Academy of Management Annual Meeting 2015 – Symposium Submission No. 13582

The Role of Context in Virtual Work

Contributors:

[1]Arik Cheshin, [2]Catherine Durnell Cramton, [3]Ella Glikson, [4]M. Travis Maynard,

[5]Karin S. Moser, [6]Katariina Salmela-Aro, [3]Yael Sidi & [7]Matti Vartiainen

[1]University of Haifa, Israel

[2]George Mason University, USA

[3]Technion, Israel Institute of Technology, Israel

[4]Colorado State University, USA

[5]University of Roehampton London, UK

[6]University of Helsinki, Finland

[7]Aalto University School of Science, Finland

Organizers:

Karin S. Moser, Department of Psychology, University of Roehampton London, UK, and

Matti Vartiainen, Department of Industrial Engineering and Management, Aalto University

School of Science, Finland

Discussant:

Catherine Durnell Cramton, School of Management, George Mason University, USA

Symposium submitted to both the MOC and OCIS divisions of AoM

ABSTRACT

In this symposium we address the tension between working remotely 'anytime, anywhere and with anyone' and the individual embeddedness of the collaborators in a specific local physical, social, cultural, mental and symbolic space. In virtual work, there are two main reasons why the importance of context increases and adds further layers of meaning to context: a) the variety of locations collaborators work from, and b) the dynamic of changing locations while working that is made possible by mobile devices and wireless connections. However, so far the role of context has not been explicitly addressed as a concept relevant to theorizing and researching virtual work.

The role of context can be approached from three perspectives: Firstly, we suggest that a reconsideration of conventional views of technology may help us to more effectively study the multiple, emergent, and dynamic socio-material configurations that constitute contemporary organizations and their practices. Secondly, developments in mobile technologies and infrastructures enable increasingly flexible ways of working. Thirdly, we would like to propose Lewin's idea of 'life space' (Lebensraum) as a way of understanding the multiple layers of meaning of 'context in virtual work'.

The four papers and the critical review by the discussant expand our understanding on the role of context by addressing the different layers relevant to context in virtual work: The relevance of a physical place in mobile work, familiarity as a feature of social space in teamwork, the cultural and social space of status cues in communication, and the symbolic space of linguistic markers.

SYMPOSIUM OVERVIEW

All our actions happen in context: Whether it is actual behaviour – such as writing a paper – or mental action – such as anticipating a meeting -, our thoughts and actions are embedded in a specific context, in a physical location, a time zone and a cultural and social context with specific norms and values attached to it. We may have the meeting online with someone located on a different continent and we may send the written paper electronically for feedback rather than delivering and discussing it personally, but the fact remains that also in virtual collaboration the local physical, social and mental spaces remain a defining feature for the collaborators.

In this symposium we would like to address the tension between working remotely 'anytime, anywhere and with anyone' and the individual embeddedness of the collaborators in a specific local physical, social, cultural, mental and symbolic space. In the past ten years, there has been a noted increase of research on global virtual teams (Gilson et al., 2015) which shows the need for studying the role of local contexts in virtual work. On a team member level, working in different locations brings with it the potential influence of specific local physical and social factors in virtual collaboration. For example, perceived differences in national culture and language barriers can adversely affect team identification (Au & Marks, 2012). A number of studies have addressed aspects of context in virtual work, for example with studies on situational familiarity (Hinds & Cramton, 2014) and on multi-locality in virtual work (Vartiainen, 2006). However, so far the role of context has not been explicitly addressed as a concept relevant to theorizing and researching virtual work. With this symposium we would like to contribute to addressing this gap for several reasons:

Firstly, along with Orlikowski and Scott (2008, p. 434) who warn against the assumption that technology, work, and organizations should be conceptualized separately, we suggest that a

reconsideration of conventional views of technology may help us to more effectively study the multiple, emergent, and dynamic socio-material configurations that constitute contemporary organizations and their practices. Likewise, the systemic model claims that three interwoven factors, i.e., the nature of tasks, the contextual affordances of mobile working and the intra-individual (and/or intra-group on the team level) processes, influence the outcomes of virtual work, for example as perceived stress, well-being, and effectiveness (Vartiainen, 2006).

Secondly, there are two main reasons why the importance of context increases in virtual work and adds further layers of meaning to context: a) the variety of locations collaborators work from, and b) the dynamic of changing locations while working, made possible by the availability of mobile devices and wireless connections. For each location, there are different affordances of the physical space and different norms that guide the social interactions of the team members (Moser & Axtell, 2013).

Thirdly, we would like to propose Lewin's idea of 'life space' (Lebensraum) as a way of understanding the multiple layers of meaning of 'context in virtual work'. Almost a century ago, Lewin (1938) introduced the idea that each individual exists in a psychological force field called the 'life space' that determines and limits his or her behaviour. 'Life space' is a highly subjective environment that characterizes the world as the individual sees it while still remaining embedded in the objective elements of physical and social fields. According to Lewin (1951), behavior (B) is a function (f) of a person (P) and his environment (E): $B = f(P,E)$. Physical and social conditions limit the variety of possible life spaces and create the boundary conditions of the psychological field. 'Subjective' and 'objective' elements are not strictly divided, but the context is blended and layered, which is also reflected in the concept of 'ba' (Nonaka, Toyama & Konno, 2000). This concept is useful for differentiating the various contexts relevant for knowledge

workers in the digital age. 'Ba' refers to a shared context in which knowledge is shared, created, and utilized by those who interact and communicate there. Ba does not just refer to a physical space but also to a specific time and space that integrates layers of spaces. Ba unifies the physical space (such as an office space), virtual space (such as videoconferencing), the social space (such as colleagues), the cultural space (such as norms, values and conventions) and the mental space (such as individual and joint experiences, ideas, and ideals shared by people with common goals in a working context) and the symbolic space of language which influences self-perception (Moser, 2007) and communication between layers.

Each of the four papers in this symposium expands our understanding of the role of context by addressing different layers of context in virtual work: The relevance of a physical place in mobile work, familiarity as a feature of social space in teamwork, the cultural and social space of status cues in communication, and the symbolic space of linguistic markers. The four contributions cover a range of methodological approaches from surveys at team and at individual level, to vignette studies and experimental designs and have studied different task contexts in health care, the IT sector, and professional knowledge work companies.

In Vartiainen and Salmela-Aro's contribution about the use of multiple locations in work shows that personal resources such as control at work, self-efficacy and resilience can reduce the influence of changing physical spaces.

Maynard's study examined the role of a team's internal context in terms of member familiarity and found that possessing a professionally familiar context has a positive effect (while a personally familiar context has a negative effect) on the level of knowledge sharing that occurs within virtual teams. However, this positive relationship is dampened as the level of virtuality increases.

Moser's study on framing effects of status and cultural cues among health care professionals shows how minimal cues, if bare of any further context or familiarity with the sender, have a great impact on the receiver's perceptions, attitudes and reactions. Differences in cultural background resulted in less negative emotional reactions such as anger. However, further analysis showed an interaction with professional status in the sense that only higher or same status individuals profited from positive attributions and most importantly, from higher compliance.

Finally, Glikson, Sidi and Cheshin's study examines the way paralinguistic cues in text-based communication influence the perceptions of the person using them across different contexts, suggesting that these cues should be addressed as part of context creating features. The symbolic influence of these cues is related not only to the cultural space – such as behavioural norms, but also to the mental representation of a person in the world of virtual communication.

The symposium will conclude with a critical review and integration of the various ways of studying context in virtual work by the discussant.

Relevance to the Organizational Communication & Information Systems Division (OCIS)

This symposium is of particular relevance to the OCIS division as it focuses on the social aspects of communication and information systems and particularly on the role of local contexts within virtual collaborative environments and the interaction between the 'de-contextualised' technology and the local contexts collaborators act in. The four papers study four different aspects of context and the discussant will provide a forum for a critical review and discussion of the contributions and concepts proposed. In relation to this year's theme this symposium also contributes to our understanding of how governing global collaborations and initiatives is affected by local work contexts and by highlighting the role of different aspects of that context, namely physical, social, cultural and linguistic aspects of social interaction of global virtual workers.

