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Under a Microscope: Examining the Impact of Digital Location Tracking in the Irish Police Force

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Under a Microscope: Examining the Impact of Digital Location Tracking in the Irish Police Force

Completed Research Paper

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Abstract

Organizational use of digital technologies to monitor employee performance is increasing in response to competitive pressures and the emergence of hybrid working scenarios. These technologies provide employers with insights that can be used to increase organizational effectiveness, but have asymmetric power implications that accentuate employee privacy concerns. This study applies a psychological contract theory lens to explore the impact of these concerns in relation to mandatory location tracking, examining the psychosocial outcomes that affect the individual and their trust in the organization. Data collected from 709 Irish police officers are tested using covariance-based structural equation modelling. The findings confirm that information privacy concerns regarding digital location tracking impact the employee and shape their trust relationship with the organization through three pathways, the first being a direct effect, the second arising from the associated loss of autonomy and the third being through employee strain resulting from those privacy concerns.

Keywords: Digital Location Tracking; Employee Information Privacy Concerns; Psychological Contract Violation

Introduction

Profit-driven organisations are increasingly tapping into technologies and monitoring software to manage workflow and measure employee performance. For example, a 2016 Intuit study found that one in three US employees surveyed were being tracked by their employer and one in ten employees describe having their location tracked by 24 hours a day. A subsequent Intuit study (2018) reported that 57% of employees surveyed experience GPS tracking in their workplace - a notable increase over the 2-year period. Use of GPS enabled systems is not distinct to the US workforce however, with as many as 1 in 3 UK employees reporting workplace GPS tracking, corresponding with figures for Canada and Australia (Intuit, 2017).

From a management perspective, digital monitoring of employees has a practical basis. Increasing competitive pressures are forcing organisations to make data-informed decisions in order to identify and address inefficiencies in the workplace, ultimately allowing them to manage their business in a more efficient manner (Telematics, 2019). For example, the use of GPS-enabled devices allows management to collate highly detailed and personalised real time information on their employees, which in turn, allows

them to make these data informed decisions (Abraham et al., 2019). The use of body worn GPS based technologies in particular, are becoming increasingly prevalent within highly automated or logistic based settings and are commonly characterised as facilitating overt supervision, high levels of control and intense work environments (Ball, 2021). Further confirmation that employee location monitoring is likely to increase is evidenced in the increased application by organizations for sophisticated technology-based monitoring patents. For example, in 2019 Amazon were granted a patent for an electronic wristband that allowed them to track employees' movements in the workplace and use vibrations to nudge them in a different direction if necessary (DeNisco Rayome, 2018). Similarly, in 2020 Ford Motor Company supplied their employees with electronic bracelets that would vibrate if they came within 2 metres of another employee to ensure compliance with stringent Covid-19 restrictions at that time (Navarra, 2022).

Technology is also being used to track and monitor employees within the public sector, but has received far less attention to date. Importantly, it differs from the aims of commercial organisations in that while it does increase workflow oversight, it also brings essential benefits to the general public which enable more efficient functioning of society. For example, Tacoma Public Utilities (which provides clean drinking water and electricity to more than 200,000 customers in the Washington area of the United States) employs GPS tracking devices to monitor its vehicles in order to deploy repair and maintenance technicians more efficiently, especially during times of power disruption, thus ensuring continuity of essential public services. Moreover, the use of GPS tracking systems can help local governments reduce their carbon footprint and meet sustainability goals by pinpointing any unnecessary idling that leads to fuel waste, improving vehicle routing and eliminating any underused or unnecessary vehicles (GPS Insight, 2022). Research by Gholamhosseini et al., (2019) describes how healthcare facilities in Iran are utilising a Real-Time Location System (RTLS) to monitor medical staff, patients and assets to improve workflow, and also to increase both patient and provider safety within hospitals and clinics. Notably, during the COVID-19 pandemic, the use of RTLS within healthcare workplaces increased rapidly, helping physicians and medical staff to monitor and contain Covid-19 cases (Lorenzi, 2020), thus protecting staff and patients alike. Similarly, in the case of police officers, GPS tracking can result in improved protection of officers, enabling accurate and speedy direction of reinforcements at critical incident points, potentially saving their lives and those of citizens.

Clearly, tracking can be introduced for multiple reasons, some of which can bring significant benefits to employees. However, they also contain drawbacks for employees. At a minimum, these devices are likely to alter the relationship between employers and their employees, not least because digital monitoring transforms how work is rendered, both at the individual and collective level. For example, knowing that their employers are able to collate employee information on a real-time basis and gain detailed data-driven insights into their behaviour and performance will almost certainly generate legitimate privacy concerns and may also provoke tension between management and employees, particularly if employee consent for monitoring is not sought, or if they are unaware of the extent of that monitoring. Further, the opacity regarding how employee information is gathered, stored, accessed and utilised by management creates an asymmetric power imbalance in favour of the employer (Mitrou & Karyda, 2006), one with potential to fracture the employee-organizational relationship. In this complex situation, it is important therefore to understand employees' perspective on these technologies and their use by management.

Such monitoring can be difficult to challenge as it is often framed in a way that appears to support employee safety (as is the case in our study), or individuals lack agency to reject the technology due to the competing need for job security or the vocational nature of their career. Moreover, the pervasive nature of wearable technologies, which enable real-time tracking of employee location, reduces employees' ability to establish temporal distance boundaries or buffer themselves from constant surveillance, an encroachment with implications for personal autonomy (Mazmanian et al, 2013). As a result, the impact of employee privacy concerns, both on the individual and the employee-employer relationship, is likely to be more consequential than would be the case in other contexts, such as the online transactional domain where individuals can block tracking software. However, research on the psychosocial impact of these technologies, both to the individual and to their relationship with the organization is in short supply (Ball, 2021). To date, no comprehensive model has been developed to explore employee information privacy concerns in relation to location tracking and the effects of those concerns on the employee and their trust in the organization. This lack of research is not trivial as employee trust has been linked to both employee well-being and organizational stability (Cook & Wall, 1980). Thus, understanding whether and how employee privacy concerns regarding location tracking influence organizational trust is not just interesting, but important. We seek to address this gap by developing a model that identifies the key dimensions of employee

