.44							5: 0.38	5: 0.47						
	—	6: 0.69							—	6: 0.54						
	—	7: 0.83							—	7: 0.70						
	—	8: 0.83							—	8: 0.80						
	—	9: 0.80							—	9: 0.82						

(Continues)

TABLE 4 | (Continued)

Model #	Exposure to phubbing: Factor structure, std.loadings								Engaging in phubbing: Factor structure, std.loadings							
	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]
4	1: 0.81	—	19	106.80***	0.94	0.91	0.05	0.130 [0.107–0.155]	1: 0.71	—	19	77.34***	0.95	0.92	0.04	0.106 [0.082–0.132]
	2: 0.76	—							2: 0.60	—						
	3: 0.89	—							3: 0.85	—						
	4: 0.85	—							4: 0.83	—						
	—	6: 0.71							—	6: 0.55						
	—	7: 0.86							—	7: 0.71						
	—	8: 0.83							—	8: 0.81						
	—	9: 0.76							—	9: 0.81						

Abbreviations: χ^2, chi-squared statistic; CFI, comparative fit index; df, degrees of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean squared residual; TLI, Tucker-Lewis index.
***$p < 0.001$.

3.1 | Method

3.1.1 | Measures

3.1.1.1 | Psychosocial Work Environment Measures. To assess the perceived psychosocial work environment, four dimensions of the Swedish version of the Copenhagen psychosocial questionnaire (COPSOQ III) (Berthelsen et al. 2020) were used. The dimension social support from colleagues (two items; $\alpha/\omega = 0.80$) concerns instrumental and emotional support from coworkers. Sense of community at work (three items; $\alpha = 0.84$, $\omega = 0.85$) involves the social atmosphere, collaboration, and sense of belonging. Horizontal trust (one item) concerns perceptions of mutual collegial trust. Organizational commitment was assessed using the dimension commitment to the workplace (three items; $\alpha = 0.84$, $\omega = 0.85$), which encompasses pride in the organization, intent to remain with the employer, and likelihood of endorsing the workplace to others. COPSOQ III has been validated in multiple languages, lines of occupations, and countries, including Sweden (Berthelsen et al. 2020).

Each COPSOQ III item consisted of a statement to which participants were asked to choose a response on a five-point Likert scale. Depending on the item, the response alternatives were 1 = Always, 2 = Often, 3 = Sometimes, 4 = Seldom, 5 = Never/hardly ever; or 1 = To a very large extent, 2 = To a large extent, 3 = Somewhat, 4 = To a small extent, 5 = To a very small extent. In the analyses, the response options were reversed to facilitate the interpretation of the results (i.e., so that high values indicate high perceived support and community, trust, and commitment).

3.1.1.2 | Age. For comparisons between age groups, the sample was divided into younger (18–34, $n = 250$) and older (35 and older, $n = 557$) participants. The primary rationale for choosing this relatively low cut-off age was that those aged 34 years or younger at the time of answering the survey were likely to have entered the workforce around or after the point when the smartphone became a household item. In contrast, those aged 35 and upward were more likely to have experienced a pre-smartphone work life. Second, this division allowed for sufficiently large groups, facilitating statistical comparisons.

3.1.2 | Data Analysis

In the scale validation, exposure to phubbing and engaging in phubbing were analyzed separately. However, for the main study a baseline model was specified where both exposure to phubbing and engaging in phubbing were included, along with social support from colleagues, sense of community at work, horizontal trust, and organizational commitment. The associations between phubbing and the above-described psychosocial variables were examined. Furthermore, associations between exposure to and engaging in phubbing were explored. Finally, comparisons were made between age groups concerning the association between phubbing and the psychosocial work environment variables. As robust maximum likelihood estimation was used due to the multivariate non-normality of the data,

TABLE 5 | Factor structures, loadings, and fit indices for CWPS, Study 1b.

	Exposure to phubbing								Engaging in phubbing							
	Factor structure, std.loadings								Factor structure, std.loadings							
Model #	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]	Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]
1	1: 0.67	—	27	356.81***	0.89	0.85	0.06	0.141 [0.128–0.154]	1: 0.73	—	27	299.53***	0.90	0.87	0.05	0.122 [0.110–0.134]
	2: 0.49	—							2: 0.60	—						
	3: 0.76	—							3: 0.81	—						
	4: 0.75	—							4: 0.71	—						
	5: 0.83	—							5: 0.77	—						
	6: 0.54	—							6: 0.40	—						
	7: 0.76	—							7: 0.67	—						
	8: 0.72	—							8: 0.68	—						
	9: 0.78	—							9: 0.67	—						
2	1: 0.75	—	26	175.15***	0.95	0.93	0.04	0.096 [0.082–0.109]	1: 0.78	—	26	154.37***	0.95	0.93	0.04	0.086 [0.073–0.099]
	2: 0.57	—							2: 0.64	—						
	3: 0.84	—							3: 0.85	—						
	4: 0.78	—							4: 0.73	—						
	—	5: 0.82							—	5: 0.79						
	—	6: 0.57							—	6: 0.41						
	—	7: 0.79							—	7: 0.71						
	—	8: 0.78							—	8: 0.75						
	—	9: 0.81							—	9: 0.71						
3	1: 0.74	—	25	114.46***	0.97	0.96	0.03	0.076 [0.062–0.090]	1: 0.78	—	25	130.01***	0.96	0.94	0.03	0.079 [0.066–0.092]
	2: 0.57	—							2: 0.64	—						
	3: 0.84	—							3: 0.85	—						
	4: 0.78	—							4: 0.72	—						
	5: 0.41	5: 0.47							5: 0.32	5: 0.50						
	—	6: 0.58							—	6: 0.42						
	—	7: 0.81							—	7: 0.73						
	—	8: 0.80							—	8: 0.78						
	—	9: 0.82							—	9: 0.72						