Relevance to the Managerial and Organizational Cognition Division (MOC)

The understanding of the role of context in virtual work is fundamental to the field of managerial and organizational cognition. All four presentations are directly investigating different aspects of context and contributing to our understanding of how contextual factors affect collaboration in a virtual work environment. The methods employed in the four studies span from experiments to surveys and case studies, and the different types of participants and tasks involved ensure the transferability of results to different virtual settings. The discussant will provide a forum for a critical review and discussion of the contributions and concepts proposed. In addition, the symposium topic also relates to the meeting's theme of the open governance as much of it is likely to be confronted with bringing together local authorities and actors via electronic platforms.

Symposium Format

The symposium will consist of four 15-minute presentations, in the order in which they are presented here. This is followed by a 15-minute contribution from the discussant, critically reviewing the contributions and the overall relevance of the symposium topic. This will allow for a 15-minute period for questions and general discussions with the audience across the presentations and the input from the discussant.

We have received signed statements from all intended participants agreeing to participate in the entire symposium, AND stating that they are not in violation of the Rule of Three + Three. We understand that if this submission is accepted, all of the listed participants must be registered for the meeting in order to take part in the session.

Mobility and Multi-Locality as Contextual Demands

Matti Vartiainen & Katariina Salmela-Aro

Two reasons increase the influence of context in virtual work: the variety of locations collaborators work from, and the dynamic of changing locations while working made possible by mobile devices and wireless connections. The purpose of this study is to examine how mobile work characteristics are connected to work related well-being when viewed together with personal and organizational resources and individually experienced recovery from work strain in the frame of Job Demands – Resources –model (Demerouti et al., 2001). Flexible use of many physical work locations brings the increased influence of local contextual factors. The meaning of contextual factors is great because employees not only use different locations but also use multiple locations during their working days. In each location, the combination of the contextual factors is unique and their outcomes different.

METHOD

The questionnaire data was gathered through an e-mail survey from three large organizations in Helsinki, Finland. The employers of the respondents can be characterized as professional knowledge work organizations. Organizations were chosen by their large size (employing over 500 people) and by their occupational health service provider, through which the data were collected. Organization A is a multinational network service provider that employs 1 780 persons, organization B is a public sector administration official employing 1 620 persons, and organization C is a global company specializing in water chemistry and it employs about 550 people. Of the total sample (N = 1415) 42% were male and 58% female. Travelling was a part of work for 54% of the respondents and more common amongst men (75%) than women (41%). Multi-locational working e.g. working in several locations weekly, was a physical mobility factor for

21% of the respondents, more so for men (29%) than women (17%). Working over time zones was one reason for the spreading of work time, and this was a complexity factor for 39% of the respondents. Multi-cultural co-operation was a complexity factor for 55% of the respondents.

Physical mobility was measured by the number of travel days per year and the number of weekly working locations besides the main office. The four *complexity factors of mobile work* were: project work, spreading of work time, working over time zones and multi-cultural co-operation. The four 'yes or no' –questions were summed together. *Personal resources* included the following scales: control at work, which was measured by two items from the Areas of Work Life Scale (AWLS) (Leiter & Maslach, 2000), and self-efficacy at work and resilience. *Organizational resources* were measured as community at work and fairness (Leiter & Maslach, 2000). A one-item scale was used for relationships as resources at work and servant leadership (van Dierendonck & Nuijten, 2011). *The recovery experience* was studied as the success of recovery (Kinnunen & Mauno, 2009). The four recovery strategies were psychological detachment, relaxation, mastery and control over free time (Sonnentag & Fritz, 2007). Five *dependent variables* were: life satisfaction (Diener et al., 1985), work engagement measured with the Utrecht Work Engagement Scale (Schaufeli et al., 2006), work exhaustion measured with the one dimension of Bergen Burnout Inventory -15 (Näätänen et al., 2003), namely physical exhaustion, workaholism (Taris et al., 2005), and depressive symptoms (Kroenke et al., 2001), see Table 1.

Hierarchical regression analysis was applied to examine the association of physical mobility factors and complexity factors of mobile work, self- and organization-related resources and the recovery experience on three indicators of work related well-being and two indicators of general well-being.

RESULTS AND DISCUSSION

The study suggests that the mobile work components are not pure job demands, but can also function as resources (see Table 2). Similar findings have been made concerning travelling (Bergbom et al., 2011) and multi-locational work (Vartiainen & Hyrkkänen, 2010). Also previous studies concerning telework – one form of multi-locational work – have associated both strains and resources with this form of mobile work (Gajendran & Harrison, 2007; Mann & Holdsworth, 2003). Therefore, the findings of the current study continue the short tradition of mobile work studies demonstrating the versatile qualities of both physical mobility and the other complexity factors of mobile work in connection to work related well-being.

The findings suggest that mobile work is not an isolated contextual strain factor, nor are its components such autonomous psychosocial strain factors as the traditional work strain factors that have previously been assessed in the occupational health. In regard to work related well-being outcomes (work engagement, work exhaustion, workholism) the explanation rate of the two physical mobility factors and four complexity factors together was between $4 - 6\%$. In regard to one of the general well-being outcomes, namely depressive symptoms, the explanation rate remained at zero. This can be expected, since depressive symptoms have previously been linked to such work characteristics as poor team climate or low procedural and relational justice (Ylipaavalniemi et al., 2005) or the lack of instrumental support from peers and supervisors (Waldenström et al., 2008), and these characteristics can prevail with or without mobile work characteristics. This study showed a slight, but still statistically significant association with life-satisfaction. A similar finding was made by Virick et al. (2010) in connection to telecommuting and life-satisfaction. However, in their study the relation was curvilinear and mediated by work drive and work enjoyment.

The current results suggest that personal and organizational resources have a strong association with psychological well-being and thus point to the direction that individual qualifications – manifesting perhaps in individually made interpretations of the mobile work aspects – might turn some of the mobile work components into job resources instead of being negative strain factors. This study does not support the notion that the mobile working population possesses more resources. The complexity factors did correlate with personal resources but the physical mobility factors showed insignificant correlations with both personal and organizational resources. When making interpretations of the findings of this study, one needs to keep in mind that there is no single group of respondents that could be identified as "the mobile working population". Instead there are aspects of work including mobile features and employer groups with more of these features as well as employer groups with less of these features. The findings suggest that the higher the position in the organization – especially middle management and corporate management – the more mobile features are included in the work.

The results of this study were able to explain $32 - 61\%$ of the variance of work related well-being outcomes and $31 - 38\%$ of the general well-being outcomes. The division of well-being onto work related and general well-being did not prove to be as clear in the light of the data at hand as one would expect, even if slight emphasis of explanation rates in favor of work related well-being can be seen. However, there is somewhat great variance in the explanation rates between the three outcome variables that constituted work related well-being in this study. For example, when viewing organizational role, work engagement and workaholism both showed a statistically significant 2% explanation rate, but work exhaustion remained at 0%. This suggests that the likelihood of both work engagement and workaholism tend to increase when moving up the organizational ladder, but the risk for work exhaustion prevails fairly even

throughout the organizational hierarchy. This in itself is interesting but simultaneously it suggests that there is no single "work related well-being", but several different indicators or profiles – some distributed more evenly throughout the organization than others..

Previous studies in regard to the well-being outcomes of mobile work dimensions have so far been very few (Bergbom et al., 2011; Mann & Holdsworth, 2003), so we can consider the results of this study at hand to be pioneering new ground. Bergbom et al. (2011) found travelling to be positively but mildly linked to stress, work fatigue and work engagement, and the findings of this study support this suggesting that travelling can be both, an enrichment and a strain, depending on the circumstances and on the individual mobile worker. In addition to the similar findings with Bergbom et al. (2011), this study found a mild but statistically significant correlation between travel days per year and workaholism as well as between travel days and life satisfaction. Current findings raise a question of travelling being linked to complexity factors not yet studied. They also suggest travelling as a physical mobility factor to function both as a resource and a strain.