information privacy concerns relating to digital monitoring, the effect of these concerns on the employee and their relationship with the organization. In their review of the information privacy literature, Bélanger and Crossler (2011) note that this body of research has been heavily reliant on student-based and USA-centric samples, which results in findings of limited generalizability and consequently they call for a broader diversity of sampling populations. They also recommend that research should consider different levels of analysis as well as multilevel effects of information privacy. The current study responds to that call on both points, using a unique public sector case study example – An Garda Síochána - the Irish Police Force, and our model provides an examination of multiple effects of location monitoring on the individual and on the organization. The study findings are relevant to public and private sector organizations as the insights obtained will guide practitioners to understand the key drivers of employee information privacy concerns in relation to digital location tracking, as well as the individual and organizational outcomes of those concerns, supporting them to respond through targeted policy interventions that enhance the employer-employee relationship.

Theoretical Development

Since 2007, An Garda Síochána were provided with purpose-built secured digital mobile radio technology while on operational duty, called TETRA radio. In recent years this has been updated, most notably with a GPS tracking system, which enables the real-time tracking of Gardaí (the term used to refer to Irish police officers) using the system. The location-tracking element of each radio is permanently active for the duration of each Garda member's work shift (including breaks) and failure to comply results in sanctions. Use of this handset is mandatory and applies to all Gardaí when on patrol regardless of rank or unit. From an operational perspective, this GPS function allows management to strategically manage and deploy resources, whilst simultaneously providing increased levels of protection whilst on duty. Both Gardaí and their representatives acknowledge and welcome the improved personal protection which the technology affords. However, they argue that these same features compromise Garda members' personal privacy and have potential to be used negatively as part of performance evaluations. Each year at the Garda Annual Conference, concerns regarding this issue have been raised. During interviews conducted with Gardaí as part of this study, the level of that concern became evident through comments such as "*I wouldn't be surprised to hear if management were collecting and storing information on members in order to throw it back at them at a later date. And to build a dossier of your comings, goings and essentially build a case against you for whatever reason.*" Senior Management have stated that data collected will not be used for performance evaluations, but as use of these technologies exists in the absence of explicit data governance policies or independent auditing - both of which have repeatedly requested by Garda representatives - this has understandably increased their potential to fracture the employee-employer relationship. To understand this better, we develop our theoretical model within the domain of two linked perspectives – Information Privacy Concerns (IPC) and Psychological Contract Theory (PCT). The latter is an investigative paradigm recognized within the organizational science research domain as providing an effective framework for understanding employee-organizational relationships. We view the introduction of digital monitoring as an intervention whose influence on information privacy may violate the psychological contract between employees and their employer. We begin by providing an overview of PCT and then analyze digital monitoring from within this paradigm. We link this perspective to the IS literature and its focus on information privacy concern in order to develop our model and hypotheses.

Psychological Contract Theory

PCT has three main premises. The first is that a psychological contract exists at the *individual* level, in the form of a person's beliefs that a reciprocal exchange agreement exists with another party, such as their employer (Rousseau, 1990). The second is that these beliefs and their associated expectations are predicated on a *perception of mutual expectation* (rather than objective mutuality). Finally, psychological contracts may be categorized as transactional or relational in nature. This indicates that the individual's expectations can extend beyond the more obvious transactional elements of exchange (such as explicit and legally protected monetary remuneration in return for extent and type of work provided), to include a spectrum of perceptual obligations and rights which are less clearly defined and represent the social and relational elements of exchange (Schein, 1978). This dual aspect of the exchange relationship reflects its theoretical roots in social exchange theory (Blau, 1964) with its emphasis on the value of the social element

of exchange as interpreted by the recipient. For example, Blau (1964: 93) advised that “the basic and most crucial distinction is that social exchange entails unspecified obligations” that only a given individual can decide. This points to the need for employers to not assume employee expectations, as perceived obligations are likely to be shaped by the nature of the employment context and the associated expectations may not be clear to the employer. Our conceptualization of psychological contracts is consistent with these three premises. We view the psychological contract as the individual’s set of expectations regarding reciprocal exchange obligations, specific to their employer. We also draw on the distinction between transactional and relational contracts. In a public sector context, the transactional element of the contract tends to be satisfied because remuneration is transparently set at fixed points in agreement with industrial representatives and is therefore not an issue of contention. However, the relational aspect of the psychological contract is more nuanced, and its success requires careful attention to identifying and addressing factors that can be perceived as a violation of that contract.

Psychological Contract Violation

A psychological contract violation (PCV) has been defined as the individual’s perception that their organization has failed to fulfil obligations which comprise their psychological contract (Robinson & Morrison, 1995), in short, a disconfirmation of expectations. PCV are thus cognitive in nature, reflecting the individual’s objective intellectual assessment of whether expectations have been satisfied, but as Morrison and Robinson (1997) observe, the term violation conveys a strong emotional experience described (Rousseau, 1989: 129) as involving “feelings of betrayal and deeper psychological distress” by which “... the victim experiences anger, resentment, a sense of injustice and wrongful harm”, a description which implies a deeply affective response. The conceptualization of emotions arising from cognitive appraisal indicates that a perceived breach of psychological contract reflects the individual’s initial cognitive assessment of the organization’s failure to meet their obligations, with perceived violation indicating the subsequent affective states that may arise from this cognitive interpretation process, which in turn can result in attitudinal and behavioral responses (Rousseau, 1989) including employee resentment, an increased sense of injustice, general dissatisfaction with the employer and even termination of the employment relationship (Robinson & Morrison, 1995). This interpretation of a cognitive-affective-attitudinal sequence is relevant to digital monitoring, as it indicates that information privacy concerns may in the first instance be cognitively assessed by the employee in terms of whether they represent a perceived contract breach. Should that be the case, that perceived breach may generate a cognitive response regarding perceived loss of autonomy and an affective response evidenced through increased psychological stress, both of which may negatively shape the individual’s trust in the organization.