(Continues)

TABLE 5 | (Continued)

Model #	Exposure to phubbing: Factor structure, std.loadings Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]	Engaging in phubbing: Factor structure, std.loadings Factor 1	Factor 2	df	χ^2	CFI	TLI	SRMR	RMSEA [90% CI]
4	1: 0.75	—	19	78.24***	0.98	0.96	0.03	0.069 [0.054–0.086]	1: 0.78	—	19	105.73***	0.96	0.94	0.03	0.081 [0.066–0.096]
	2: 0.58	—							2: 0.65	—						
	3: 0.84	—							3: 0.84	—						
	4: 0.77	—							4: 0.73	—						
	—	6: 0.58							—	6: 0.44						
	—	7: 0.83							—	7: 0.75						
	—	8: 0.80							—	8: 0.77						
	—	9: 0.79							—	9: 0.70						

Abbreviations: χ^2, chi-squared statistic; CFI, comparative fit index; df, degrees of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean squared residual; TLI, Tucker-Lewis index.
***$p < 0.001$.

the reported fit indices were the Satorra-Bentler scaled (Satorra and Bentler 2001) chi-squared statistic (χ^2) with its degrees of freedom (df), the robust comparative fit index (CFI), the robust Tucker-Lewis index (TLI), the standardized root mean square residual (SRMR), and the robust root mean square error of approximation (RMSEA).

3.1.2.1 | Measurement Invariance Testing.

Before any comparisons of age groups, measurement invariance testing was conducted to assess whether the same underlying constructs were measured across younger (–34) and older (35+) respondents. Measurement invariance is a prerequisite for meaningful group comparisons (Putnick and Bornstein 2016). As horizontal trust consisted of only one item, it was not included in assessments of measurement invariance. However, it was included in global analyses pertaining to the relationships between latent variables.

Stepwise testing of configural, metric, and scalar invariance was performed, where each step retained the preceding step's restrictions, to assess whether the included variables had similar meanings and interpretations across groups, allowing for meaningful comparisons. Configural invariance means that the overall model structure is consistent across groups, i.e., that the same manifest variables load on the same factors. Metric invariance means that factor loadings are comparable across groups, i.e., that the relationships between the latent variables and their respective manifest variables are similar across groups. Scalar invariance means that the item intercepts are comparable across groups. For assessment of metric and scalar invariance across groups, particular consideration was given to alternative fit measures due to the sensitivity of the χ^2 measure (Kline 2016). A −0.01 change in CFI and TLI, a 0.015 change in RMSEA, and a SRMR change of 0.030 for metric invariance and 0.015 for scalar invariance were viewed as indications that measurement invariance did not hold (Chen 2007; Cheung and Rensvold 2002).

After establishing configural, metric, and scalar invariance, the next step was to assess whether there were any differences in exposure to and engaging in phubbing between younger (–34) and older (35+) participants. While age differences in support and community, trust, and commitment in and of themselves were not part of the research aim, they were also examined to find any general divergence in these constructs. To test for differences, the latent means were constrained to be equal across groups in a stepwise procedure, and the resulting model fit was compared with that of the scalar invariance model (where latent means were free to vary). A reduced model fit indicated measurable group differences. Here, a statistically significant difference in the χ^2 measure was seen as an indication of group differences (Thompson and Green 2013). Following Putnick and Bornstein's (2016) recommendation to provide a standardized effect size, Cohen's d was calculated for the differences in latent means.

Finally, group differences in covariances between the latent phubbing and psychosocial variables were examined. In a process analogous to the one described for the assessment of latent mean differences, the covariances between latent constructs were constrained to be equal across groups in a stepwise procedure. Again, the resulting models were compared with the

scalar invariance model, and a significant increase in the χ^2 measure was seen as an indication of age differences.