This study was able to contribute an overall view on mobile work characteristics and how they are related to strain and well-being. Physical context factors are a mixture of mutually interdependent elements. We studied six of them as mobile work characteristics; project work being the most common, then spreading of work time, multi-cultural co-operation and travelling. Multi-locational work was the rarest form of all. Only one out of five respondents had to move about on a weekly basis. Working over time zones was the second rarest form of mobile work, but its prevalence was two times that of multi-locational working. Some of them are related to output variables, however, individual resources, that is mental space, moderate their influence strongly.

Table 1: Descriptive information of the independent and dependent variables (N = 1415)

	Mean	SD	Range	Nr of items	α
Physical mobility					
Number of travelling days per year	11.1	20.3	0 – 200		
Number of working locations per week	1.1	3.5	0 – 48		
Complexity					
Number of complexity factors of mobile work	1.8	1.6	0 – 4	4	.66
Personal resources					
Control at work (AWLS)	6.9	1.7	2 – 10	2	.49
Self-efficacy at work	30.8	4.6	8 – 40	8	.86
Resilience	21.6	4.4	6 – 30	6	.87
Organizational resources					
Community at work (AWLS)	7.0	1.8	2 – 10	2	.64
Fairness at work (AWLS)	5.8	1.9	2 – 10	2	.70
Relationships at work	4.9	1.6	0 – 7		
Servant leadership	51.5	9.9	16 – 80	16	.83
Recovery experience					
Success of daily recovery after work	3.5	0.9	1 – 5		
Psychological detachment (REQ)	12.9	3.6	4 – 20	4	.87
Relaxation (REQ)	14.9	3.1	4 – 20	4	.86
Mastery (REQ)	13.0	3.3	4 – 20	4	.84
Control over free time (REQ)	14.7	3.6	4 – 20	4	.91
Dependent variables					
Life satisfaction (Diener)	17.8	3.9	5 – 25	5	.87
Work Engagement (UWES)	31.4	10.9	0 – 54	9	.95
Work Exhaustion (BBI/Exh)	13.9	5.1	6 – 30	5	.81
Workholism	10.6	5.1	0 – 24	4	.82
Depressive symptoms (PHQ-9)	5.1	4.1	0 – 27	9	.84

α = Cronbach's Alpha

Table 2: Results of regression analysis: Physical mobility factors and complexity factors as antecedents of psychological well-being

Dependent variables	Work Engagement		Work exhaustion		Workaholism		Life satisfaction		Depressive symptoms	
Parameters	β	r	β	r	β	r	β	r	β	r
Step 1: Demographics										
Age	.07*	.06*	-.04	-.02	-	-	.03	-.00	-.04	.00
Gender	.15***	.05*	.00	.03	.12***	.12***	.10***	-.01	.03	
Number of children living at home	.01	.02	-.01	.02	.03	-.02	.11***	.12***	-.10	.11***
					.00	.06*				-.10
ΔR²	.01*		.00		.02***		.02***		.02***	
Step 2: Physical mobility										
Number of travelling days per year	.03	.11***	.00	.11***	-.02	.13***	.02	.08**	-.02	-.03
Number of working locations per week	.02	.09**	.02	.13***	.02	.12***	.00	.03	.03	.02
ΔR²	.02***		.03***		.02***		.01*		.00	
Step 3: Complexity factors of mobile work										
Sum of 4 complexity factors	.04	.14***	.07	.18***	.12***	.25***	.10**	.14***	.04	-.03
ΔR²	.02***		.02***		.04***		.01**		.00	
Step 4: Content of work										
Organizational role	.03	.20***	.05	.12***	.12***	.23***	.06	.17***	-.07*	-.12***
ΔR²	.02***		.00		.02***		.01*		.01	
Step 5: Personal resources	.10***	.41***	-	-	-	-.07*	.09**	.32***	-.03	-
Control at work (AWLS)	.27***	.53***	.09***	.26***	.12***	.02	.15***	.38***	.01	.27***
Self-efficacy	.08**	.44***	.05	-	.13***	-	.07*	.36***	-	-
Resilience			-	.22***	-	.15***			.19***	.32***
			.17***	-	.11***				-	.44***
				.41***						
ΔR²	.32***		.24***		.06***		.18***		.20***	
Step 6: Organizational resources	.07*	.38***	-.00	-	.06	.01	.05	.31***	-.06	-
Community at work (AWLS)	-.01	.31***	-.07*	.23***	-.11**	-	.05	.28***	-.01	.30***
Fairness at work (AWLS)	.11***	.30***	-03	-	.05	.10***	.08**	.21***	-.03	-
Relationships at work	.23***	.45***	.03	.29***	.19***	.03	.07	.31***	-.07	.27***
Servant leadership				-.09**		.06				-
				-						.16***
				.20***						-
										.28***
ΔR²	.08***		.02***		.03***		.04***		.03***	
Step 7: Recovery	.13***	.34***	-	-	-	-	.13***	.37***	-	-
Success of daily recovery after work	-.09**	.07**	.36***	.68***	.22***	.37***	.07*	.22***	.34***	.54***
Psychological detachment (REQ)	-.03	.20***	-	-	-	-	.10**	.26***	-.02	-
Relaxation (REQ)	.15***	.32***	.34***	.64***	.21***	.43***	.02	.22***	-.04	.30***
Mastery (REQ)	.01	.23***	-.03	-	-.10**	-	.00	.21***	-.03	-
Control over free time (REQ)			.04	.44***	.02	.29***			-.06	.30***
			-.08**	-	.02	-				-
				.25***		.11***				.27***
				-		-				-
				.39***		.20***				.29***
ΔR²	.03*		.30***		.13***		.05***		.11***	
Seven step total R²	.49***		.61***		.32***		.31***		.38***	
N	1193		1202		1207		1207		1183	

Familiar Internal Team Contexts:

The Effect on Knowledge Sharing and Performance in Global Virtual Teams

M. Travis Maynard

Due to the prevalence of teams within organizations, research continues to focus on identifying ways to enhanced team performance (see Gully, 2000; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Kozlowski & Bell, 2003 for reviews). In particular, team context has long been considered as a critical component in shaping team dynamics and subsequent performance (e.g., Campion, Medsker, & Higgs, 1993; Hackman, 1987; Judge, Martocchio, & Thoresen, 1997; Tannenbaum, Beard, & Salas, 1992). As noted by Mathieu, Maynard, Taylor, Gilson, and Ruddy (2007), context can be viewed as emerging from various levels – individual, team, subunit, organizational, as well as industry and geographic. Within the current study, we examine the internal context that exists within teams that possess more familiarity with one another and seek to gain a deeper understanding of how such an internal context can influence team processes (i.e. knowledge sharing) and overall team performance (i.e. effectiveness) as such relationships have been noted as being a gap within the organizational team literature (e.g., Mathieu et al., 2007). In response, within the current study, we examine the impact that team composition can have in shaping and creating the internal context that emerges within a team. We argue that composition is a salient contextual variable to consider and in particularly so within virtual teams as it has been argued that composition remains salient even when teams are distributed or work virtually (Cramton, 2001; Potter & Balthazard, 2002). However, an area that has not been considered sufficiently within team composition research is that team members may already possess interpersonal knowledge about one another (familiarity). Of the work that has considered familiarity, we are not aware of any study that has considered the type of familiarity possessed by team members

and have examined the impact that such familiarity may have in shaping the internal context that exists within the team.