PCV has two main causal routes, renegeing or incongruence (Morrison & Robinson, 1997). Renegeing relates to when employers are aware that an explicit obligation exists but do not follow through with it due to either their inability to fulfill the promise (e.g., incompetence) or because they are unwilling to do so (e.g., opportunism) and the likelihood of its occurrence is influenced by power asymmetry with the employment relationship and assessment of the employee’s behavior including whether they have met their own obligations. An example of renegeing is an employer who promises that location tracking data would only be used for employee protection purposes but instead uses the data to critique employee performance. PVC can also result from incongruence, which is when understanding regarding the fulfilment of a given promise differs for both parties, with the organizational agent or agents sincerely believing they have fulfilled that promise, but the employee viewing otherwise.

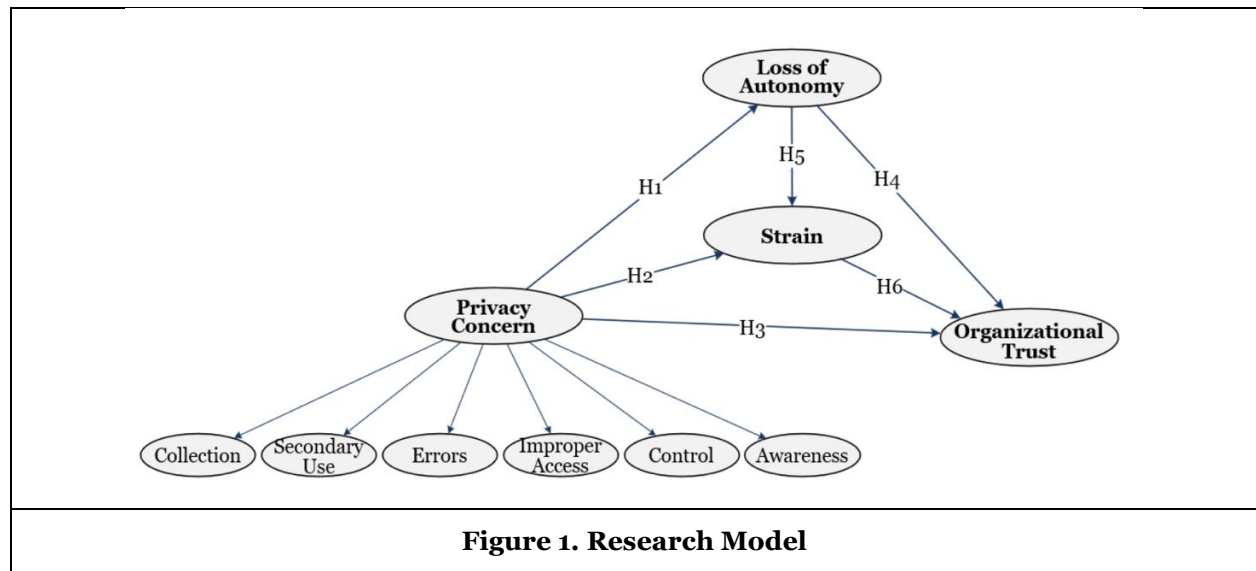
IS researchers such as Mazmanian et al., (2013) have called for examinations of the unintentional consequences of workplace technologies on personal well-being, including personal autonomy. The psychological contract provides a valuable theoretical framework for guiding such an examination for a number of reasons. Firstly, its role in relation to employee trust in the organization has already been confirmed (Clinton & Guest, 2013), signifying the relevance of extending this framework to a mandatory digital monitoring context. The second reason is that previous research has demonstrated that a psychological contract violation perspective can yield rich insights into the factors influencing formation of online consumer trust (Liu et al., 2020). It is similarly likely to yield valuable insight into the effects of information privacy concerns within a mandatory location-monitoring context. However, to date only one exploratory study (Coultrup & Fountain, 2012) has employed psychological contract theory in relation to electronic monitoring (email and internet) of employees of an academic institution and data was collected using a small convenience sample and short self-crafted instrument. Instead, the limited work exploring

privacy and trust in relation to employee monitoring has used alternative guiding lens such as that of communication boundary management to focus on email (e.g. Chang, Liu & Lin, 2015) or Call Centre monitoring (Ball & Margulis, 2011), or alternatively employed justice frameworks (Chory et al., 2016) that emphasize organizational fairness perceptions, compliance or resistance. In a mandatory use employment context, the absence of disclosure agency and the associated loss of control over collection and ownership of information points to the potentially more severe impact of PCV on the employee-employer relationship. The use of the PCT framework therefore provides an empirically tested scaffolding for exploring the impact of employee information privacy concerns in relation to digital monitoring, specifically for yielding insight into the pathway through which violation of that contract impacts the employee and shapes their relationship with the organization.

Research Model and Hypotheses

Based on the PCT framework described above, we now discuss each construct in our model and present the hypotheses of the construct relationships. The research model is depicted in Figure 1. The model proposes that IPC regarding workplace digital monitoring shape employee trust in the organization and this can occur through three distinct pathways, the first being a direct effect, the second arising from the associated loss of autonomy and the third being through employee strain resulting from those privacy concerns. Through these examinations we provide empirically supported insights into how digital monitoring and its associated privacy concerns influence the employee-organization trust relationship.

In line with Psychological Contract Theory, we propose that Gardaí use TETRA technology with the belief and perceived reciprocal expectation that Senior Management’s use of their location information will be for their personal benefit, such as to improve their security through more effective resource allocation. The ongoing unaddressed Information Privacy Concerns which Gardaí have regarding use of their location data represents their cognitive appraisal that these expectations have been reneged upon, thus violating the relational psychological contract. The resulting disappointment, frustration and distress (Morrison & Robinson, 1997) resulting from this breach of contract is expressed at the organizational level, through reduced employee trust, and also at the individual level, as evidenced through reduced employee autonomy and increased strain, both of which also impact organizational trust.



