Employee Attitudes Towards Wearable Technologies in the Workplace

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Abstract

Despite the increasing number of companies using wearable technologies in the workplace to gather data from employees, we know very little about what employees think and feel about wearing these devices and about organizations using corresponding data. In this study, 275 employees evaluated three organizational wearable programs that varied on participatory discretion and purpose. Compared to programs designed to fulfill some administrative purpose, programs that were designed to monitor employee wellness resulted in more favorable outcomes, including more enthusiasm to participate, fewer turnover intentions, and less perceived invasion of privacy. Similarly, programs that allowed participatory discretion were viewed more favorably than programs which required participation. These effects were more pronounced for employees who reported greater concern for privacy.

"Today, information and communication technology is heading toward a new stage that is based on ubiquitous computing. … an environment in which computational technology permeates almost everything" (Cascio & Montealegre, 2016, p. 353). Ubiquitous computing provides organizations with a way to incorporate employees into the "Internet of Things" through devices that can be worn as an accessory, or in rare cases, implanted (e.g., Astor, 2017). These "wearables" facilitate novel methods of monitoring individual productivity (Chaffin et al., 2017) and safety (Baka & Uzunoglu, 2016; Fujitsu, 2017), studying group dynamics (Chaffin et al., 2017; George, Haas, & Pentland, 2014), incentivizing employee wellbeing (Brakenridge et al., 2016), and designing organizational processes and procedures (Cascio & Montealegre, 2016; George et al., 2014; Olguín et al., 2009).

Although consumer wearables have only emerged in the past decade, their use in the workplace is growing rapidly. Salesforce Research (2015) surveyed representatives of 1,455 companies, 500 of which reported they were currently or planning to use wearable technology. In another survey of 1,000 consumers, 66% report wanting their employers to pay for wearable devices, and nearly half of them believe that wearables will improve their efficiency at work (PwC, 2016). PwC (2016) also noted that a projected 75 million wearables will be utilized in the workplace globally by 2020.

Despite increased scholarly interest in the ways wearable technologies can be leveraged in organizations and in organizational research (e.g., Brakenridge et al., 2016; Chaffin et al., 2017; Olguín et al., 2009), employee attitudes and reactions to organizations using these technologies and characteristics of the associated programs have yet to be investigated. The present study seeks to address this gap by investigating individuals' reactions to organizations with different wearable device programs and the degree to which individual differences influence

their reactions.

Electronic Monitoring in the Workplace

To an extent, previous research on electronic performance monitoring (EPM) and electronic observation of employees can be used to inform research on wearable technology in the workplace (e.g., Aiello & Kolb, 1995; Cascio & Montealegre, 2016; Karim, Willford, & Behrend, 2015; McNall & Roch, 2009; Stanton, 2000). For example, research has demonstrated a positive relationship between EPM and job stress (Aiello & Kolb, 1995; McNall & Roch, 2007) and perceived invasion of privacy (Alge, 2001; McNall & Roch, 2007), and a negative relationship with perceptions of interpersonal justice (McNall & Roch, 2007). Whereas the mode of observation may be different from more "traditional" electronic monitoring (EM) methods like computer surveillance or video monitoring, wearables can be used for similar purposes. For example, rather than having employees swipe a badge to enter an area, they might access an area via a wrist-worn wearable device. In contrast to traditional EM methods, wearable devices can facilitate collecting different kinds of data that may be unfeasible or impossible to collect with more traditional methods, such as physiological data (e.g., heartrate, electrodermal activity) or sociometric data (e.g., various dimensions of interpersonal interactions between large numbers of employees).

Wearable Purpose and Data

Of course, one cannot blindly collect data; whether it is announced or not, the data collection must serve some purpose for the organization (e.g., to maximize staffing) or its employees (e.g., wellbeing). The degree to which employees perceive EM to be empowering (e.g., Fujitsu, 2017), rather than oppressive (e.g., Pasquale, 2015), can be explained by self-determination theory (SDT; Deci & Ryan, 1985). Briefly, SDT proposes that there are three

fundamental needs that drive individuals' motivation: the needs for autonomy, competence, and relatedness (Ryan & Deci, 2000). Individuals will pursue activities that fulfill these needs and try to avoid activities which result in undermining these needs.

For example, the Fujitsu Vital Sensing Band (Fujitsu, 2017) enables monitoring of employees' wellbeing while they are outside, so that if they fall or succumb to heat exhaustion the organization will be notified automatically and can dispatch emergency services to the employee. This system that promotes or monitors employee wellbeing might lead to fulfilling the need for relatedness, as employees feel cared for (Ryan & Deci, 2008). Alternatively, a wearable program which empowers employees to independently perform work would likely lead to feelings of autonomy and competence, as they are able to exert more control over the tasks they perform and demonstrate their capacity to perform those tasks (Ryan & Deci, 2008). Conversely, a program that monitors employees for an administrative purpose (e.g., team effectiveness) may limit or even frustrate satisfaction of the needs for autonomy, competence, and relatedness (Gagné & Deci, 2005; Stanton & Stam, 2006). Additionally, a program concerned with both employee wellbeing and an administrative purpose may engender feelings of relatedness, but not feelings of autonomy. Therefore, it is not the data alone that might frame employees' reactions about a device; the purpose for which that device is being worn, which is often yoked to the data being collected, must also be considered.