3.2 | Results

3.2.1 | Assessment of a Model Including all Phubbing and Psychosocial Variables

An eight-factor structure was specified (model 5), with four indicators loading on exposure to passive phubbing, four on exposure to active phubbing, four on engaging in passive phubbing, four on engaging in active phubbing, three on sense of community at work, two on social support from colleagues, and three on organizational commitment. Additionally, horizontal trust was included as a single-indicator latent variable. While the model fit was acceptable ($\chi^2 = 981.86$ (df = 248), $p < 0.001$, CFI = 0.93, TLI = 0.91, SRMR = 0.04, RMSEA = 0.062 [0.058–0.066]), the factors sense of community at work and social support from colleagues were extremely highly correlated ($r = 0.98$). To avoid issues of multicollinearity, these factors were combined into a compound social support and community factor (model 6, five items; $\alpha/\omega = 0.90$). Possibly due to the reduced model complexity, there was an increase in χ^2 ($\Delta\chi^2 = 27.45$ (Δdf = 7), $p < 0.001$). However, there was no meaningful difference in alternative fit measures: (ΔCFI = −0.002, ΔTLI = 0, ΔSRMR = 0.001, ΔRMSEA = 0.000). Thus, this model was retained as multicollinearity issues were avoided.

3.2.2 | H1: Associations Between Exposure to Phubbing and Social Support and Community, Horizontal Trust, and Commitment

The next step after assessing the global model fit was to examine associations between exposure to passive and active phubbing and social support and community, horizontal trust, and organizational commitment. All associations were statistically significant (Table 6). H1 was supported. Exposure to passive phubbing was weakly negatively correlated with (a) support and community ($r = -0.14$), (b) trust ($r = -0.12$), and (c) commitment ($r = -0.17$). For exposure to active phubbing, the correlations were stronger: (a) support and community ($r = -0.25$), (b) trust ($r = -0.23$), and (c) commitment ($r = -0.22$). In other words, exposure to more intense phubbing behaviors from coworkers was associated with lower reported support and community, trust, and commitment than exposure to less intense phubbing behaviors.

3.2.3 | H2: Associations Between Engaging in Phubbing and Support and Community, Trust, and Commitment

Associations between engaging in phubbing and the included psychosocial variables were examined. Here, no significant correlations were found concerning (a) support and community or (c) commitment (Table 6). There was a negative correlation between engaging in active phubbing and (b) trust ($r = -0.12$). However, as the correlation was weak and as trust was measured using a single indicator, this finding should be interpreted with caution. Overall, H2 was not supported.

3.2.4 | H3: Association Between Exposure to Phubbing and Engaging in Phubbing

The association between exposure to phubbing and engaging in phubbing was examined. All correlations were statistically significant, except for that between exposure to active phubbing and engaging in passive phubbing (Table 6). Thus, a greater exposure to passive phubbing behaviors from coworkers was associated with a higher level of engaging in phubbing behaviors, both passive ($r = 0.36$) and active ($r = 0.34$). Exposure to active phubbing behaviors was associated with engaging in active phubbing behaviors ($r = 0.31$), but not passive. Thus, H3 was largely supported. Although no claims can be made about causal direction, these results indicate some degree of contagiousness in phubbing behaviors.

3.2.5 | H4 and H5: Age Differences in Reported Exposure to Phubbing and Engagement in Phubbing

Before proceeding with group comparisons of latent means, the model was assessed for configural, metric, and scalar invariance across younger (−34) and older (35+) participants (Table 7). While there was a significant increase in χ^2 for the scalar invariance model, inspection of the alternative fit indices did not indicate any meaningful reduction in goodness-of-fit (ΔCFI = −0.001, ΔTLI = 0.001, ΔSRMR = 0.001, ΔRMSEA = −0.001). In accordance with Chen's (2007) recommendations, the overall assessment was thus that scalar invariance was supported.

After establishing measurement invariance, group differences in latent means were examined (Table 8). First, a model was specified where all latent means were constrained to be equal across groups. This model was then compared with the scalar invariance model. In case invariance was not supported (i.e., a significant increase in χ^2), sensitivity analyses were conducted to investigate the source of noninvariance (i.e., for which specific factor there existed a difference in latent means). Cohen's *d* was reported to provide a standardized estimation of effect sizes (Putnick and Bornstein 2016).

Younger participants reported higher levels of engaging in both passive and active phubbing. Older participants reported higher levels of exposure to active, but not passive, phubbing. The age differences were more pronounced for engaging in phubbing than exposure to phubbing. Thus, H4 was partly supported and H5 was supported.

3.2.6 | H6 and H7: Comparing the Associations Between Exposure to Phubbing and Engaging in Phubbing and Psychosocial Variables Across Age Groups

Finally, age differences in latent covariances between exposure to phubbing, engaging in phubbing, support and community, trust, and commitment were examined. A model was specified where all latent covariances were constrained to be equal across groups. Comparison with the (baseline) scalar invariance model yielded that there was a significant increase in χ^2 (scaled $\Delta\chi^2 = 37.01$, Δdf = 21, $p < 0.05$), indicating the

TABLE 6 | Factor variances and covariances.