Information Privacy

Information privacy is commonly noted as an important subset of general privacy (Smith et al., 2011). Similar to general privacy, it has been examined from a multiplicity of disciplinary perspectives, many of which emphasize differing rights or control. Information Systems researchers such as Bélanger and Crossler (2011) avoid an exclusive emphasis on either rights or on absolute control, whilst simultaneously

acknowledging that individuals do have rights regarding their information and wish to assume greater control over it than is the case at present. The current study harnesses their definition, adapting it to the study context and defining information privacy as “*the desire of employees to be afforded a degree of control over the collection and dissemination of their personal location information by their employer.*” When information privacy is discussed in this study, it references this definition.

Information Privacy Concerns

Information privacy concerns (IPC) is one of the most widely cited privacy-related variables in information systems research, where it has been shown to be a strong predictor of privacy-related behavior, including disclosure of personal information on social media platforms (Krasnova et al., 2010) and in an online health community (Tacco et al, 2018), as well as influencing online shopping adoption (Dinev & Hart, 2006)

Increased interest in IPC has evolved in tandem with a changing technological landscape and several studies have sought to identify its dimensionality. For example, Hong and Thong (2013) systematically examined various conceptualizations of IPC using four online surveys and nearly 4000 Internet users in order to determine IPC dimensions and their factor structure. They found that the conceptualization of IPC that best fit with the data contained six first-order factors, which were collection, secondary usage, errors, improper access, control, and awareness. These dimensions can be viewed as expressions of two factors, interaction management and information management, which together are posited to represent general IPC¹. They also found that these privacy concern dimensions and their factor structure are significant determinants of both trusting beliefs and risk beliefs, something that is particularly important for this study. Surprisingly, although the relevance of this 6-factor conceptualization has been widely acknowledged and applied in a variety of contexts including health (Fox & Connolly 2018), airport digital services and online retail services (Mwesiumo et al, 2021) , it has not been applied in an employment context. Therefore, whether this dimensionality applies equally within such a context is a critical focus of this study. Similarly, the effects of IPC in such a context, specifically its impact on the individual and on their trust in the organization has not been determined. This study therefore provides important insights in that regard.

A foundational premise of much of the extant research on information privacy concerns assumes agency on the part of the individual. There is a deficit of research examining such concerns in a mandatory disclosure context such as that of workplace monitoring, where individual agency is restricted. In parallel, the psychosocial impacts of such concerns and the pathway to their expression remains undetermined. In this study, we recognize the direct link between IPC and adoption-related outcomes, but also incorporate a parallel examination of alternative impact pathways through which IPC may be influence trust. Thus, the dependent variable of our research model remains the construct of organizational trust, but IPC-related pathways to its expression are examined both directly and through its effect on loss of autonomy and employee strain.

IPC and Autonomy

The concept of autonomy is derived from the Greek words *autos* (self) and *nomos* (law), referencing having control or self-determination over one’s own life. We define job autonomy as the degree of freedom and discretion of the employee with regards to making task-related decisions and selecting work procedures (Hackman & Oldham, 1975). Researchers such as Becker (2019) contend that the loss of autonomy resulting from persistent surveillance becomes accentuated in a context of unprecedented digital collection and storage of individuals’ information, thereby relating loss of autonomy to individuals’ loss of control over their information and the potential for errors in collected information, which the individual cannot correct. In a real-time location tracking context that is characterized by real-time surveillance, the employee’s privacy concerns are likely to exert a greater effect on their perceived loss of autonomy. Therefore, based on this discussion, we posit that:

H1: IPC regarding digital location tracking increases employee loss of autonomy.

IPC and Strain

In the organizational science literature, the terms strain and stress are often used interchangeably due to their interlinked nature. For example, mental strain has been defined as a psychological frustration

¹ Hong and Thong test both a second order and third order model and conclude that both are acceptable.

resulting from a stressor situation, one that the individual struggles to find a solution to reduce or eliminate (Zhang, Wang & Shi, 2012). The use of digital technologies for employee performance monitoring has been identified (Botan, 1996) as one such stressor as it creates a power asymmetry that favors the employer and results in a corresponding lack of employee control. In a workplace context that is characterized by mandatory use of wearable location tracking technologies, employees cannot redress the power asymmetry and associated loss of control over their personal data. This produces an ongoing psychological frustration which they must endure, as opposed to a single or transitory stressor incident. Based on the exponentially greater potential for monitoring which mandatory wearable location tracking technology confers, employee concerns regarding the systematic erosion of their privacy is likely to accentuate that strain. We therefore posit that:

H2: IPC regarding digital location tracking increases employee strain.

IPC by their nature encapsulate a perception of risk, which is the individual's subjective assessment of an adverse outcome, in the case of this study in relation to the collection and use of employee location data. Studies have shown that perceived risk is also associated with trust in relationships (Mayer et al., 1995). Such trust has been defined as a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intention or behavior of another (Rousseau et al, 1998: 395). Central to this conceptualization is the 'willingness to increase one's vulnerability to another whose behavior is not under one's control (Zand, 1972:230). It is this vulnerability and lack of control which underpins the risk-taking aspect of trusting behavior (Mayer et al, 1995) and it points to the fact that a violation of expectations will negatively impact the trust basis of the employee-employer relationship. In the literature the relationship between information privacy concerns and trust responses has been repeatedly confirmed in multiple contexts including adoption of online shopping (Tsai et al., 2011) and online health communities (Tacco et al, 2018). It is likely that this should also extend to digitally mediated workplace contexts. We therefore propose:

H3: IPC regarding digital location tracking reduces employee-organizational trust.

Loss of Autonomy – Organizational Trust

Employee job autonomy is an indicator of a high trust culture and is associated with increased employee positive performance outcomes. This has been consistently confirmed across a number of sectors and cultures including the United States (Hart et al., 1986) and South Korea (Cho & Song, 2017) where it has been shown to influence organizational trust (Singh and Srivastava, 2016). A loss of autonomy, resulting from the persistent surveillance associated with wearable location tracking technologies, is therefore likely to negatively impact employee organizational trust. Based on this discussion, we therefore propose that:

H4: Loss of autonomy associated with IPC regarding digital location tracking reduces employee-organizational trust.