Specifically, whereas some team members may have worked together previously and have developed a level of professional familiarity, others may know one another on a more personal level (i.e., personal familiarity). It is our contention that team member familiarity (professional and personal) is a salient internal contextual variable that should be considered when examining team effectiveness and the means by which such effectiveness is attained. In particular, we propose that such relationships are of greater significance when teams interact virtually as prior research has noted that interpersonal relationships within such settings are a particularly salient factor shaping team dynamics and ultimately performance (e.g., Martins, Gilson, & Maynard, 2004).

HYPOTHESES

In this work, we start by suggesting (as demonstrated in prior research – e.g., Rosen, Furst, & Blackburn, 2007) that knowledge sharing within virtual teams will be influential in the level of performance attained by the team (i.e. satisfaction and effectiveness). Moreover, we anticipate that the extent of virtuality will moderate the effect of knowledge sharing on satisfaction and effectiveness. Specifically:

H1: Knowledge sharing within a team will be positively associated with: a) satisfaction; and b) effectiveness.

H2: The relationships between knowledge sharing and both satisfaction and effectiveness will be moderated by team virtuality such that as virtuality increases the positive relationships between knowledge sharing and both satisfaction and effectiveness will be strengthened.

Similarly, given that we are interested in the impact of different types of familiarity on team dynamics, we propose that teams that possess internal contexts that are professionally and

personally familiar will both facilitate and inhibit team members' knowledge sharing, respectively. Finally, we posit that the extent to which members rely on various technology-mediated communication channels (i.e., team virtuality) will moderate the relationship between both forms of familiar internal contexts and knowledge sharing. Stated formally:

H3: Knowledge sharing within a team will be positively associated with a professionally familiar internal team context.

H4: Knowledge sharing within a team will be negatively associated with a personally familiar internal team context.

H5: The relationship between a professionally familiar internal team context and knowledge sharing will be moderated by team virtuality, such that as virtuality increases the positive relationship between a professionally familiar internal team context and knowledge sharing will be dampened.

H6: The relationship between a personally familiar internal team context and knowledge sharing will be moderated by team virtuality, such that as virtuality increases the negative relationship between a personally familiar internal team context and knowledge sharing will be dampened.

METHOD

We assessed our hypothesized model in a study of 35 virtual teams in an international information technology organization. As detailed in Figure 1, three waves of surveys were sent to team managers, leads, and members (staggered about a month apart). All scales exhibited acceptable reliabilities and justification for aggregation.

Internal Team Contexts – Personally and Professionally Familiar. We developed a 15-item scale that was administered to team members to assess the extent to which the team's internal contexts were personally and professionally familiar.

Team Virtuality. To minimize same-source biases (e.g., Podsakoff, MacKenzie, Lee, & Podsakoff, 2003) team leads rated how important various technologies were in allowing the team to function effectively. These scores were then indexed as a rating of virtuality.

Knowledge sharing. Team members responded to three items that asked the extent to which members exchange information and share ideas about the team's task.

Team performance. Team managers described their level of satisfaction with the team's processes and outcomes using a three-item scale. Additionally, the team managers rated their teams' effectiveness using a four-item scale.

RESULTS

We analyzed the hypothesized model (depicted in Figure 1) using regression and found support for many of the posited relationships. Specifically, as depicted in Figure 2, knowledge sharing was positively related to team satisfaction [H1a: β = .46, p < .01] and effectiveness [H1b: β = .36, p < .05]. Additionally, while we did not find support for H2b, we did find marginal support for the moderating relationship of team virtuality on the relationship between knowledge sharing and team satisfaction [H2a: β = .42, p < .10].

Next, we examined the relationships between the team's internal contexts (i.e. professionally and personally familiar) and knowledge sharing and found support for both the positive hypothesized relationship between a professionally familiar internal context and knowledge sharing [H3: = β .52, p < .01], as well as the negative relationship between a personally familiar internal context and knowledge sharing [H4: β = -.38, p < .05].

Finally, we tested the interactions between both forms of familiar internal contexts and team virtuality leading to knowledge sharing. While we found no support for virtuality moderating the link between a personally familiar internal context and knowledge sharing (H6), we did

find support for an interaction between virtuality and a professionally familiar internal context and knowledge sharing [H5: $\beta = -.38$, $p < .05$].