As with traditional EM methods, the implementation of wearables may affect a number of employee and organizational outcomes. The massive volume of data that can be captured by devices raises concerns around individuals' privacy and information security (Guzzo, Fink, King, Tonidandel, & Landis, 2015; Rotolo & Church, 2015). Thus, individuals may perceive a wearable device program as being invasive of their privacy and in turn, convey a lack of

enthusiasm to participate, or more extremely contemplate leaving the organization (Stanton & Stam, 2006). A "favorable" set of outcomes would therefore include enthusiasm to participate in a program and low levels of intentions to quit and perceptions of invasion of privacy.

H1: A wearable device program which collects data from employees for an administrative purpose will result in less favorable outcomes than a program which collects data for employee wellbeing.

Discretionary Participation

A wearable device program may also vary on the amount of discretion employees have to participate. In many police departments officers are required to wear body cameras as a matter of policy, and thus employees have no participatory discretion. Other organizations have voluntary "Bring Your Own Wearable" (BYOW) programs, where employees have more participatory discretion. Salesforce (2015) stated that 54% of 500 surveyed companies reported they currently have a BYOW policy in place, with an additional 40% expecting to have a BYOW policy in the near future.

H2: A wearable device program which does not allow employees to have participatory discretion will be result in less favorable outcomes when compared against a program in which employees are allowed participatory discretion.

Information Privacy

Smith, Dinex, and Xu (2011) state that definitions of privacy can be broadly classified into one of two categories: value-based (i.e., as a commodity or right) or cognate-based (i.e., as a state or form of control). In-line with a definition of privacy as a form of control, Stone, Gueutal, Gardner, and McClure (1983) define information privacy as "the ability (i.e., capacity) of the individual to control personally (vis-a-vis other individuals, groups, organizations, etc.)

information about one's self" (p. 460). Smith, Milberg, and Burke (1996) conceptualize concern for information privacy (CFP) as an umbrella term for a number of attitudes concerning the acquisition, retention, fidelity, and use (and misuse) of data. Framed this way, information privacy appears to be an extension of the need for autonomy. Individuals who report more CFP may then be more likely to feel a loss of personal control if an organization implements a wearable device program, regardless of the specifications of the program. This loss of control would likely then cause a number of unfavorable outcomes (Stanton & Stam, 2006). Therefore, it is expected that:

H3: There will be a negative relationship between CFP and favorable outcomes, such that individuals who report more CFP will report less favorable outcomes.

Further, Smith et al. (2011) note that concerns for privacy are being constantly adjusted, depending on contextual factors in a given situation. To the degree that privacy is a form of control individuals have, an individual's general CFP may interact with the specifications of a wearable device program (i.e., the purpose and participatory discretion of a program) in such a way that intensifies the reported outcomes. Therefore, it is expected that:

H4: Concern for privacy will moderate the relationship between the wearable program purpose and outcome variables, such that individuals who report more CFP will report stronger associations than individuals who report less CFP.

H5: CFP will moderate the relationship between the participatory discretion of the wearable program and outcome variables, such that individuals who report more CFP will report stronger associations than individuals who report less CFP.

Hypothesized effects and interactions are summarized in Figure 1.

Method

Participants

Participants were recruited to complete a web-based survey using Amazon's Mechanical Turk (MTurk). In order to participate, MTurk workers must have been employed full-time in the United States and over the age of 18. The survey was completed by 376 individuals. After removing careless responders (Meade & Craig, 2012), data from 275 participants were analyzed. The mean age of participants was 34.30 (*SD* = 11.11), 58% (*n* = 160) identified as male, and 66% (*n* = 183) identified as White. Participants primarily worked in the private sector (*n* = 207) and reported a mean tenure of 5.6 years (*SD* = 6.5) in their current position. Data about participants' wearable device ownership and usage were also captured. A majority of participants (*n* = 245) reported owning at least one wearable device; of those that owned a device, 70 participants reported owning two or more devices. Most participants reported wearing their devices daily at work (*n* = 153) and outside of work (*n* = 168). Lastly, 25% of participants (*n* = 70) reported that their employer has a program through which they provide employees with a wearable device (*n* = 48) or provide a discount for a wearable device (*n* = 22).