Loss of Autonomy and Employee Strain

Job autonomy is a psychosocial resource in the work environment that is associated with psychological well-being. For example, higher levels of job autonomy are associated with lower levels of negative psychosocial outcomes including anxiety frustration and turnover and physical symptoms (Liu, Spector & Jex (2005). This is likely because autonomy enables greater decision-making discretion, which increases the individual's resilience to stress-provoking conditions (Carver & Scheier, 1998). A loss of autonomy can therefore reduce that resilience and potentially increase employee strain. For example, studies confirm an association between lower levels of job autonomy and increased risk for mental health problems (Madsen et al., 2017). The use of digital surveillance technologies in the workplace is likely to further reduce employee autonomy. Based on this discussion and the fact that the reduction of job autonomy associated with mandatory use of digital location tracking technologies is likely to increase Garda strain, we posit that:

H5: Loss of autonomy associated with IPC regarding digital location tracking increases employee strain.

Strain – Organizational Trust

Much research has confirmed the relationship between employee well-being and organizational trust. In general, the focus of this research tends to be the positive in orientation (e.g., Jena et al. 2018). However, the inverse equally applies and when the psychological contract is damaged through an employee perceiving that their employer did not fulfil obligations, this has been shown to impact employee psychological well-being and reduce organisational trust (Richter & Näswall, 2019). It is likely that the same relationship between employee strain and trust in the organization would extend to the mandatory use of surveillance technologies in the workplace. Based on this discussion, we posit that:

H6: Employee strain resulting from IPC regarding digital location tracking reduces employee-organizational trust.

Methodology

This study focuses on the Irish Police Force - ‘An Garda Síochána’ (Guards of the Peace) – which has over the past decade completed its nationwide implementation of TETRA radio, a real-time location tracking technology. It is now a mandatory requirement for all 14,000 police officers (Gardaí) to wear this technology during their work. Both the police union executive bodies and Management granted permission to conduct a quantitative survey with its members, facilitating access to Gardaí (lowest rank), Sergeant and Inspector grade employees drawn from all locations across Ireland.

Measures

We operationalized the constructs by adapting existing scales to fit the context of our study. All constructs were measured using multi-item scales. Items were measured on a 5-point Likert scale, with anchors ranging from strongly disagree to strongly agree. Privacy concern was measured as a second order reflective construct after adapting the items the integrated conceptualization of Hong and Thong (2013). Since the context of this study is very different to the original paper, besides modifying the wordings of the original items, we add one item to four of its dimensions and two items to two others. For example, the item *‘I am uneasy about the fact that I don’t have control over how An Garda Síochána may use my TETRA location information record’* was added to the measure of control. Loss of autonomy was measured by adapting three items from Beehr’s (1976) employee autonomy scale, one item from Hackman and Oldham (1975) job diagnostic survey (*‘I feel that being monitored via TETRA radio has reduced my personal initiative and judgement to carry out my daily work’*), and one item from Clasen (2012) examining the degree of autonomy perceived by employees regarding work scheduling and task performance. Consistent with past research on organizational trust in the context of psychological contracts (Colquitt, Scott & LePine, 2007) we measured organizational trust based on Gabarro and Athos (1976). Strain was assessed by the adapted four-item work exhaustion scale of Moore (2000) and the addition of two more items to achieve a better contextual fit (such as *‘I feel stressed from having my location monitored at work’*). Two pre-tests were conducted in order to ensure item interpretation equivalence (Cha, Kim & Erlen, 2007). In the first pre-test, members of the Garda Representative Association, the union executive, were invited to respond the questionnaire and provide feedback to improve the items. For the second pre-test, the process was repeated with a range of Gardaí, Sergeants and Inspectors. During this process, we examined the validity of the scales based on statistical procedures proposed by MacKenzie et al., (2011). Overall, no significant changes to items were required, but some were slightly adjusted in order to increase statement clarity.

Data Collection and Filtering Variables

Study participants are members of the Irish police force. The respondents were encouraged by their union executive bodies to answer the 129 items of the questionnaire, which was made available to them from May to Oct 2020. Because respondents tend to be inattentive at some point when answering long questionnaires, we added two attention-check items located at 1/3 and 2/3 of the questionnaire which later have been used to screen the answers deemed meaningful. We apply limits of time completion as a measure to avoid inattentive respondents and bias answers. We then employed 1/3 of the median of completion time as the lower cut-off value for the time of completion, obtaining 225.8 sec for the full questionnaire, which gives a mean of 1.75 sec per item of answering time. Bias of slow respondents might arise because the instrument

exposed subjects to initial blocks of contextualization vignettes. If taking too long to answer, one may be less into the context and possibly biasing the answers of the late items when compared to the initial ones. Since very low number of respondents took too long, we use 86400 sec (24 hours) as the higher time limit to finish the survey. In total, we collected 1,808 answers, from which we dropped those outside the completion time limits ($n=479$), completion percentage below 90% ($n=897$), failing to pass the attention check #1 and #2 ($n=188$), which resulted in 709 usable responses. Before filling the missing values with item means, we checked for non-response bias and found no significant difference in demographics between respondents and non-respondents, and no pattern considering the demographic types of respondents, gender, answering day or time.

Data Analysis

We conducted our analysis using a two-stage process. First, we evaluated the measurement model using a confirmatory factor analysis (CFA). Specifically, we assess the psychometric properties of the scales by using STATA (version STATA/MP 15.1). Following the evaluation of the measurement model, we tested the research model using a structural equation modelling approach based on covariances (CB-SEM). We adopted CB-SEM because it is considered the appropriate alternative when dealing with larger sample sizes and validating models that employ well-established theories, because it is more sensitive to small differences between the structures of the data and the model (Hu & Bentler, 1999). Although presenting these advantages, CBSEM requires multivariate distribution of the data, which rarely is the norm in survey designs because of the usual Likert format. When observed data are nonnormal, the test statistic does not follow a correct *chi-square* distribution, leading to incorrect interpretations of the results. We use Doornik-Hansen test (Doornik & Hansen, 2008) to verify the condition of multivariate normality and found evidence of non-normally distributed multivariate data ($\chi^2 = 4560$, $df = 86$, $p=0.000$), indicating that we should estimate the parameters by employing robust estimation methods (Satorra & Bentler, 1994). Following the guidelines of CBSEM model fit statistics in the literature, we report the key quality criteria: chi-square (χ^2), adjusted chi-square (χ^2/df ; df =degree of freedom), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean squared error of approximation (RMSEA), standardized root mean squared residual (SRMR), and coefficient of determination (CD) (Hu & Bentler, 1999). As CFI, TLI, and RMSEA are contingent to the robust estimation technique employed, their results are reported with the subscription SB.