CONCLUSION

To summarize, we sought to address a gap that has been identified within the broader team effectiveness literature, namely what impact does context have on team processes and performance (e.g., Mathieu et al., 2007). That said; while context is salient for all examinations of organizational teams, we contend that it is even more important to consider context in examinations of virtual teams as was performed here. Likewise, we sought to gain through this work, a more "fine-grained" understanding of the role of team familiarity creating an internal team context that impacts virtual team dynamics and performance. In a sample of teams drawn from 10 countries that rely extensively on technology-mediated communication, we find that knowledge sharing has a positive effect on both manager-rated satisfaction and effectiveness. Additionally, a professionally familiar internal team context has a positive effect on the level of knowledge sharing that occurs within such virtual teams. However, this positive relationship is dampened as the level of virtuality increases. In contrast, while a personally familiar internal team context has a negative effect on knowledge sharing this effect is not altered by virtuality. These findings lend initial support to our contention that team familiarity is a salient construct that needs to be considered when examining team context and its relationship with team outcomes especially within teams that interact virtually. Additionally, these findings are novel and complex suggesting that not only who team members know, but how they know them may play a key role in what happens within virtual team settings.
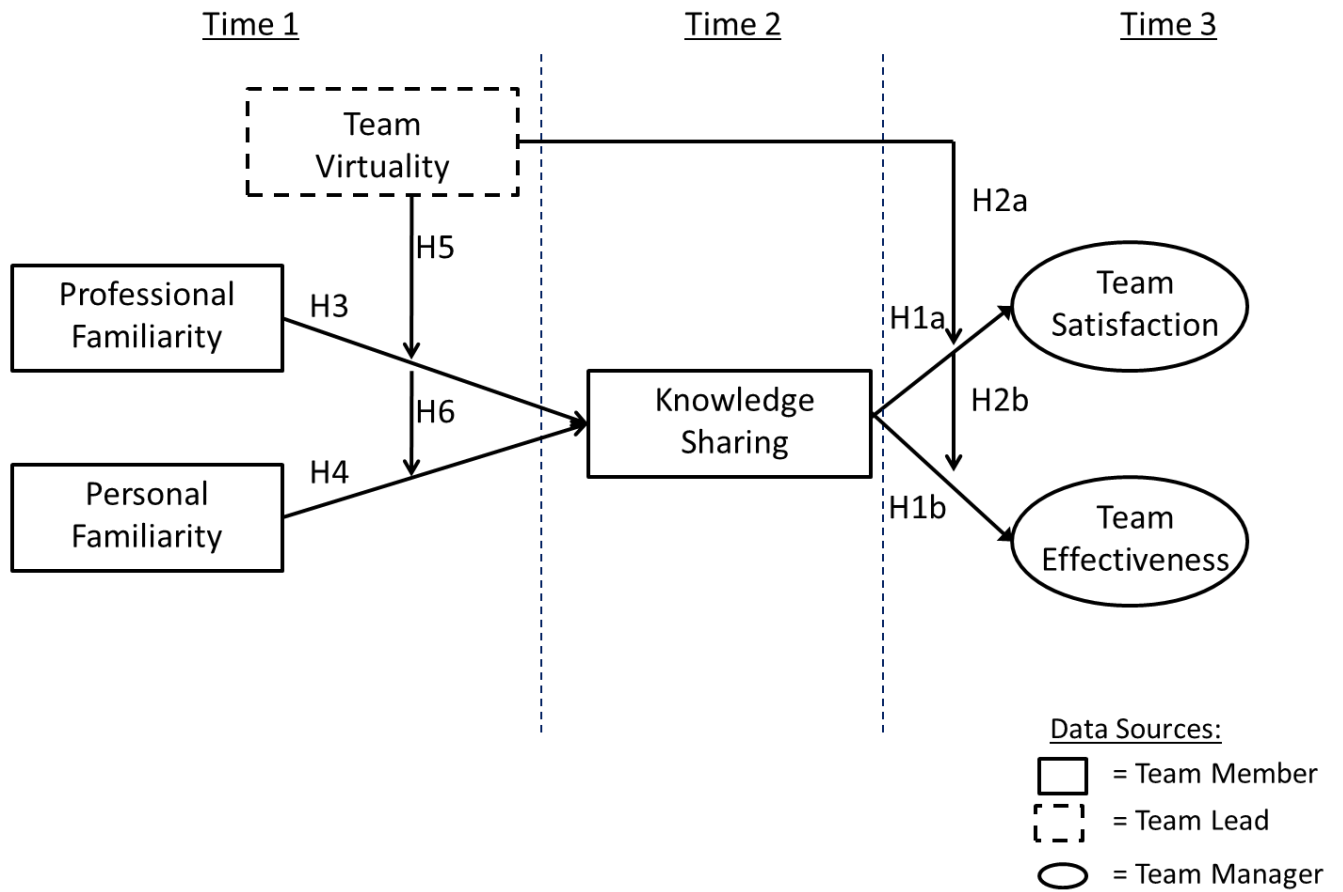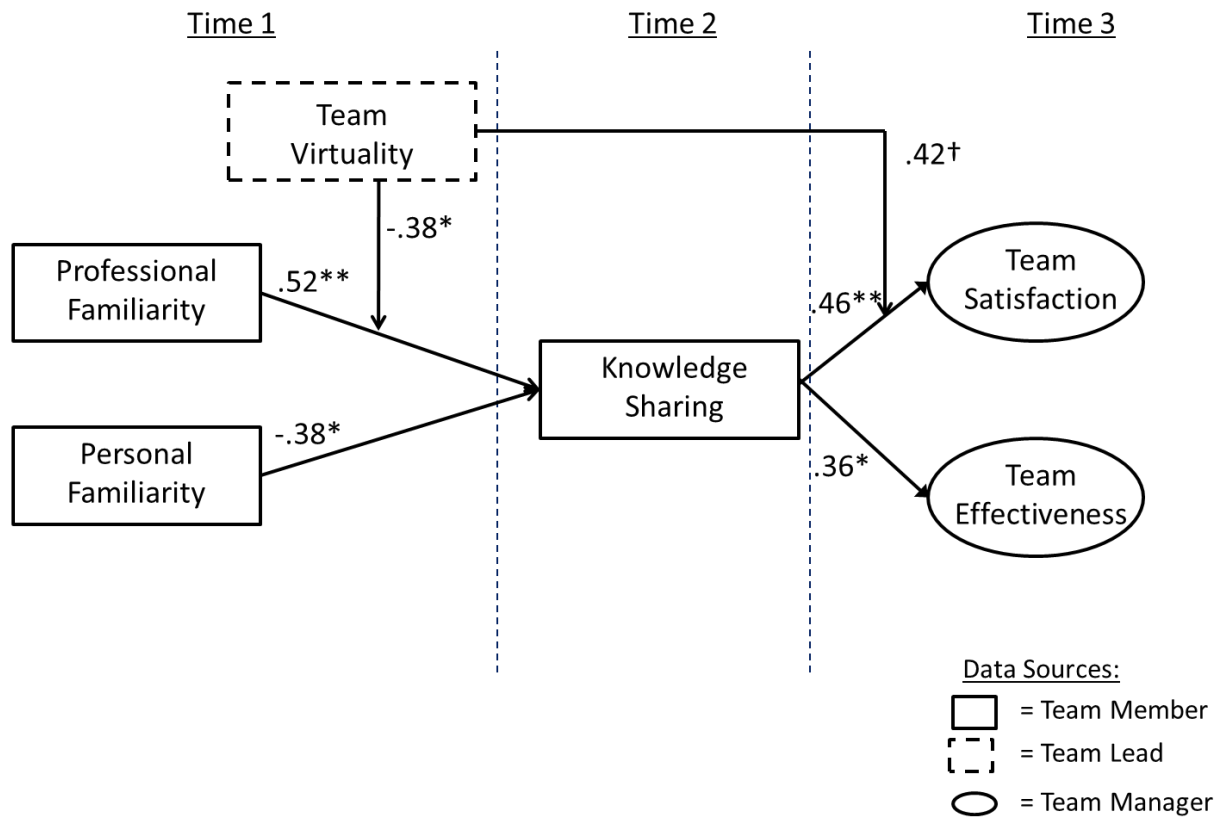
Figure 1. Hypothesized Model

Data Sources:
- ☐ = Team Member
- ⬚ = Team Lead
- ⬭ = Team Manager

Figure 2. Results of Hypothesized Model

Putting Virtual Work into Context:

Framing Effects of Status and Cultural Cues among Health Care Professionals

Karin S. Moser

Although there are many ways to enrich virtual communication by using video links or emoticons to express emotions, many professional exchanges – especially first contacts - still happen in a comparatively lean environment with fewer social cues and context information than in face to face communication (Cramton, 2001). In health care for instance, first contacts between professionals often occur over email or – in the case of patients seeking advice – over standardized online contact forms which are similar in leanness to email communications.

As we know from previous research (Postmes et al., 2001), in a leaner electronic environment aspects of social identity tend to become more salient – such as professional status groups for example – and can have a disproportionate impact on how the sender of a message is perceived and how the receiver responds to such as message. Even in first contacts professional status is something that is usually known and very often recipients have an idea of the cultural background of the sender, either because the location and the organizational affiliation of the sender are known or because cultural identity is inferred from the sender's name. This is important for two reasons: Firstly, electronic media facilitate collaboration across professional and cultural boundaries, but while opening in up borders, they may also lead to – unintended – restrictions and potentially to discriminations. This is possible if simple cues, such as professional titles and ethnic background information, are decontextualized in the technology-supported exchange and then interpreted within the professional and cultural context of the receiver. Secondly, in many service industries such as in health care electronic customer contact is encouraged, e.g. via eHealth platforms, but also for record keeping and information sharing between medical institutions, because it is seen as time and cost efficient. While this might be true to some extent, there

might be other 'costs' to e-provision, stemming from the very fact that framing the context of collaboration plays a key role: First by reducing and decontextualizing the exchange and then by enriching it again in a very specific cultural and organizational context.

This paper extends knowledge about the effects of status and cultural background cues in virtual communication between health care professionals. It is proposed that in-group favouritism and out-group bias are moderated by professional status and cultural background differences. Higher status senders are expected to receive more negative attributions, but less negative reactions than same or lower status senders. In addition, a different cultural background is expected to lead to more positive attributions and compliant behaviour, but only for higher status senders.

METHOD

In two independent studies UK health care professionals received email messages systematically varying in cues about professional status and cultural background of the sender. Receivers were then asked to respond to both the message form (e.g. regarding politeness, formality) and the message content (e.g. emotional reaction to message, willingness to comply with the sender's request). In Study 1 (N=93), the full range of health care professional was included (e.g. physiotherapists, social workers, doctors, nurses) with three different conditions (same, higher or lower professional status of sender compared to the receiver). In Study 2 (N=230), only two distinct professional groups were included (doctors and nurses) but in addition to the professional status cues, cultural background information was also included, resulting in a 3 (same/higher/lower professional status) x 2 (same/different cultural background) factorial design. In both studies, participants were randomly assigned to conditions and in addition to measuring emotions, attributions and behavioural reactions, controls were also included, such as familiarity with technology.

RESULTS

In both Studies 1 and 2, we found an out-group bias with more negative reactions towards out-group senders with a different professional status than the receiver. Furthermore, reactions were stronger (more anger, more negative attributions) from higher status individuals, particularly in response to senders of lower status, and there was also some evidence of lenience and compliance towards higher status senders from lower status individuals. This is consistent with the power differences indicated by the difference in professional status. There was also a 'black sheep' effect of more negative emotional reactions towards members of the same status group as they 'should know better' (Marques et al., 2001) which we did not expect.