		Estimate	SE	*Z*	*p*	Stand. estimate
Exp. passive phubbing	Exp. passive phubbing	0.292	0.034	8.66	< 0.001	1.000
	Exp. active phubbing	0.208	0.021	9.88	< 0.001	0.748
	Eng. passive phubbing	0.153	0.020	7.70	< 0.001	0.360
	Eng. active phubbing	0.091	0.013	6.86	< 0.001	0.337
	Support and community	−0.040	0.012	−3.39	< 0.01	−0.142
	Horizontal trust	−0.049	0.015	−3.20	< 0.01	−0.124
	Commitment	−0.064	0.016	−3.95	< 0.001	−0.170
Exp. active phubbing	Exp. active phubbing	0.264	0.034	7.80	< 0.001	1.000
	Eng. passive phubbing	0.024	0.018	1.29	0.196	0.058
	Eng. active phubbing	0.079	0.014	5.65	< 0.001	0.309
	Support and community	−0.067	0.014	−4.69	< 0.001	−0.248
	Horizontal trust	−0.084	0.016	−5.22	< 0.001	−0.225
	Commitment	−0.079	0.018	−4.37	< 0.001	−0.220
Eng. passive phubbing	Eng. passive phubbing	0.620	0.045	13.71	< 0.001	1.000
	Eng. active phubbing	0.304	0.032	9.40	< 0.001	0.775
	Support and community	0.022	0.017	1.29	0.198	0.053
	Horizontal trust	−0.022	0.022	−0.96	0.335	−0.038
	Commitment	−0.008	0.024	−0.35	0.728	−0.015
Eng. active phubbing	Eng. active phubbing	0.248	0.042	5.94	< 0.001	1.000
	Support and community	−0.022	0.013	−1.71	0.087	−0.083
	Horizontal trust	−0.044	0.017	−2.65	< 0.01	−0.121
	Commitment	−0.023	0.016	−1.45	0.148	−0.066
Support and community	Support and community	0.275	0.038	7.23	< 0.001	1.000
	Horizontal trust	0.261	0.032	8.14	< 0.001	0.685
	Commitment	0.203	0.027	7.64	< 0.001	0.555
Horizontal trust	Horizontal trust	0.529	0.035	15.10	< 0.001	1.000
	Commitment	0.275	0.029	9.45	< 0.001	0.543
Commitment	Commitment	0.485	0.057	8.58	< 0.001	1.000

Abbreviations: Eng., engaging in; Exp., exposure to.

TABLE 7 | Invariance testing of the model containing all phubbing and psychosocial items.

	df	χ^2	Scaled $\Delta\chi^2$	CFI	TLI	SRMR	RMSEA [90% CI]
Configural invariance	510	1234.69		0.92	0.91	0.05	0.062 [0.058–0.067]
Metric invariance	528	1244.11	12.64	0.92	0.91	0.05	0.061 [0.056–0.065]
Scalar invariance	546	1276.06	31.22*	0.92	0.92	0.05	0.060 [0.056–0.065]

Abbreviations: χ^2, chi-squared statistic; CFI, comparative fit index; df, degrees of freedom; RMSEA, root mean square error of approximation; SRMR, standardized root mean squared residual; TLI, Tucker-Lewis index.
*$p < 0.05$.

presence of age differences. Next, sensitivity analyses were conducted, where all possible covariances were individually constrained to be equal across groups. These models were then each compared with the (baseline) scalar invariance model. Again, a statistically significant change in χ^2 was seen as evidence of measurable group differences.

TABLE 8 | Assessment of age differences in latent means.

	df	χ^2	Scaled $\Delta\chi^2$	CFI	TLI	SRMR	RMSEA [90% CI]	Cohen's *d*
Scalar invariance (baseline)	546	1276.05		0.92	0.92	0.05	0.060 [0.056–0.065]	
Latent mean invariance	553	1369.14	91.93***	0.91	0.91	0.06	0.063 [0.059–0.068]	
ExpPP mean invariance	547	1276.91	0.91	0.92	0.92	0.05	0.060 [0.056–0.065]	0.08
ExpAP mean invariance	547	1282.79	7.04**	0.92	0.92	0.05	0.060 [0.056–0.065]	0.22
EngPP mean invariance	547	1350.27	79.98***	0.92	0.91	0.06	0.063 [0.059–0.067]	0.76
EngAP mean invariance	547	1302.48	35.13***	0.92	0.91	0.06	0.061 [0.057–0.066]	0.47
SSC mean invariance	547	1277.63	1.62	0.92	0.92	0.05	0.060 [0.056–0.065]	0.11
HT mean invariance	547	1277.59	1.40	0.92	0.92	0.05	0.060 [0.056–0.065]	0.09
CW mean invariance	547	1276.40	0.17	0.92	0.92	0.05	0.060 [0.056–0.065]	0.03

Abbreviations: χ^2, chi-squared statistic; AP, active phubbing; CFI, comparative fit index; CW, commitment to the workplace; df, degrees of freedom; Eng, engaging in; Exp, exposure to; HT, horizontal trust; PP, passive phubbing; RMSEA, root mean square error of approximation; SRMR, standardized root mean squared residual; SSC, social support and community; TLI, Tucker-Lewis index.
*$p < 0.05$.
**$p < 0.01$.
***$p < 0.001$.