Results

Demographics

Most of the respondents (84%) are Garda police officers, the lowest rank in the force. Among all ranks, Women (20%) are less represented than Men (80%), and especially low-represented at the highest ranks.

Measurement Model

To evaluate the measurement model we performed a CFA with four latent constructs (IPC, strain, organizational trust and loss of autonomy) with IPC modeled as a second-order construct with six first-order dimensions (Hong & Thong, 2013). The results indicate good fit of the data ($\chi^2 (842) = 1944.58$; $\chi^2/df = 2.31$; $CFISB = 0.972$; $TLISB = 0.970$; $RMSEASB = 0.035$; $SRMR = 0.048$; $CD = 1.000$). Our constructs show adequate convergent validity as composite reliabilities (CR) and Cronbach's alpha (CA) are higher than 0.90, well above the threshold of 0.7 (MacKenzie et al., 2011), meaning the added items intended to contextualize worked properly with adapted ones. Also, convergent validity is established as the average variance extracted (AVE) for all constructs are higher than 0.5 (Bagozzi & Yi, 1988), and the item loadings are higher than 0.7. Discriminant validity at the item level is confirmed based on low cross-loadings. (Item loadings not shown in this paper because of page limitations). At the latent variable level, the square roots of the AVE for our constructs were greater than the correlations between constructs (Fornell & Lacker, 1981), further confirming the discriminant validity. Table 1 shows the key reliability indicators as well as the construct level convergent and discriminant validity indicators.

	CR	CA	AVE	Strain	IPC	Org. Trust	Loss of Autonomy
Strain	0.93	0.94	0.70	0.83			
Information Privacy Concern (IPC)	0.99	0.97	0.76	0.43	0.87		
Organizational Trust	0.91	0.90	0.63	-0.44	-0.56	0.79	
Loss of Autonomy	0.96	0.97	0.85	0.42	0.70	-0.51	0.92
CR = Composite Reliability; CA = Cronbach's Alpha; AVE = Average Variance Extracted							
Table 1. Latent-level convergent and discriminant validities							

Structural Model

Figure 2 presents the structural model results. The overall fit statistics confirm that the hypothesized model provides a good representation of the structures that underlie the observed data ($\chi^2(842) = 1944.58$; $\chi^2/df = 2.31$; $CFI_{SB} = 0.972$; $TLI_{SB} = 0.970$; $RMSEA_{SB} = 0.035$; $SRMR = 0.048$; $CD = 0.955$). The chi-square measure is significant ($p < .001$), as is often the case for models with large sample sizes ($n = 709$ in our study). We find that privacy concern is a significant negative predictor of organizational trust in a direct relationship ($\beta = -0.307$, $p = 0.000$), and a positive predictor of loss of autonomy ($\beta = 0.674$, $p = 0.000$), and strain ($\beta = 0.243$, $p = 0.000$), in support of H1, H2, and H3. The results also support the negative direct effects of loss of autonomy on organizational trust ($\beta = -0.193$, $p = 0.000$) and of strain on organizational trust ($\beta = -0.213$, $p = 0.000$), in support of H4 and H6, respectively. In addition, loss of autonomy has a positive significant effect on strain ($\beta = 0.243$, $p = 0.000$), so supporting H5.