Materials and Procedure

The present study utilized a 3 (device purpose) × 2 (participatory discretion) within-subjects experimental design. After completing demographic and individual difference items, all participants read three vignettes that described a real-world use of a wearable device in the workplace. Vignette one contained a description of a device used to gather physiological data (heart rate, blood pressure), that enables managers to infer stress levels in nurses, which they would use to inform the scheduling of overtime hours. Vignette two described a device that gathered sociometric data (number and length of interpersonal interactions, vocal tone during interactions) from bank tellers, which managers would use to evaluate team effectiveness and

inform team-oriented interventions. Vignette three described a device that would gather a variety of data (heart rate, body temperature, atmospheric pressure, acceleration) to monitor powerline technicians' wellbeing when they are outside, so that managers would be able rapidly respond to employees experiencing a medical emergency common in the field (e.g., heat exhaustion, falls from significant heights). Participants were asked to read each vignette, imagine themselves as an employee in the hypothetical organization, and respond to an attitudinal inventory twice. In one inventory, participants were asked to respond as if the organization was requiring them to participate in the described wearable device program; in the other, participating in the device program was voluntary.

Measures

Concern for privacy. Concern for privacy (CFP) was measured using an adapted version of the CFP scale developed and validated by Smith et al. (1996). The CFP scale is composed of four subscales which measure individuals' concerns with data collection, errors, unauthorized secondary use, and improper access. The adapted 11-item CFP scale demonstrated a high level of internal consistency (α = .90).

Dependent variables. Because participants completed the dependent variables six times, single-item measures of enthusiasm to participate, intentions to leave, and perceptions of privacy invasion were used as measures of participants' attitudes about a hypothetical organizational wearable device program. Participants rated their level of agreement with each statement on a 5-point agreement scale.

Results

To test Hypotheses 1, participants' responses for the required and voluntary conditions within each vignette were averaged so that each participant had one response to each outcome

per vignette. Following this, a repeated-measures MANOVA (RM-MANOVA) was conducted comparing differences across the three vignettes. RM-MANOVA revealed significant differences in responses, Wilk's $\Lambda = 0.63$, $F(6, 1092) = 47.12$, $p < .01$, partial $\eta^2 = .21$. Shown in Table 1, follow-up univariate tests indicated wearable purpose had a significant effect on all three dependent variables. Bonferroni post-hoc tests revealed all possible paired vignette comparisons within each condition were significantly different ($p < .05$). Participants reported the least favorable outcomes for the "team effectiveness" wearable program (i.e., vignette two), and the most favorable outcomes for the "employee wellbeing" wearable program (i.e., vignette three); descriptive statistics are presented in Table 2, and a full comparison of the outcomes is presented in Figure 2. Thus, Hypothesis 1 was supported.

Paired-sample t-tests were used to test Hypotheses 2; results from these t-tests are summarized in Table 2. Consistent with expectation that a program which disallows participatory discretion would result in less favorable outcomes, participants reported less enthusiasm to participate, stronger intentions to turn over, and a greater perceived invasion of privacy when participation in the wearable program was framed as being required, rather than voluntary. This effect was significant ($p < .05$) across all three vignettes. Thus, Hypothesis 2 was supported.

In order to test Hypothesis 3, a linear regression was conducted for each outcome variable; results are presented in Table 3. Results indicated that participants that reported more CFP were more likely to perceive that their privacy has been invaded by the use of a company-provided wearable device. However, CFP was not associated with turnover intentions or enthusiasm to participate. Thus, Hypothesis 3 was partially supported.

In order to test Hypotheses 4, multiple generalized linear mixed-effects regression

analyses were conducted in R (R Core Team, 2017). Simple slopes, intercepts, and associated tests of significance are presented in Table 4 and plotted in Figure 3. Results indicated that there was a significant interaction between CFP and device purpose for all outcomes. Presented in Table 5, deviance difference tests for each outcome indicated that models which included an interaction term (CFP x device purpose) were a better fit when compared to models containing only the simple effect of device purpose. The overall effect of device purpose on outcomes of interest was more pronounced when participants reported more CFP than when participants reported less CFP; thus, Hypothesis 4 was supported.

The same method was used to test Hypothesis 5, substituting device purpose for participatory discretion. Simple slopes, intercepts, and associated tests of significance are presented in Table 6 and plotted in Figure 4. Results indicated that there was a significant interaction between CFP and participatory discretion when predicting turnover intentions and enthusiasm to participate but not perceived invasion of privacy. Follow-up deviance difference tests (see Table 7) between a model containing only the simple effect of participatory discretion and a model adding the interaction term indicated significant deviance reductions for models containing the interaction term for turnover intentions and perceived invasion of privacy, but not for enthusiasm to participate. Thus, Hypothesis 5 was partially supported.