Based on changes in χ^2, there were no significant age differences concerning the associations between exposure to phubbing and support and community, commitment, or trust. Thus, H6 was not supported. As for the associations between engaging in phubbing and the included psychosocial measures, change in χ^2 indicated an age difference concerning how participants' passive phubbing related to horizontal trust (scaled $\Delta\chi^2 = 5.81$, $\Delta df = 1$, $p < 0.05$). However, this difference was modest and should be interpreted with some caution, partly due to the fact that horizontal trust was measured with a single item, and partly due to the correlations themselves being weak and nonsignificant for both younger ($r = 0.12$) and older ($r = -0.08$) participants. The overall assessment was that H7 was not supported.

Although it was not included as a hypothesis, age differences in the link between exposure to phubbing and engaging in phubbing were assessed post hoc as part of the stepwise sensitivity testing. Exposure to passive phubbing was more strongly associated with engaging in active phubbing among younger ($r = 0.48$, $p < 0.001$) than older ($r = 0.26$, $p < 0.001$) participants (scaled $\Delta\chi^2 = 12.47$, $\Delta df = 1$, $p < 0.001$). Similarly, exposure to active phubbing was more strongly linked to engaging in active phubbing among younger ($r = 0.55$, $p < 0.001$) than older ($r = 0.23$, $p < 0.001$) respondents (scaled $\Delta\chi^2 = 17.41$, $\Delta df = 1$, $p < 0.001$). Thus, younger participants who experienced more passive or active phubbing were more likely than older participants to report engaging in active (but not passive) phubbing.

4 | Discussion

The starting point of the present study, situated in the context of electricians in Sweden, was the concern that the occurrence of phubbing (phone snubbing) during communal work breaks could have implications for the psychosocial work environment. A theoretical starting point was that phubbing may lead to social displacement and expectancy violations, thereby impacting social exchange among coworkers. In turn, employees may experience reduced social support and community, horizontal trust, and organizational commitment.

Previous studies of workplace phubbing have primarily examined it as a one-way phenomenon (predominantly exposure to phubbing) and focused on vertical, dyadic relationships (i.e., supervisor–employee). To address this gap, we adapted and validated a scale for measuring both exposure to and engaging in phubbing among colleagues. The coworker phubbing scale (CWPS), in its final form, was an adaptation of Roberts and David's (2017) boss phubbing scale (BPS), with one addition from Roberts and David's (2016) partner phubbing scale (PPS). These scales emphasize observable behaviors rather than subjective mental states or perceptions, meaning that the items could be adapted to measure both being phubbed and being the phubber. This behavioral focus also addresses concerns raised by Frackowiak et al. (2023), who noted that much of the phubbing literature conflates behavior (phubbing) with its consequences (e.g., feeling ignored), often treating them as one and the same. Furthermore, both the BPS and the PPS have been validated in multiple studies (e.g., Bracht et al. 2024; Koçak 2021; Roberts and David 2016, 2017, 2020, 2023; Wang et al. 2017; Yasin et al. 2023), providing a solid foundation for adaptation. After proper validation, the CWPS should be applicable across most segments of the working population involving collegial relationships. The scale can also be adapted to examine contexts beyond work breaks.

The primary finding was that "being phubbed" by colleagues was negatively associated with social support and community, horizontal trust, and organizational commitment (H1) in our

sample of Swedish electricians. In the scale validation, it was found that collegial phubbing behaviors could be attributed to two underlying factors: passive phubbing, which concerns more subtle behaviors such as keeping one's phone at hand, and active phubbing, which concerns more overt behaviors such as engaging with one's phone during conversations. The correlations were stronger for active phubbing, meaning that more "severe" phubbing behaviors were more strongly negatively associated with support and community, commitment, and trust. It appears likely that more severe phubbing is perceived as a clearer violation of social expectations and displaces social interaction to a higher degree. While holding on to one's phone or occasionally checking for updates may be noticeable, these behaviors are less likely to breach social norms or drown out social interactions compared with more direct and prolonged instances of phubbing.