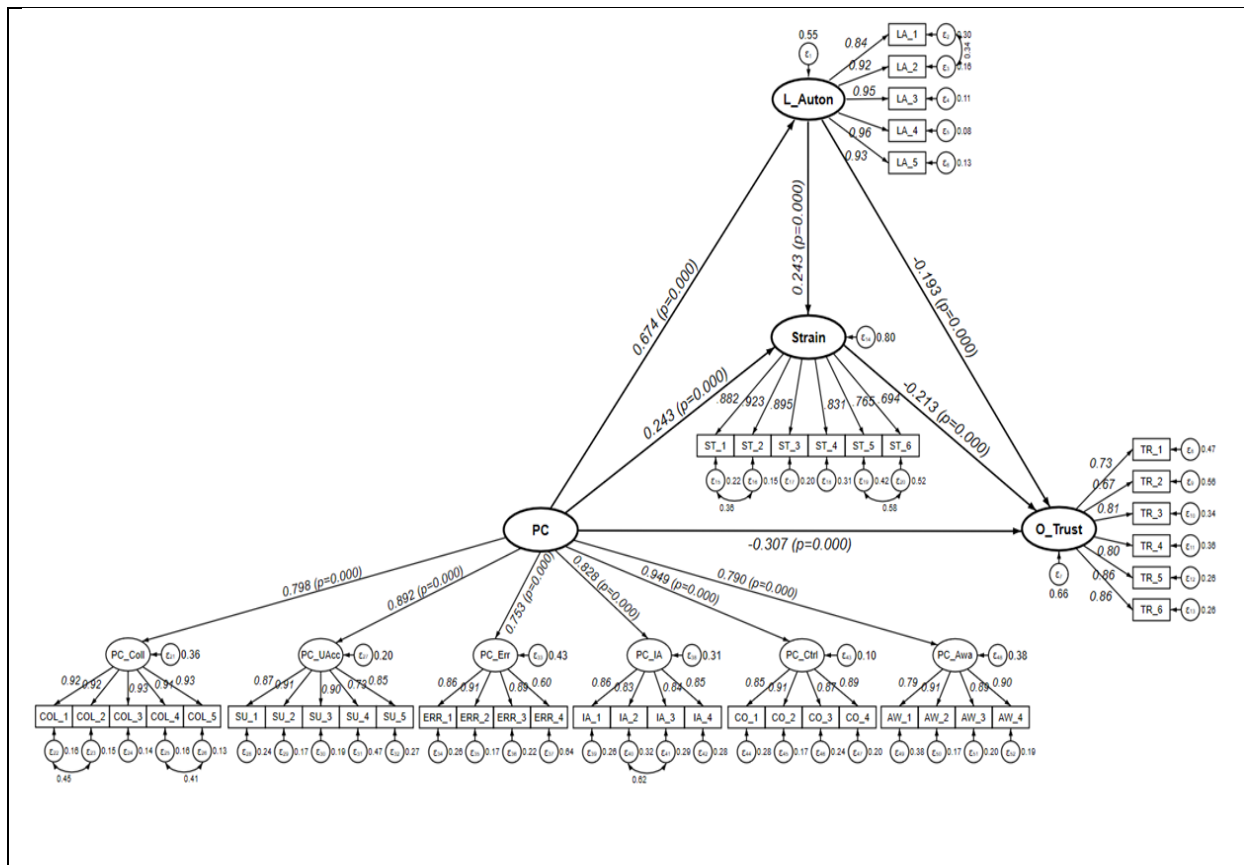


Figure 2. Results of the Structural Model

Post Hoc Analyses

Mediation Analysis

To test the mediating roles of loss of autonomy and strain in our model we followed the recommendation of Zhao, Lynch, Chen and Deighton (2010) performing a bootstrap estimation based on 5000 sub-samples. This approach is preferred over the product-of-coefficients approach (Sobel, 1987) because as a non-parametric method it does not impose the assumption of normality (Zhao et al., 2010). Our results, shown in table 2, indicate that privacy concern exerts a complementary partial mediation through loss of autonomy and strain ($\beta = -0.217$; , $p = 0.000$) which represents 41.5% of its total effect on organizational trust ($\beta = -0.523$, $p = 0.000$). In the same way, 21.2% of the total effect of loss of autonomy on organizational trust ($\beta = -0.245$, $p = 0.000$) is attributed to a complementary partial mediation ($\beta = -0.052$, $p = 0.000$).

Predictor	Effect type	sample mean	%	SD	pvalue	Mediation Type
Privacy Concern	Direct	-0.307	59%	0.058	0.000	Complementary Partial Mediation
	Indirect via Loss of Autonomy and Strain	-0.217	41%	0.037	0.000	
	Total (<i>direct + indirect</i>)	-0.523	100%	0.048	0.000	
Loss of Autonomy	Direct	-0.193	21%	0.032	0.000	Complementary Partial Mediation
	Indirect via Strain	-0.052	79%	0.010	0.000	
	Total (<i>direct + indirect</i>)	-0.245	100%	0.033	0.000	
Strain	Direct only	-0.213	100%	0.031	0.000	

Table 2: Mediation analysis of the effects on Organizational Trust

Common Method Bias

Common method bias (CMB) is a source of concern, especially when data are based on self-report surveys (MacKenzie et al., 2011). Consequently, we performed the marker variable test, which is considered an effective tool to reveal CMB issues (Malhotra, Kim & Patil, 2006). We select Cognitive Absorption as our marker variable because it is supposed to be susceptible to the same causes of the CMB while theoretically unconnected to the variables in the model. After following the procedure indicated in Lindell and Whitney (2001), we found a low, non-significant second lowest correlation of 0.013. We calculated adjusted correlations to partial out the potential method variance and the results showed very small, statistically non-significant differences between the original zero-order correlation matrix and the adjusted one, suggesting that method bias did not present a major threat to our analysis.

Discussion

This study developed and empirically tested a model that illustrates the impact of IPC in relation to mandatory location tracking of employees, integrating an investigation of both the psychosocial outcomes that directly affect the individual, as well as their trust in the organization. The findings confirm that employee IPC influence the perception of loss of autonomy, increases their strain and reduces their trust in the organization. Our proposed model is able to account for 45% of the variance in loss of autonomy, 20% of variance in employee strain and 34% of variance in organizational trust across this unique context, which possesses adequate explanatory power to make the interpretation of path coefficients meaningful.

An overarching contribution of this study relates to its focus. It recognizes that digital location tracking can bring many benefits to police officers, not least increased safety. However, it also demonstrates that unaddressed IPC regarding mandatory digital location tracking can produce psychosocial outcomes which impact trust in the organization. This is significant, as previous privacy research has tended to focus on consumer contexts including online shopping and health in which the individual has a higher level of agency. Moreover, previous research has assumed a direct relationship between IPC and individual and organizational outcomes without considering the nuanced pathway of impact development. Comparing the

direct and indirect pathways through which IPC are expressed therefore informs our understanding of both IPC outcomes and their effect, highlighting the need for other privacy researchers to incorporate indirect psychosocial impact pathways within their examinations.

The study findings inform theory in relation to the impact of IPC concerns. Firstly, these results provide empirical evidence that information privacy is a critical concern for employees who are subject to digital location tracking within their work environments, thereby confirming that the relevance of the IPC dimensions as identified by Hong and Thong (2013) extend to workplace environments. They show that lack of control over the location data that is being collected by management is a dominant concern, as are concerns regarding secondary usage and improper access to the data. This insight presents an opportunity for the organization to design data governance policies that pay specific attention to these concerns, to implement independent auditing of processes and to proactively communicate this to employees, thus strengthening trust in the organization. If the benefits of location tracking technologies are to be realized, then addressing these IPC must be a priority for An Garda Síochána.

A second point is that the results provide detailed insight into the impact of these privacy concerns, both for the individual and the organization. In terms of individual impact, they result in a perceived loss of autonomy and increased employee strain. The particularly strong impact on loss of autonomy ($R^2=45\%$) indicates the critical importance of this construct and confirms the view of IS researchers (Mazmanian et al., 2013) who contend that workplace technologies can have unintentional consequences on personal well-being, including personal autonomy, empirically demonstrating that consequence extends to digital location monitoring of employees. The implication of this for An Garda Síochána is consequential. Police recruits are trained to identify if a situation does not appear as it should and to effectively intervene. This can prevent a crime taking place and increase societal confidence in the effectiveness of the police force. However, the findings of this study illustrate the chilling effect which location monitoring technologies exert on that autonomy, thus reducing the effectiveness of police officers to proactively intervene where necessary. If Senior Management do not address location monitoring IPC, this outcome is likely to intensify, thereby reducing policing effectiveness and its societal value.