Discussion

The results of the present study suggest that the purpose of a wearable device program and the amount of participatory discretion employees have significantly affect how favorably employees will react to that program. In line with Stanton and Stam (2006) and SDT (Deci & Ryan, 1985), administrative programs were viewed less favorably than programs that had a partial or complete focus on employee wellbeing. Contrary to expectations, CFP did not have a

direct effect on turnover intentions or enthusiasm to participate in a wearable program; however, it did have a direct effect on the perceived invasion of privacy of a wearable program. As expected, individuals who have more CFP are more likely to be affected by the characteristics of a wearable device program, whereas individuals with less CFP may not react quite as strongly. This supports the notion that privacy is being continually adjusted based on different situational variables (Smith et al., 2011). Therefore, this would suggest that the impact of individual CFP should be considered not necessarily because of its direct effect on a specific outcome, but because of the moderating effect that CFP has on the characteristics of a given device program.

While these results may inspire further research, there are also clear limitations. Type of device, data collected from the device, and the hypothetical job of individuals wearing the device cannot be teased apart. Additionally, while the best practice recommendations from Aguinis and Bradley (2014) were considered in the design of the vignettes, the external validity of the responses remains unknown. The survey was also cross-sectional, capturing data only immediately after participants had read about a device. While initial reactions to a new technology can be informative, there are also reasons to believe that individuals may report different reactions after becoming familiar with the device. For example, depending on how accepting individuals are of the device and the program, it is possible that negative reactions could be attenuated, or facilitated (Roca & Gagné, 2008; Stam & Stanton, 2010; Venkatesh & Bala, 2008). Lastly, while SDT informed the design of the experiment, the impact of a program on individuals' need satisfaction in a given program could not be reasonably measured, due to the hypothetical nature of each program.

Future studies can be designed to tease apart the type data being captured, the context the device is being used in, and the type of device being used (e.g., wrist-worn vs. badge).

Additional explanatory mechanisms for the differential impact could be explored. Further, data on actual wearable programs could be gathered over multiple time points to track potential changes in reactions to a given wearable device.

As the utilization of wearable devices in organizations continues to increase, the degree to which wearable device program characteristics matter needs to be scientifically determined. Building on SDT, theories of information privacy, and research on EPM, the present study reveals the purpose of the device, participatory discretion, and individuals' concern for privacy are all important variables to consider when adopting a wearable program at work.

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Table 1

Differences in Outcome Responses to Three Wearable Device Programs

Source	Outcome	SS	df	MS	F	partial η^2
Vignette	Enthusiasm to participate	228.11	1.85	123.46	141.71**	0.34
	Turnover intentions	121.14	1.80	67.25	78.41**	0.22
	Invasion of privacy	149.77	1.91	78.51	85.99**	0.24
Error	Enthusiasm to participate	441.06	506.24	0.87		
	Turnover intentions	423.36	493.56	0.86		
	Invasion of privacy	477.23	522.72	0.91		

Note. Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated for enthusiasm to participate, $\chi^2(2) = 25.58$, $p < .01$, turnover intentions, $\chi^2(2) = 34.01$, $p < .01$, and invasion of privacy, $\chi^2(2) = 15.58$, $p < .01$. Degrees of freedom were corrected using Huynh-Feldt estimates of sphericity ($\varepsilon = 0.92$, 0.90, & 0.95, respectively).
**$p < .01$

Table 2

The Influence of Participatory Discretion and Wearable Device Purpose on Three Outcomes

	Enthusiasm to participate						Turnover intentions						Invasion of privacy					
	Voluntary		Required				Voluntary		Required				Voluntary		Required			
Device purpose	M	SD	M	SD	*t*	*d*	M	SD	M	SD	*t*	*d*	M	SD	M	SD	*t*	*d*
Stress and scheduling	3.45	1.13	3.02	1.25	6.90**	0.37	2.49	1.26	2.94	1.29	6.28**	0.35	3.15	1.17	3.47	1.19	4.78**	0.28
Team effectiveness	2.54	1.23	2.35	1.29	3.89**	0.16	3.17	1.21	3.61	1.2	6.67**	0.36	3.83	1.04	3.95	1.04	2.38**	0.12
Employee wellbeing	3.80	1.04	3.61	1.08	3.74**	0.18	2.34	1.24	2.64	1.32	4.66**	0.24	2.79	1.2	2.91	1.22	2.21**	0.10

Note. Participants responded with how much they agree or disagree with statements capturing the listed outcomes. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Voluntary = participants asked to respond as if participation in the hypothesized program was voluntary. Required = participants asked to respond as if participation in the hypothetical program was mandatory.
**$p < .01$, one-tailed.