In Study 2, there were interesting interaction effects of professional status with regard to the cultural backgrounds of senders and receivers. A different cultural background to the receiver resulted in less negative emotional reactions such as anger (Figure 1). However, further analysis showed an interaction with professional status in the sense that only higher or same status individuals profited from positive attributions (Figure 2) and most importantly, from higher compliance (Figure 3). Interestingly, the highest positive attributions were made to senders from a different cultural background and the same professional status. Lower status senders from different cultures received the least positive attributions, more angry reactions than higher status senders, and less compliance, - although slightly more than lower status senders from the same culture.

DISCUSSION

This research extends previous studies on electronic communication (Stephens et al., 2009) and our understanding of the complex inter-relationship between status and culture cues in virtual contexts. Previous studies found that negative attributions tended to lead to more negative behaviour (Cramton, 2001). Combining this with systematic cues about professional status we can extend this research and say that the attitude-behaviour link is only supported if senders of

messages have lower professional status than the receiver. Moreover, we find that there are further effects if cues about cultural background are included. If the sender has a different cultural background this seems to lead to a more tolerant attitude, which can be characterized by less anger, more positive attributions and higher compliance. However, this is only the case for same or higher status individuals, but not lower status senders. The results show that very minimal cues, if bare of any further context or familiarity with the sender, can have a great impact on the receiver's perceptions, attitudes and reactions. These judgments are made within the context of the receiver's own cultural and social space of norms and conventions (Moser & Axtell, 2013) and might not even be intentional. These framing effects are of special concern in an intercultural work context, as those of high status might get away with more and - unintentionally - discriminate against lower status professionals from a different cultural background. In the field of health care it points to the need for carefully considering how electronic interactions are framed and what information is asked for, e.g. in electronic contact forms, as the use of decontextualized electronic media may lead to faulty information processing and a lower willingness to comply, based on cues that are sent in one local context and received and interpreted in another one.

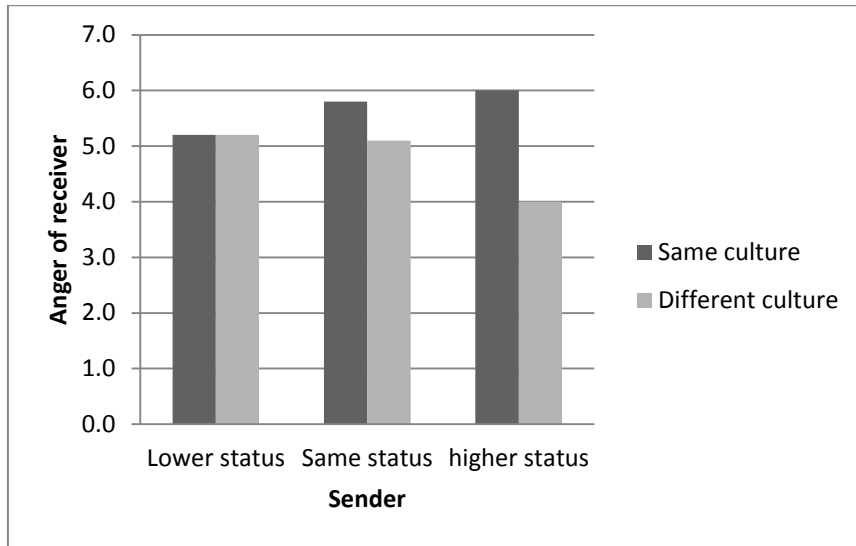Figure 1. Interaction Effect of Culture x Status on Emotions: Anger

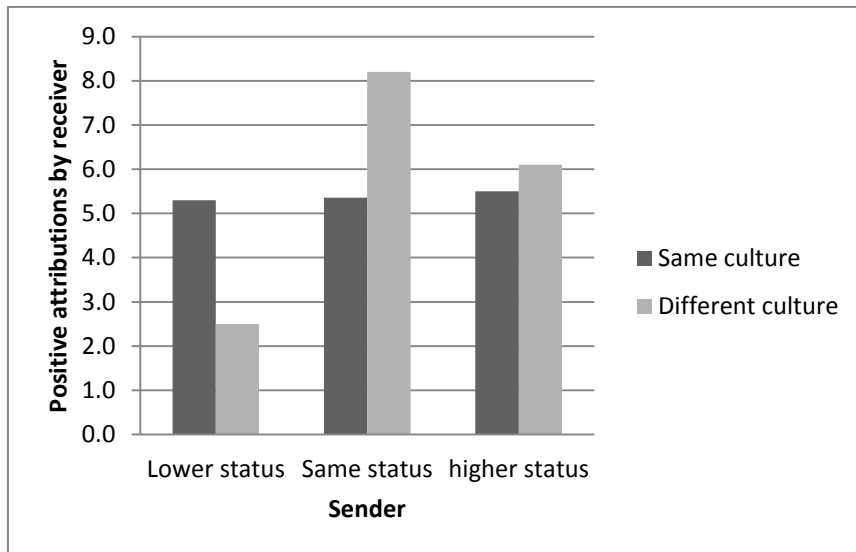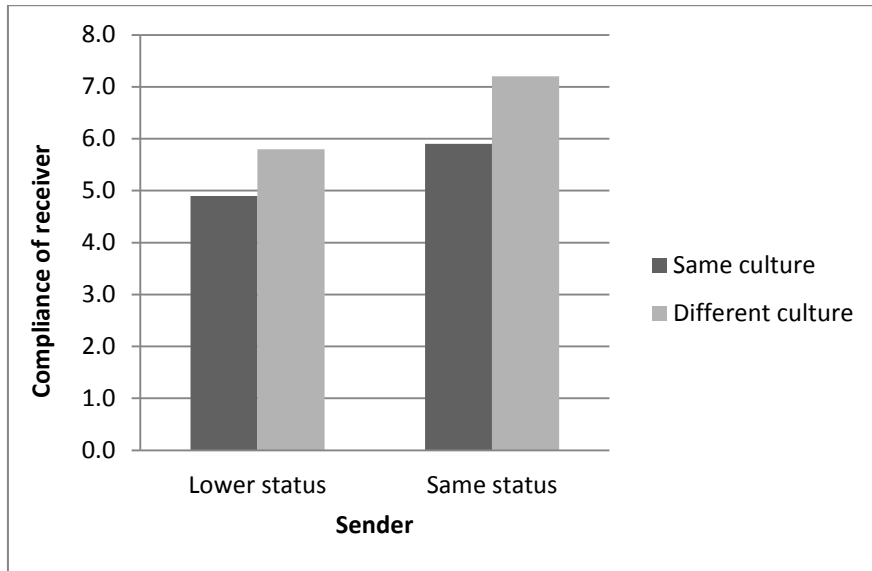Figure 2. Interaction Effect of Culture x Status on Positive Attributions

Figure 3. Interaction Effect of Culture x Status on Complying with Requests for UK doctors

The Undesirable Outcomes of (Ab)using Para-lingual Cues in Electronic Communication

Ella Glikson, Yael Sidi & Arik Cheshin

Text based communication is considered to be lean due to the lack of non-verbal cues and its consequent difficulty of accurate interpretation (Daft & Lengel, 1986). However, people have found creative ways to overcome this limitation by using excessive punctuation, capital letters, emoticons and other paralinguistic cues. Para-lingual cues indeed enrich the expressiveness of the text and are expected to improve interpretation precision of the writer's intention, though research shows that they are highly context dependent (Postmes, Spears & Lea, 1998). While extensive research examined how non-verbal cues shape perceptions in face-to-face communication, not much is known regarding the impact of paralinguistic cues on judgment biases in text-based communication, particularly when used in excess. In this paper we suggest that paralinguistic cues are not only influenced by context, such as cultural space, but also carry symbolic meaning that shapes the mental space, and in this way could be addressed as additional context.