As research on coworker phubbing is scarce, it is relevant to position these findings in relation to previous research in other social contexts. The correlations between active phubbing and social support and community ($r = -0.25$), horizontal trust ($r = -0.23$), and organizational commitment ($r = -0.22$) were fairly close to the weighted average correlations between phubbing and interpersonal outcomes accounted for in Courtright and Caplan's (2020) meta-analysis ($r\,(37) = -0.29$, $p < 0.039$). In Nuñez and Radtke's (2024) more granular meta-analysis, the outcomes most conceptually similar to those in the present study, along with their disattenuated mean correlations to exposure to phubbing, were: trust in interlocutor ($\hat{\rho}\,(5) = -0.40$, $p < 0.001$), relationship satisfaction ($\hat{\rho}\,(22) = -0.23$, $p < 0.001$), emotional/social support ($\hat{\rho}\,(3) = -0.22$, $p < 0.001$), and social connectedness ($\hat{\rho}\,(3) = -0.14$, $p = 0.001$). Based on the above, a tentative conclusion is that exposure to coworker phubbing has similar interpersonal implications as exposure to phubbing in other contexts (e.g., friendships, romantic relationships, families, and supervisor–employee relationships). Although further research is needed to explore causal paths, the present study provides a preliminary indication that exposure to coworker phubbing is at least interrelated with the social dynamics at work.

Another finding of interest was that "being a phubber" (i.e., engaging in phubbing) was not associated with perceived support and community (H2a) or commitment (H2c). While there was a weak significant correlation between engaging in active phubbing and horizontal trust (H2b), the overall evaluation is that engaging in phubbing neither considerably influenced nor was influenced by the included psychosocial factors. Thus, being phubbed by coworkers was linked to the psychosocial factors, whereas participants' own tendency to engage in such behaviors was generally not. Although the cross-sectional nature of the study does not allow for causal inferences, some tentative theoretical considerations can be made. It seems improbable that a poor social work environment would influence others' phubbing behaviors, but not participants' own. A more plausible explanation, based on the findings, is that while engaging in phubbing behavior is largely independent from support and community, trust, and commitment, the collective aggregation of others' phubbing behaviors in the workplace (i.e., exposure to phubbing) has bearing on the social atmosphere. Another possibility is that being exposed to phubbing involves the perceived subjection to an external social barrier, whereas engaging in phubbing may be understood as an exercise of individual choice. This distinction, described as the phubbing blind spot (Barrick et al. 2022), may help explain the differences in how exposure to phubbing and engaging in phubbing are associated with the psychosocial outcomes.

The results supported the hypothesis that there is a link between exposure to phubbing and engaging in phubbing among Swedish electricians (H3). Being exposed to passive phubbing correlated moderately with engaging in passive and active phubbing, and being exposed to active phubbing correlated moderately with engaging in active phubbing behaviors. The strength of these associations is highly comparable with those found between phubbing and being phubbed in previous meta-analyses (Arenz and Schnauber-Stockmann 2024; Nuñez and Radtke 2024). This indicates that reciprocity of coworker phubbing follows similar dynamics to those observed in other social contexts. While the causal direction again cannot be empirically determined, previous research indicates that individuals are more likely to engage with their smartphones when they observe others doing the same (Finkel and Kruger 2012; Maglieri et al. 2021). Theoretically, participants' phubbing behavior is more likely to be influenced by their coworkers as a collective than the other way around.

It has previously been demonstrated that age may be a factor in phubbing behaviors and attitudes (Kadylak et al. 2018; Rainie and Zickuhr 2015). In the present study, older participants reported markedly lower levels of engaging in passive and active phubbing than younger participants (H4). Again, this is consistent with previous research, as it has been argued that younger individuals are more likely to engage in phubbing behaviors (Arenz and Schnauber-Stockmann 2024; Rainie and Zickuhr 2015) and use their phones more frequently in general (Andone et al. 2016; Olson et al. 2022). Furthermore, there was a modest age difference concerning perceived exposure to active, but not passive, phubbing (H5). It is probable that passive phubbing behaviors (e.g., placing one's phone where one can see it) are generally normalized, especially in a workplace setting where the smartphone is commonly used as a work tool, such as among electricians. On the other hand, older individuals may be more sensitive to overt and potentially intrusive phubbing behaviors, whereas younger individuals may be more likely to perceive even these behaviors as a normalized part of social interaction.

No age differences were found concerning the correlations between exposure to phubbing and psychosocial work environment variables (H6). Thus, the associations between exposure to phubbing and support and community, trust, and commitment (or the reverse) were not age-dependent. This suggests that while younger individuals may be more overtly accepting of phubbing, its impact on social dynamics may be largely unrelated to age. This finding may align with the social displacement hypothesis—the idea that time spent on one's phone displaces social interaction with physically present individuals, regardless of how those involved feel about it. Phubbing and being phubbed may be subjectively preferable to socializing for some individuals and in certain social contexts, such as when feeling stressed or tired (Martinsson and Thomée 2025). Additionally, it has been suggested that phone

use may complement rather than displace face-to-face interaction (Lutz and Knop 2020). These complexities are important to acknowledge. However, despite such exceptions, research and theories on occupational well-being consistently underscore the fundamental role of social bonds in the workplace (e.g., Bakker and Demerouti 2017; House 1981; Karasek and Theorell 1990; Oldham and Hackman 2010; Siegrist 1996). For most people, most of the time, social connection is important. If a considerable portion of the limited time available for informal interaction during breaks is displaced, this may have meaningful consequences for workplace relationships.