Table 3

The Influence of Individual Concern for Privacy on Three Outcomes

	Enthusiasm to participate					Turnover intentions					Invasion of privacy				
Variable	*B*	*SE B*	β	*F*	R^2	*B*	*SE B*	β	*F*	R^2	*B*	*SE B*	β	*F*	R^2
Intercept	3.60	0.27	--	--	--	3.14	0.30	--	--	--	2.50	0.24	--	--	--
Concern for privacy	-0.12	0.07	-0.11	3.06	0.01	-0.07	0.08	-0.06	0.88	0.00	0.22	0.06	0.22	13.30**	0.05

Note. Degrees of freedom for each *F* test were (1, 273).
**$p < .01$

Table 4

The Moderating Effect of Concern for Privacy on Device Purpose for Three Outcomes

		Enthusiasm to participate				Turnover intentions				Invasion of privacy			
Predictor	Level of CFP	*B*	*SE B*	*t*	t_{ss}	*B*	*SE B*	*t*	t_{ss}	*B*	*SE B*	*t*	t_{ss}
Intercept	Low CFP	2.78	0.08	34.20**	--	3.21	0.09	36.29**	--	3.55	0.08	46.78**	--
	Mean CFP	2.44	0.06	42.41**	--	3.39	0.06	54.23**	--	3.89	0.05	72.45**	--
	High CFP	2.10	0.08	25.77**	--	3.57	0.09	40.39**	--	4.23	0.08	55.66**	--
Stress and scheduling	Low CFP	0.52	0.08	6.53**	--	-0.44	0.09	-5.20**	--	-0.40	0.08	-4.81**	--
	Mean CFP	0.80	0.06	14.15**	--	-0.68	0.06	-11.20**	--	-0.57	0.06	-9.71**	--
	High CFP	1.08	0.08	13.48**	--	-0.91	0.09	-10.63**	--	-0.75	0.08	-8.92**	--
Employee wellbeing	Low CFP	0.77	0.08	9.68**	--	-0.44	0.09	-5.19**	--	-0.66	0.08	-7.83**	--
	Mean CFP	1.27	0.06	22.60**	--	-0.90	0.06	-14.93**	--	-1.04	0.06	-17.60**	--
	High CFP	1.78	0.08	22.28**	--	-1.36	0.09	-15.91**	--	-1.43	0.08	-17.06**	--
CFP	Mean CFP	-0.49	0.08	-5.96**	--	0.26	0.90	2.90**	--	0.49	0.08	6.28**	--
CFP x Stress and scheduling	Mean CFP	0.40	0.08	4.91**	-1.14	-0.33	0.09	-3.84**	-0.81	-0.25	0.09	-2.90**	3.08**
CFP x Employee wellbeing	Mean CFP	0.73	0.08	8.91**	2.78**	-0.66	0.09	-7.58**	-4.42**	-0.56	0.09	-6.53**	-0.92

Note. CFP = Concern for Privacy. Low CFP = -1SD CFP, High CFP = +1SD CFP. Reference group = Required participation. t_{ss} = t-value for test that slope is significantly different than 0.
*$p < .05$, **$p < .01$

Table 5

Goodness of Fit Comparisons for Two Models of Device Purpose Predicting Three Outcomes

	Enthusiasm to participate			Turnover intentions			Invasion of privacy		
Model	df	Log-likelihood	χ^2	df	Log-likelihood	χ^2	df	Log-likelihood	χ^2
Model 1	5	-2472.61	--	5	-2580.62	--	5	-2489.57	--
Model 2	8	-2437.36	70.50**	8	-2556.85	47.53**	8	-2467.06	45.01**

Note. Model 1 contains only the simple effect of device purpose. Model 2 adds the interaction term of concern for privacy on device purpose.
**$p < .01$

Table 6

The Moderating Effect of Concern for Privacy on Participatory Discretion for Three Outcomes

		Enthusiasm to participate				Turnover intentions				Invasion of privacy			
Predictor	Level of CFP	*B*	*SE B*	*t*	t_{ss}	*B*	*SE B*	*t*	t_{ss}	*B*	*SE B*	*t*	t_{ss}
Intercept	Low CFP	3.14	0.08	40.63**	--	3.00	0.08	36.37**	--	3.25	0.07	46.44**	--
	Mean CFP	2.99	0.05	54.69**	--	3.07	0.06	52.59**	--	3.45	0.05	69.77**	--
	High CFP	2.84	0.08	36.71**	--	3.13	0.08	37.98**	--	3.65	0.07	52.21**	--
Voluntary	Low CFP	0.14	0.08	1.82	--	-0.17	0.07	-2.23*	--	-0.09	0.08	-1.17	--
	Mean CFP	0.28	0.05	5.09**	--	-0.40	0.05	-7.51**	--	-0.19	0.05	-3.53**	--
	High CFP	0.41	0.08	5.38**	--	-0.63	0.07	-8.38**	--	-0.29	0.08	-3.83**	--
CFP	Mean CFP	-0.22	0.08	-2.77**	--	0.10	0.08	1.14	--	0.29	0.07	4.08**	--
CFP x Voluntary	Mean CFP	0.20	0.08	2.51*	-0.26	-0.33	0.08	-4.35**	-2.81**	-0.15	0.08	-1.88	2.03**