Following the growing use and dependence on text-based communication in working environments, there is a clear need to explore the potential projection on the perceptions of the person using paralinguistic cues in varied contexts. The goal of the current study is to explore the outcomes of excessively using a specific paralinguistic cue (multiple question marks), on both context and character interpretation.

Intuitively, people associate excessive punctuations, such as multiple question marks, as a sign of emotional expression. This expression could be attributed to the current state of a person due to a specific context, but could also be seen as a reflection of a personal trait. Following the *Fundamental Attribution Error* theory (Ross, 1977) and the Social Identity Model of Deindividuation Effects (SIDE; Lea & Spears, 1992), we examined the impact of using multiple question marks on the perceptions of state and trait of an unknown person in two settings – job seeking

and service related queries. We hypothesized that while in a job seeking setting the expression of emotion could be seen as inappropriate and unprofessional, and therefore reflect candidate's low competence (i.e. trait), service failure is highly associated with strong negative feelings, and therefore will be seen as more appropriate and attributed to the writer's state.

To test our hypotheses we conducted two studies, in which we presented participants with electronic text communication in two settings (job and service), while manipulating the number of questions marks, to examine judgment bias. Study 1 was set in a job seeking context (N = 140). Participants were asked to read a short job-seeking scenario in a textual e-mail format, which included several relevant questions, and rate their interpretation of the text-writer's state and trait using 7-items Likert-like scale. The texts were identical except for the number of questions marks used: in the Control group only one question mark followed each question, while in the Manipulation group, there were three question marks. As past research showed relations between appropriateness of emotional expressions and gender (e.g. Hess, Beaupre & Cheung, 2002), we also manipulated the gender of the text writer. Thus, the study was a 2 (Excessiveness: (Control '?'/Excessive '???') X 2 (Gender: Male/Female) design.

Trait characteristics were based on Cuddy, Fiske and Glick's (2007) scales of Warmth and Competence ($\alpha > 0.80$). In addition we examined the assumption that excessive use of question marks is associated with regulation of emotional expression using 3 items based on Gross and John (2003) ($\alpha = 0.91$). The importance of the position to the applicant was measured using 3 items ($\alpha > 0.80$).

We did not find the expected differences between male and female judgment ratings. Thus, the presented results indicate the differences between Control and Excessiveness conditions in a unified data, including both genders (See Table 1 for all results).

Table 1: Results for Study 1 and Study 2

Study 1

	Warmth	Competence	Control of emotions	Importance of Inquiry
Control	4.66	4.08	4.30	4.41
Excessiveness	4.45	3.22 ***	3.00 ***	4.55

Study 2

	Warmth	Competence	Control of emotions	Importance of Inquiry	NA	Willingness to help
Control	5.15	4.09	4.83	6.03	5.11	5.50
Excessiveness	4.00 **	3.38 *	3.22 ***	6.15	5.23	5.00 +

+p < .01 *p < .05, **p < .01, ***p < .001

Analysis revealed that excessive use of question marks had no significant impact on the perception of warmth, but significantly hindered both the perception of competence and the ability to regulate emotions. As hypothesized, the importance of the job did not differ between the conditions.

These results indicate that using excessive question marks in text electronic communication in an inappropriate manner was not attributed to situational causes, but to the writer's trait, namely, damaging the perception of his/her competence, and an inability to suppress emotions. We next turned to see if indeed it was the context itself that explained the discrepancy between competence judgments, by replicating the experiment in a service context.

Study 2 replicated Study 1, in a service failure setting (N = 53). Research has shown that service failure is highly associated with experience of strong negative emotions (Gelbrich, 2010), and dissatisfied customers tend to express their negative feelings through verbal and non-verbal cues (McColl-Kennedy, Patterson, Smith, & Brady, 2009). Therefore, the context of service failure could be considered as more appropriate for use of paralinguistic cues than the job seeking context. Furthermore, it is reasonable to suggest that the framing of experienced service failure would guide the interpretation of paralinguistic cues as an expression of the writer's emotional

state and the importance of the issue on stake, rather than of the writer's traits. Therefore, we hypothesized that in this context the excessive use of question marks would be interpreted as a sign of issue importance or negative affect rather than of a low competence or a low capability of emotion suppression. In addition, to examine the behavioral consequences of encountering para-lingual cues, we tested participants' willingness to help the writer with resolving the service issue. Following our suggestion that para-lingual cues indicate the writer's state, we hypothesized that multiple question marks would facilitate participants' tendency to help, and this relationship would be mediated by the perception of issue importance.

We measured trait characteristics (warmth and competence) and issue importance using the same items as in study 1 ($\alpha > 0.80$). In addition, we tested the perceived negative affect of the writer, using 5 items ($\alpha = 0.79$) from the PANAS scale. The tendency to help was tested using four items ($\alpha = 0.85$).

Notably, the results were opposite to our hypotheses: We found that participants did not attribute the use of paralinguistic cues to the importance of the issue to the writer, nor to the writer's negative affect. Instead, they perceived the writer in the Excessive condition as being less warm, less competent and less capable to control his emotions than in the control condition, and were even marginally less willing to help him (See Table 1).

These surprising findings suggest that regardless of context (job seeking/service) or gender (Study 1), excessive question marks do not communicate a specific emotional state, but rather the inability to control emotions. Furthermore, paralinguistic cues might not only be perceived as an indicator of negative personality traits, but also decrease the willingness to help. Thus, while those who use excessive question marks might intend to express their emotional state, indicate a problem or draw attention, the interpretation of these cues is highly negative and relates to personal traits, rather than to a specific state.

REFERENCES

Au, Y., & Marks, A. (2012). Virtual teams are literally and metaphorically invisible: Forging identity in culturally diverse virtual teams. *Employee Relations*, *34*(3), 271-287.

Bergbom, B., Vesala H., Leppänen, A., Sainio, M., Mukala, K., & Smolander, A. (2011). *Kansainvälisten työmatkojen kuormittavuus sekä terveys- ja hyvinvointivaikutukset. Tutkimusraportti*. Työterveyslaitos, Helsinki 2011. Työsuojelurahasto, ISBN 978-952-261-086-7 (pdf). (In Finnish)

Campion, M. A., Medsker, G. J., & Higgs, A. C. (1993). Relations between work group characteristics and effectiveness: Implications for designing effective work groups. *Personnel Psychology*, 46, 823-850.

Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12: 346-371.

Cuddy, A. J., Fiske, S. T., & Glick, P. (2007). The BIAS map: Behaviors from intergroup affect and stereotypes. *Journal of Personality and Social Psychology, 92*(4), 631-648.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science, *, 554-571.

Demerouti, E., Bakker, A.B., Nachreiner, F., Schaufeli, W.B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499-512.

Diener, E., Emmons, R.A., Larsen, R.J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment, 49*, 71-75.

Gajendran, R.S., & Harrison, D.A. (2007). The Good, the Bad and the Unknown About Telecommuting: Meta-Analysis of Psychological Mediators and Individual Consequences. *Journal of Applied Psychology, 92*(6), 1524 – 1541.

Gelbrich, K. (2010). Anger, frustration, and helplessness after service failure: Coping strategies

and effective informational support. *Journal of the Academy of Marketing Science, 38*(5),

567-585.

Gilson, L. L., Maynard, M. T., Jones Young, N.C., Vartiainen, M., & Hakonen, M. (2015). Virtu-

al teams research: ten years, ten themes, and ten opportunities. *Journal of Management*. (in

press).

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes:

Implications for affect, relationships, and well-being. *Journal of Personality and Social Psy-*

chology, 85(2), 348.

Gully, S. M. (2000). Work teams research: Recent findings and future trends. In M. M. Beyerlein

(Ed.), *Work Teams: Past, Present and future* (pp. 25-44). Netherlands: Kluwer Academic

Publishers.