Concerning the link between engaging in phubbing and the psychosocial measures, only very limited age differences were found (H7). Engaging in passive phubbing was significantly but weakly correlated with perceived horizontal trust among younger, but not older, respondents. There were no such group differences concerning engaging in active phubbing. It is unclear why these differences were found for passive, but not active, phubbing. Post hoc analyses revealed that there were fairly pronounced age differences concerning how exposure to phubbing and engaging in phubbing were interrelated. Here, younger electricians who reported more exposure to passive or active phubbing from coworkers were also more likely to engage in active phubbing themselves, when compared with older individuals. It is possible that the phubbing behaviors of younger participants were more heavily influenced by their coworkers' actions compared with their older counterparts. This, in turn, could indicate that workplace norms exert more influence on younger employees. Furthermore, it is consistent with Winkelmann and Geber's (2022) finding that younger individuals, while being more approving of phubbing, are also likely to adapt their phone use according to the perceptions of the older generations' phubbing norms.

Finally, a brief expanded discussion of the findings in the validation of the CWPS is in order. In contrast to the single-factor structure of Roberts and David's (2016, 2017) boss and partner phubbing scales, a two-factor structure (i.e., attributing the response patterns to two distinct underlying latent constructs) provided a markedly better model fit in the present study. The first four items, which described relatively minor instances of phubbing, loaded on the first factor, which was labeled "passive phubbing". The last four items, which described more noticeable phubbing behaviors, loaded on the second factor, labeled "active phubbing". A possible explanation for this two-factor structure is that while boss and partner phubbing both concern dyadic interactions, work breaks are often socially dynamic, involving multiple persons, different possible constellations, and relationships ranging from close to peripheral. It has been shown that phubbing is perceived differently depending on contextual factors and social expectations (e.g., Kelly et al. 2017; Roberts and David 2023; Vanden Abeele 2020). A one-on-one meeting with one's manager or an interaction with a significant other is likely to involve higher expectations of mutual attention, whereas some degree of phone use is likely both expected and less noticeable in a break room setting. Here, the context of the study is relevant for the interpretation of the results, as electricians use mobile phones to perform various work tasks and are likely to carry at least one phone with them at all times during the workday. Furthermore, many electricians generally work and take breaks alongside colleagues at a specific time and place, meaning that they have ample horizontal social contact points where phubbing may be actualized.

In conclusion, the present study found that the perception of being "phubbed" by coworkers during work breaks is of relevance to support and community, horizontal trust, and organizational commitment in the context of Swedish electricians. The type of phubbing (i.e., passive or active) is of importance in this respect. Furthermore, exposure to phubbing and engaging in phubbing were moderately correlated. Generational differences also emerged, primarily in that younger participants reported higher levels of engaging in phubbing.

4.1 | Implications

This study adds to the literature by examining phubbing behaviors among coworkers during communal breaks, incorporating the dual perspectives of both being phubbed and phubbing others. The central implication of the study is that being exposed to coworker phubbing may negatively impact social support and community, horizontal trust, and organizational commitment in the context of electricians in Sweden. The associations were more pronounced for active phubbing, i.e., behaviors which may be characterized as more obvious and socially intrusive. While the study was carried out in a specific and male-dominated occupational setting, meaning that further research is needed to expand the generalizability of the findings, a tentative hypothesis is that a similar relationship between phubbing and the psychosocial work environment could be present at least among other subsets of the population which regularly work and take breaks alongside colleagues.

Furthermore, the findings indicate that coworker phubbing may be a question of relevance for both employees and organizations. If a higher prevalence of phubbing is linked to a less favorable psychosocial work environment, as the findings suggest, there may be negative consequences at the individual and organizational levels, for example, in the form of reduced well-being, job satisfaction, individual and team effectiveness, and higher levels of turnover and absenteeism (e.g., Chou 2015; De Jong et al. 2016; Khusanova et al. 2021; Nielsen et al. 2017; Rydstedt et al. 2012; Undén 1996). While strict policies regulating phone use during breaks are not likely to be either palatable or effective (Madlock and Hessling 2020), organizations could benefit from acknowledging that smartphone use may have a bearing on collegial relationships, and that the copresence of different unspoken norms surrounding phone use may lead to unintentional friction. Smartphones are a central part of contemporary life, including social situations at work. Simultaneously, our findings show that some smartphone use, especially of the more socially disruptive kind, may carry negative implications for workplace relationships. In practical terms, managers who perceive phubbing practices to be problematic in their workplace, or who receive such indications from employees, may choose to initiate collaborative group discussions concerning social ground rules. One possible example, borrowed from an interview study on employee perceptions of coworker phubbing (Martinsson and Thomée 2025), could be to instate "phone zones" in the break

room. However, the details of such arrangements should stem from bottom-up discussions and collaborative agreements. In other words, the subject of smartphone use during communal breaks may be an issue to consider for discussion at different organizational levels to mitigate potentially detrimental consequences for both employees and organizations.