Note. CFP = Concern for Privacy. Low CFP = -1SD CFP, High CFP = +1SD CFP. Reference group = Required participation. t_{ss} = t-value for test that slope is significantly different than 0.
*$p < .05$, **$p < .01$

Table 7

Goodness of Fit Comparisons for Two Models of Participatory Discretion Predicting Three Outcomes

	Enthusiasm to participate			Turnover intentions			Invasion of privacy		
Model	df	Log-likelihood	χ^2	df	Log-likelihood	χ^2	df	Log-likelihood	χ^2
Model 1	4	-2669.01	--	4	-2658.82	--	4	-2618.10	--
Model 2	6	-2667.72	2.58	6	-2652.32	13.00**	6	-2613.35	9.50**

Note. Model 1 contains only the simple effect of participatory discretion. Model 2 adds the interaction term of concern for privacy on participatory discretion.

**$p < .01$

Table 8 [Not referenced in text]

Comparisons of Random-Intercept and Fixed-Intercept Models

	Enthusiasm to participate					Turnover intentions					Invasion of privacy				
Predictor	τ_{00}	σ^2	*ICC*	*GMR*	χ^2	τ_{00}	σ^2	*ICC*	*GMR*	χ^2	τ_{00}	σ^2	*ICC*	*GMR*	χ^2
Device Purpose x CFP	0.47	0.87	0.35	0.76	312.98**	0.57	1.00	0.36	0.77	335.17**	0.31	0.96	0.24	0.66	164.73**
Participatory Discretion x CFP	0.41	1.23	0.25	0.67	173.66**	0.55	1.16	0.32	0.74	268.55**	0.27	1.20	0.19	0.58	101.23**

Note. Chi-square tests compared the -2 Log-likelihood of a model with random intercepts against one without random intercepts. GMR = Group-mean Reliability.

** $p < .01$

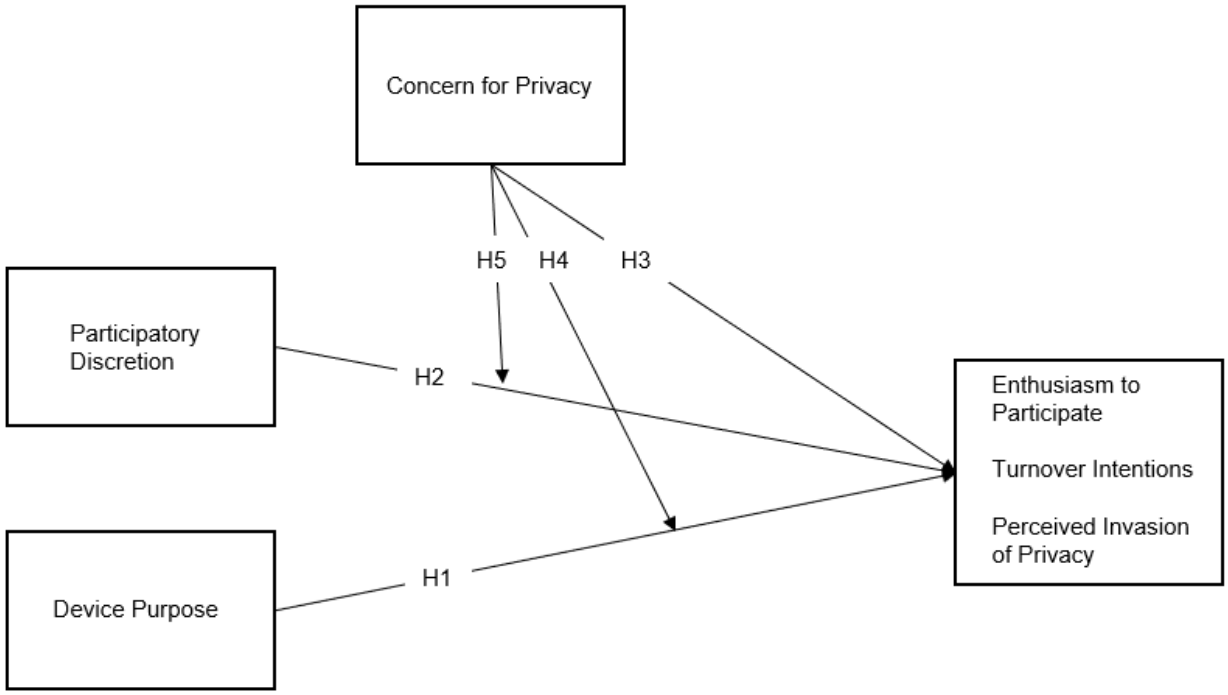

Figure 1. Summary of the hypothesized effects that the device purpose, participatory discretion, and concern for privacy have on individuals' enthusiasm to participate in the program, turnover intentions, and perceived invasion of privacy.