Hackman, J. R. (1987). The design of work teams. In J. W. Lorsch (Ed.), *Handbook of organiza-*

tional behavior (pp. 315-342). Englewood Cliffs, NJ: Prentice-Hall.

Hess, U., Blairy, S., & Kleck, R. E. (2000). The influence of facial emotion displays, gender, and

ethnicity on judgments of dominance and affiliation. *Journal of Nonverbal Behavior, 24*(4),

265-283.

Hinds, P. J., & Durnell Cramton, C. (2014). Situated Coworker Familiarity: How Site Visits

Transform Relationships Among Distributed Workers. *Organization Science, 25*(3), 794 -

814.

Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in Organizations: From

I-P-O Models to IMOI Models. *Annual Review of Psychology*.

Judge, T. A., Martocchio, J. J., & Thoresen, C. J. (1997). Five-factor model of personality and

employee absence. Journal of Applied Psychology, 82, 745-755.

Kinnunen, U., & Mauno, S. (2009). *Irtiottoja työstä: Työkuormituksesta palautumisen psykologia.* Psykologian laitos. Tampereen yliopisto. (In Finnish)

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen & R. J. Klimoski (Eds.), *Handbook of psychology: Industrial and organizational psychology* (Vol. 12, pp. 333-375). London: Wiley.

Kroenke, K.; Spitzer, R.L., & Williams, J.B. (2001). The PHQ-9: Validity of a brief depressive symptoms severity measure. *Journal of General Internal Medicine, 16*(9), 606 – 13.

Lea, M., & Spears, R. (1992). Paralanguage and social perception in computer-mediated communication. *Journal of Organizational Computing and Electronic Commerce, 2*(3-4), 321-341.

Leiter, M., & Maslach, C. (2000). *Preventing burnout and building engagement. A complete program for organizational renewal.* San Francisco: Jossey-Bass.

Lewin, K. (1938). The conceptual representation and the measurement of psychological forces. Contributions to psychological theory. Durham, NC: Duke University Press.

Lewin, K. (1951). *Field theory in social science: selected theoretical papers*, in D. Cartwright (ed.), New York: Harper-Row.

Mann, S., & Holdsworth, L. (2003). The psychological impact of teleworking: stress, emotions and health. New Marques, J., Abrams, D., & Serôdio, R. G. (2001). Being better by being right: Subjective group dynamics and derogation of in-group deviants when generic norms are undermined. *Journal of Personality and Social Psychology*, 81(3), 436-447.

Martins, L. L., Gilson, L. L., & Maynard, M. T. (2004). Virtual teams: What do we know and where do we go from here? *Journal of Management*, 30: 805-835.

Marques, J., Abrams, D., & Serôdio, R. G. (2001). Being better by being right: Subjective group dynamics and derogation of in-group deviants when generic norms are undermined. *Journal of Personality and Social Psychology, 81*(3), 436-447.

Mathieu, J.E., Maynard, M.T., Taylor, S., Gilson, L.L., & Ruddy, T. (2007). An examination of the effects of organizational district and team contexts on team processes and performance: A meso-mediational model. *Journal of Organizational Behavior*, 28: 891-910.

McColl-Kennedy, J. R., Patterson, P. G., Smith, A. K., & Brady, M. K. (2009). Customer rage episodes: Emotions, expressions and behaviors. *Journal of Retailing, 85*(2), 222-237.

Moser, K. S., & Axtell, C. M. (2013). The Role of Norms in Virtual Work: A Review and Agenda for Future Research. *Journal of Personnel Psychology*, 12, 1-6.

Moser, K. S. (2007). Metaphors as symbolic environment of the self: How self-knowledge is expressed verbally. *Current Research in Social Psychology, 12*(11), 151- 178.

Näätänen, P., Aro, A., Matthiesen, S.B., & Salmela-Aro, K. (2003). *Bergen Burnout Indicator 15*. Edita: Helsinki.

Nonaka, I., R. Toyama & Konno, N. (2000). SECI, Ba and leadership; a unified model of dynamic knowledge creation'. *Long Range Planning, 33*(1), 5-34.

Orlikowski, W. J., & Scott, S. V. (2008), 'Sociomateriality: Challenging the separation of technology, work and organization'. *The Academy of Management Annals, 2*(1), 433-474.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88: 879-903.

Postmes, T., Spears, R., & Lea, M. (1998). Breaching or building social boundaries? SIDE-effects of computer-mediated communication. *Communication Research, 25*(6), 689-715.

Postmes, T., Spears, R., Sakhel, K., & de Groot, D. (2001). Social Influence in Computer-Mediated Communication: The Effects of Anonymity on Group Behavior. *Personality and Social Psychology Bulletin*, 27(10), 1243-1254.

Potter, R. E. & Balthazard, P. A. (2002). Understanding human interaction and performance in

the virtual team. *Journal of Information Technology Theory and Application*, 4: 1-23.

Rosen, B., Furst, S., & Blackburn, R. (2007). Overcoming barriers to knowledge sharing in virtu-

al teams. *Organizational Dynamics*, 36: 259-273.

Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution

process. *Advances in Experimental Social Psychology, 10*, 173-220.

Schaufeli, W., Bakker, A., & Salanova, M. (2006). The Measurement of Work Engagement With

a Short Questionnaire. A Cross-National Study. *Educational and Psychological Measure-

ment, 66*(4), 701 – 716.

Sonnentag, S., & Fritz, C. (2007). the Recovery Experience Questionnaire: Development and

validation of a measure for assessing recuperation and unwinding from work. *Journal of Oc-

cupational Health Psychology, 12*, 204 – 221.

Stephens, K. K., Houser, M. L. & Cowan, R. L. (2009) R u able to meat me: The impacts of stu-

dents' overly casual email messages to instructors. *Communication Education*, 58, 303-26.

Tannenbaum, S. I., Beard, R. L., & Salas, E. (1992). Team building and its influence on team

effectiveness: An examination of conceptual and empirical developments. In K. Kelley

(Ed.), *Issues, theory, and research in industrial/organizational psychology* (pp. 117-153).

Amsterdam, Holland: Elsevier.

Taris, T.W., Schaufeli, W.B., & Verhoeven, L.C. (2005). Internal and external validation of the

Dutch Work Addiction Risk Test: Implications for jobs and non-work conflict. Journal of

Applied Psychology: An International Review, 54, 37–60.

van Dierendonck, D., & Nuijten, I. (2011). The Servant Leadership Survey: Development and

validation of a multidimensional measure. *Journal of Business Psyhcology, 26*, 249 – 267.

Vartiainen, M. (2006). Mobile virtual work – concepts, outcome and challenges. In: J.H.E. An-
driessen and M. Vartiainen, eds., (2006). *Mobile virtual work. A new paradigm?* Berlin &
Heidelberg: Springer, pp. 13–44.

Vartiainen, M., & Hyrkkänen, U. (2010). Changing requirements and mental workload factors in
mobile multi-locational work. *New Technology, Work and Employment, 25*, 2, 117 – 135.

Waldenström, K., Ahlberg, G., Bergmen, P., Forsell, Y., Stoetzer, U., Waldenström, M., &
Lundberg, I. (2008). Externally assessed psychosocial work characteristics and diagnoses of
anxiety and depressive symptoms. *Occupational Environmental Medicine, 65*, 90 – 96.

Virick, M., DaSilva, N., & Arrington, K. (2010). Moderators of the curvilinear relation between
extent of telecommuting and job and life satisfaction: The role of performance outcome ori-
entation and worker type. *Human Relations, 63*(1), 137 – 154.

Ylipaavalniemi, J., Kivimäki, M., Elovainio, M., Virtanen, M. Keltikangas-Järvinen, L., &
Vahtera, J. (2005). Psychosocial work characteristics and incidence of newly diagnosed de-
pressive symptoms: a prospective cohort study of three different models. *Social Science &
Medicine, 61*(1), 111-122.