4.2 | Limitations and Future Research

While the present study provides new insights concerning links between coworker phubbing and workplace social dynamics, it is important to acknowledge its limitations and identify avenues for future research. The sample of electricians in Sweden is highly restricted and specific, both in terms of occupation and gender distribution, which introduces questions about the validity of the scale and the generalizability of the findings. For example, it is likely that smartphone habits carry different implications among office workers. Moreover, the cultural context may entail certain limitations for generalizability. For example, the Swedish work culture emphasizes regular communal breaks. Although the CWPS was first validated in a sample containing a fairly even gender distribution and a larger range of occupations (Study 1a), further research is needed to assess whether the associations between phubbing and psychosocial outcomes hold in broader samples. On the other hand, the specificity of the sample allowed for certain advantages. First, installation electricians typically work at a specific place and time. This means that overarching trends concerning telework and/or the effects of the covid-19 pandemic likely had limited effect compared with many other subgroups of the working population. Second, installation electricians normally work and take communal breaks alongside their colleagues, which provides ample opportunities for social interactions. While the study targeted a restricted population, similar characteristics are shared by a substantial portion of the workforce. The study sought to assess phubbing in nondyadic settings. While the settings themselves (i.e., communal break rooms) are likely to involve multiple individuals, it is not possible to unequivocally ascertain that the interactions themselves were nondyadic in nature.

The psychosocial work environment is a broad and complex concept, and the present study cannot claim to assess it in its entirety, as it focuses on aspects related to collegial relationships and organizational commitment. Furthermore, the COPSOQ dimensions used to assess social support, community, trust, and commitment are short, ranging from one to three items per dimension. Using more comprehensive scales for each of these dimensions may have allowed for more nuanced analyses. However, COPSOQ has been validated in a range of national and occupational contexts, and the dimensions were deemed appropriate for assessing the quality of collegial relationships as well as organizational commitment, which is influenced by workplace relationships (Church et al. 2018; Kim et al. 2017).

The cross-sectional nature of the data meant that no inferences could be made regarding changes over time or the causal direction between exposure to phubbing, own phubbing behaviors, and the included psychosocial measures. Furthermore, as organizational commitment is influenced by social relationships at work, a reasonable assumption is that the link between phubbing and organizational commitment is mediated by the perceived quality of horizontal relationships. Again, meaningful assessments of mediation cannot be made using cross-sectional data (Little 2023). However, this question can be addressed in future research employing multiple time points. Additionally, the low response rate at 6.2% of the initial sampling frame poses a problem for the generalizability of the findings. Although the results still provide relevant insights regarding phubbing, social support and community, horizontal trust, and organizational commitment, future research may address these issues by including more diverse samples, additional aspects of the psychosocial work environment, multiple time points, and optimally achieving a higher response rate.

5 | Conclusion

Exposure to coworker phubbing was negatively associated with social support, sense of community, horizontal trust, and organizational commitment among Swedish electricians. These associations were stronger for exposure to more severe ("active") phubbing than more subtle ("passive") phubbing behaviors, indicating that it is not only the presence of smartphones that is of relevance but also how they are used. However, participants' own engagement in phubbing behaviors was generally not associated with the psychosocial variables. Exposure to phubbing and engaging in phubbing were moderately correlated, suggesting some degree of contagiousness regarding phone habits. Age was a factor, in that older participants were less likely to report engaging in phubbing behaviors overall. Furthermore, older participants reported somewhat higher exposure to active, but not passive, phubbing, hinting at possible age differences in perceptions of others' smartphone behaviors. Overall, coworker phubbing may be of relevance for the psychosocial work environment and, by extension, have implications for key outcomes at both the individual and organizational levels, such as job satisfaction, well-being, performance, and turnover rates. While strict top-down regulation of phone use during breaks is likely not constructive, workplaces where phubbing is perceived as an issue may benefit from discussing the topic and establishing social ground rules. Finally, the specificity of the sample and cross-sectional data may limit generalizability and raise questions about causality. Future research is needed to address these concerns.

Author Contributions

Per Martinsson: conceptualization, data curation, formal analysis, investigation, methodology, writing – original draft. **Pernilla Larsman:** conceptualization, formal analysis, methodology, supervision, validation, writing – review and editing. **Karin Allard:** conceptualization, methodology, writing – review and editing. **Mattias Gunnarsson:** conceptualization, methodology, writing – review and editing. **Maria Spante:** conceptualization, methodology, writing – review and editing. **Sara Thomée:** conceptualization, investigation, methodology, project administration, supervision, funding acquisition, writing – review and editing.

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Ethics Statement

Ethics approval was sought and granted by the Swedish Ethical Review Authority (reg. no. 2020-04813).

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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