A third point is that police officers are more frequently exposed to high stress events more than is the case for most other employees and there is evidence (e.g., Gershon et al, 2008) that this exposure is associated with anxiety, depression, somatization, posttraumatic stress disorder and burnout. Our study findings show that IPC regarding location tracking adds to their psychological strain, potentially accentuating these negative outcomes. Significant numbers of police are choosing to leave their occupation (Maher, 2022). By demonstrating that IPC regarding location tracking technologies reduce police officers' autonomy and increases their strain, this study progresses our understanding of the mechanisms or pathways through which the organizational environment may influence intention to quit cognitions and therefore contributes to our understanding of a critical element of organizational functioning, that is employee retention.

Further, in terms of organizational impact, our results show that employee IPC explain 34% of variance in organisational trust and this effect is both direct and indirect. Over and above the direct effect on trust, our results show that loss of autonomy and strain are important mediators, explaining 41% of the effect of IPC on trust. This confirms the increased explanatory power which inclusion of psychosocial constructs provides in this study, enhancing our understanding of impact pathways in relation to the shaping of organizational trust outcomes. This is consequential for the future of policing as a substantial relationship exists between trust and organizational commitment, with low levels of the latter influencing turnover (Cho & Park, 2011).

A noteworthy aspect of this study relates to the nature of the study sample, the Irish Police Force – An Garda Síochána - a unique occupational group experiencing mandatory geo-location monitoring. Access to this sample for research purposes is normally highly restricted, but was enabled via invitation from union representative bodies who were seeking to gain more detailed understanding into the impact of the TETRA wearable location tracking technology on their members and the organization. This privileged access enabled us to respond to the call from Bélanger and Crossler (2011) for information privacy research encompassing a broader diversity of sampling populations in order to increase the generalizability of findings and to also consider multilevel effects of information privacy. Previous research (Bakker & Demerouti, 2007), conducted in a more general (non-digital) context, has indicated that the association between psychosocial working conditions and work-related outcomes may differ across occupational

groups, leading Clausen et al., (2021) to call for research examining the association between job autonomy and psychological well-being across unique occupational groups. Therefore, the findings of this large-scale examination of An Garda Síochána, showing how location-tracking technology accentuates loss of autonomy and negatively impacts psychological wellbeing, also provide an important response to that call.

A similarly important point relates to the guiding framework employed in this study. As noted, the study conceptual framework draws on psychological contract theory to illustrate how employee privacy concerns regarding mandatory location tracking can be interpreted as a violation of the psychological contract, one which negatively impacts the well-being of the individual and shapes their relationship with the organization. Our model and study findings confirms the fecundity of this theoretical foundation for yielding nuanced insight into the employee-employer relationship in a surveilled employment context, underscoring its relevance for privacy impact examinations of other digitized employment contexts.

One final point that is worth noting relates to the positioning of trust in this study, as an outcome variable. This is for two reasons. The first is that research examining the relationship between information privacy concerns and trust at the organizational level most often situates trust as behavioral response that is contingent on the extent of those concerns (Zimmermann et al, 2015), the assessment of privacy risks (Mutimukwe, Kolkowska & Grönlund, 2020) or presence of privacy policies which serve as trust antecedents (Beldad, van der Geest, DeJong & Steehouder, 2012). Our positioning is also consistent with earlier research which found that privacy concerns impacts behavioral reactions, including trust response (Dinev & Hart, 2006). We do however acknowledge that alternative and valid conceptualizations of the trust-IPC relationship exist, including the possibility that the individual's trust beliefs may influence their privacy concerns. For example, research by Van Slyke et al., (2006) demonstrated that trust beliefs (along with risk perceptions) can mediate the relationship between privacy concerns and willingness to transact online. Bélanger and Crossler (2011) acknowledge this very point, that the relationship between information privacy concerns and trust can vary dependent on the focus of the study. Our second reason is that this research is exploratory in nature and represents a first step in uncovering the multi-layered impact of privacy concerns on the individual and on their relationship with the organization. Its focus is therefore on the identification of impact in the first instance. Subsequent research may however examine whether the employee's pre-existing trust in the organization moderates these impacts, particularly in relation to development of psychosocial outcomes. One limitation of this study is that women are less represented across all ranks of An Garda Síochána than is the case for men. Research (Sorum, Eg & Resthus, 2022) has shown that women tend to be more sensitive to risk than is the case for men and future research employing a sample with greater gender balance might provide interesting insights into gender-based differences in the expression of privacy concerns regarding digital location tracking and their impacts.

Conclusion

This study empirically demonstrates the impact of employee privacy concerns regarding mandatory location tracking, both in terms of psychosocial outcomes that affect the individual and in terms of trust based outcomes that affect the employee's relationship with the organization. It confirms the impact of these concerns on employee's perceived loss of autonomy and strain, showing how these interact and influence organizational trust. These findings have important implications for employers seeking to promote employee wellbeing in a competitive talent retention environment. From a practical perspective, they point to the need for organizations to develop policies that comprehensively address employee concerns regarding how their data is controlled, accessed and used by the organization, as well as to communicate these policies more effectively. They also highlight that location-monitoring technology can exert a chilling effect on employee autonomy, which can negatively impact their well-being, something which Management will need to counter through more supportive attitudes towards employee agency when completing goal directed tasks. In conclusion, this study provides preliminary empirical support to understanding the impact of IPC on employees within a mandatory digital monitoring context, harnessing a psychological contract theory perspective. Using the groundwork provided by this study, future research along various possible directions could contribute significantly to extending our theoretical understanding and practical ability to address the impact of IPC within digitally monitored employment contexts.

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