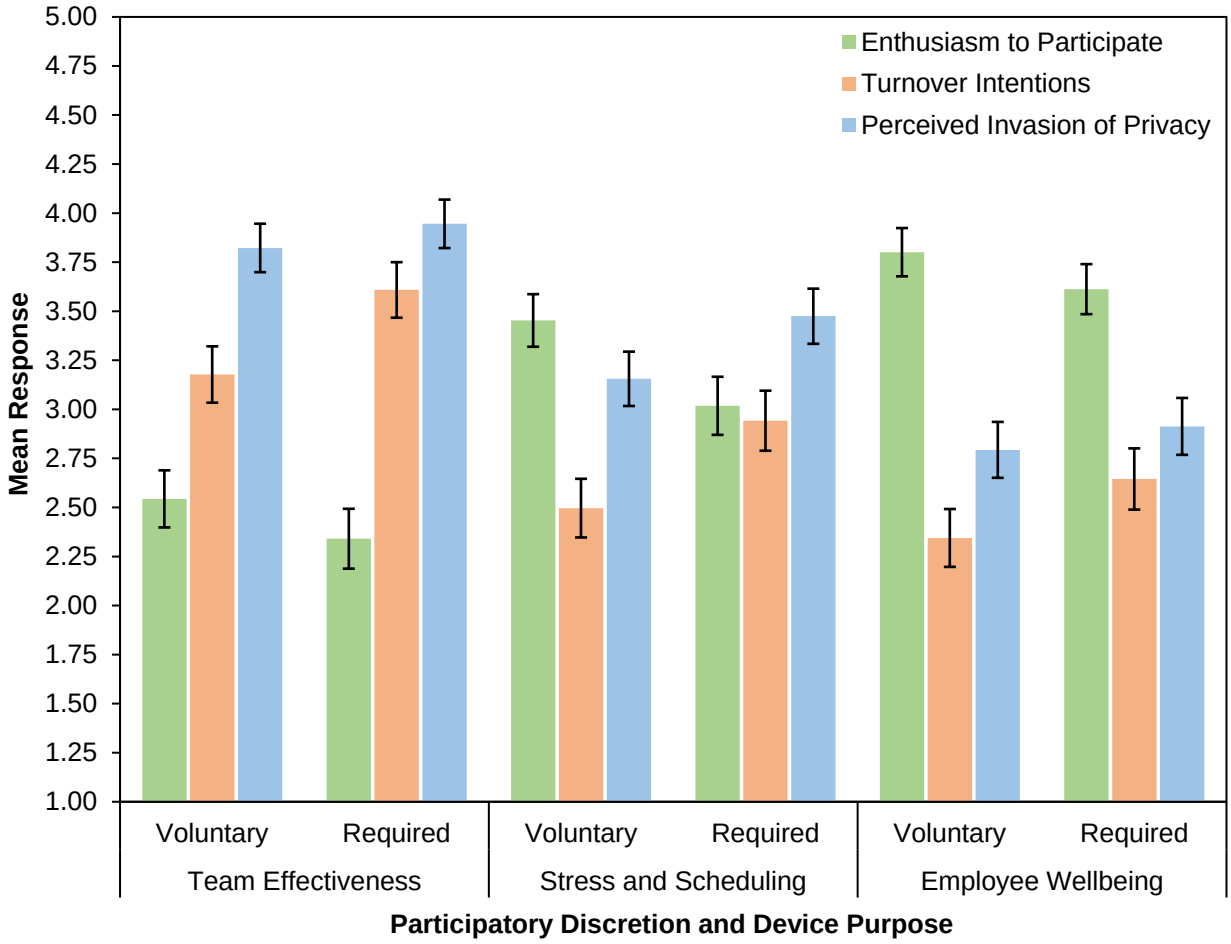

Figure 2. Mean responses to outcomes of interest by participatory discretion and device purpose. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Voluntary = participants asked to respond as if participation in the hypothesized program was voluntary. Required = participants asked to respond as if participation in the hypothetical program was mandatory. Error bars represent 95% confidence intervals.

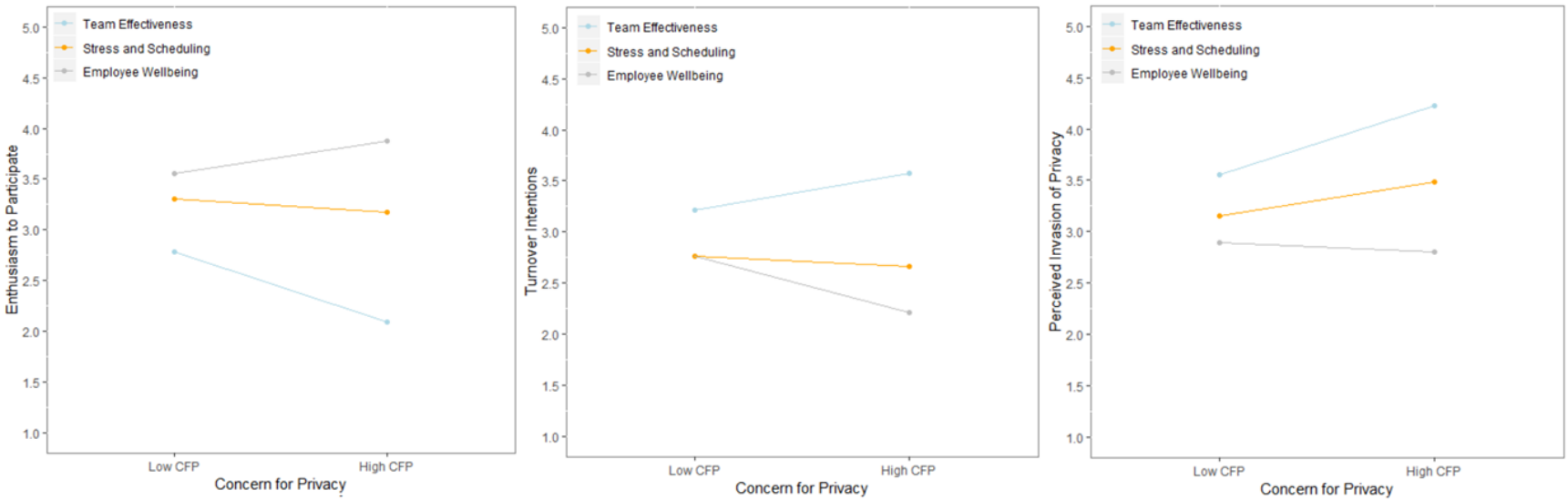

Figure 3. Simple slopes of outcomes of interest by Concern for Privacy (CFP) for each device purpose. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Low CFP = -1SD, High CFP = +1SD.

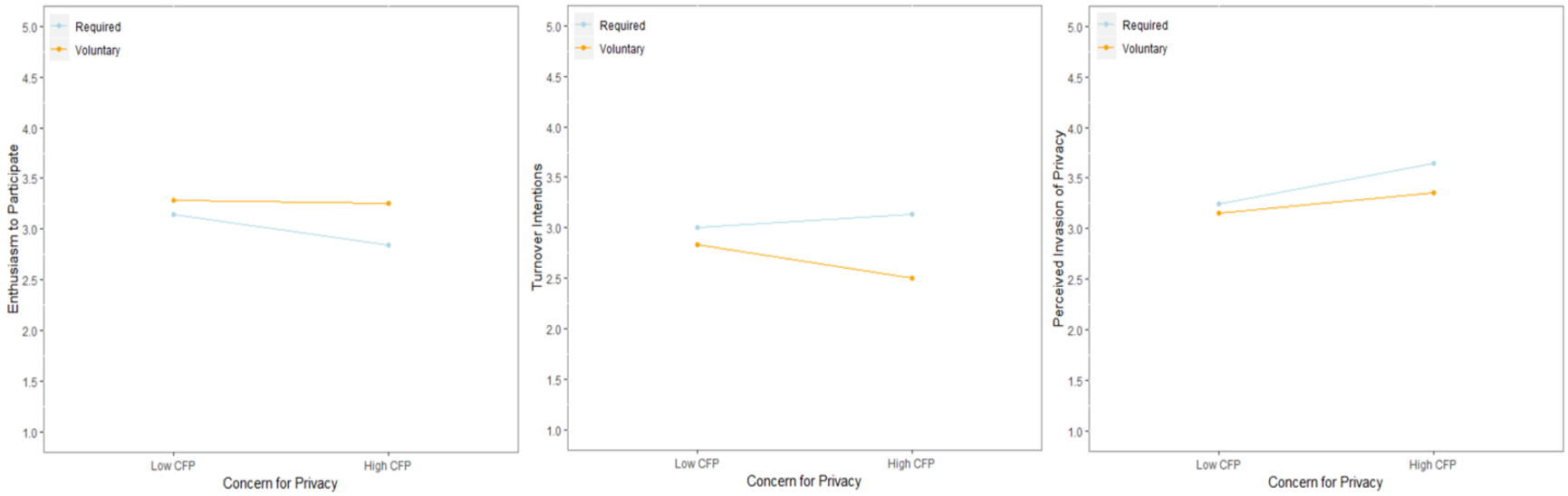

Figure 4. Simple slopes of outcomes of interest by Concern for Privacy (CFP) for each participatory discretion condition. Responses ranged from 1 (Strongly Disagree) to 5 (Strongly Agree). Low CFP = -1SD, High CFP = +1SD.