

Morality, Generational Differences, and Cybersecurity: Understanding the Matrix of Unsanctioned App Usage in Remote Work Arrangements

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ABSTRACT

With a multigenerational workforce bringing diverse values and technological fluency to remote workplaces, effective cybersecurity management must go beyond technical solutions to include moral and social dimensions. Unsanctioned Shadow Apps Usage (USAU)—a gray area in security practices—exacerbates risks like data breaches and non-compliance, underscoring the need for moral frameworks in maintaining secure IT environments.

This study integrates Kohlberg's Theory of Moral Development and Jones's Moral Intensity Model with the moderating role of generation differences to examine how remotely working employees approach the ethical and moral complexities of gray area security issues like USAU. By exploring variations in moral reasoning and risk perception, the study highlights the role of morality in shaping sustainable cybersecurity practices. Practical implications lay in the areas of security governance strategies with workforce values in mind, fostering a culture of moral responsibility in security.

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INTRODUCTION

Today's rapidly evolving work environment, in addition to the rapid advancements of technology e.g. the groundbreaking arrival of Foundation and Large Language Models, has fundamentally transformed organizational operations by offering tools that significantly enhance efficiency and streamline workflows. In tandem, these advancements have ushered in profound complexities that continue to reshape the landscape of organizational information and cybersecurity². This is also in an era where younger generations are bringing varying levels of technological fluency and increasing demands for flexible work modalities. A survey by PwC found that 72% of today's multigenerational workforce prefer a mix of remote and in-office work modality³.

As organizations grapple with escalating cybersecurity complexities, the imperative for sustainable fortification and protective measures grow ever more critical. In this study, the impact of moral development on end user security behavior is examined. Specifically, Unsanctioned Shadow Apps Usage (USAU) - a gray area end-user security behavior often rationalized by employees as a necessary means to overcome perceived inefficiencies or limitations within their organization's official IT - is examined (Haag and Eckhardt 2017). USAU, defined as the unauthorized use of publicly available, unvetted, unsanctioned tools like

² <https://www.forbes.com/sites/delltechnologies/2024/04/24/what-shadow-it-can-teach-us-about-managing-shadow-ai/>

³ <https://www.pwc.com/us/en/services/consulting/business-transformation/library/covid-19-us-remote-work-survey.html>

AI apps (Silic and Back 2014), differs from software piracy in its legal ambiguity. Unlike piracy, USAU exists in a gray area where rapid technological advancements outpace organizational updates to IT and security policies, leaving employees to navigate acceptable use based on their moral judgment (Gozman and Willcocks 2019).

The theoretical framework underpinning this study is derived from Kohlberg's (1981) Theory of Moral Development and Jones's (1991) Moral Intensity Model (Jones 1991; Kohlberg 1981). This dual-framework approach underscores the premise that moral behavior is contingent not only upon internal individual-level moral reasoning processes but also on external situational dynamics. The incorporation of generational differences further contextualizes the analysis of the moral decision-making processes.

THEORETICAL FOUNDATIONS AND HYPOTHESES DEVELOPMENT

Kohlberg's (1981) Theory of Moral Development

Kohlberg's (1981) posits that individuals progress through three distinct stages of Moral Reasoning, MR: pre-conventional, conventional, and post-conventional. At the pre-conventional level, MR is predominantly self-serving, motivated by the avoidance of punishment or the pursuit of immediate rewards. Within the scope of this study, employees at this level may rationalize the use of shadow applications as a means to achieve personal efficiency or convenience (Haag and Eckhardt 2017), a justification which overlooks security considerations essential for maintaining a secure work environment. Intuitively, it can be suggested that this propensity is particularly pronounced among younger employees or recent hires who may not yet have been socialized into injunctive organizational security norms. At this stage, adherence to rules is based more on fear of punishment rather than internalized moral principles.

Conversely, at the conventional level, MR is shaped by adherence to established norms, rules, and expectations, whether societal or organizational. Employees operating at this stage are more likely to demonstrate propensity to align their actions with institutional protocols and injunctive IT and security norms because of their internalized respect for authority, a desire to maintain group cohesion and an aversion to undermining collective security. USAU, within this context, is likely perceived as a violation of injunctive organizational norms. Intuitively, we might suggest this stage of moral reasoning to be associated with older employees who exhibit a stronger socialization into organizational culture, or workers who have spent longer periods with the organization.

At the post-conventional level, moral reasoning transcends organizational norms, guided by principles of justice, equity, and individual rights. In the context of this study, employees at this stage might assess USAU not merely by compliance with rules, but by questioning whether rules are morally justified in a broader context. This reasoning involves evaluating the moral implications of bypassing inefficient systems, weighing harm to the organization against potential benefits to it, as well as to the individual (Haag and Eckhardt 2017). For example, Gen Zs who are frequently characterized by heightened moral awareness and a commitment to social responsibility and the greater good (Dimock 2019) may perceive the use of USAU phenomenon as a justifiable action only if it aligns with a larger moral imperative. MR is posited to serve as the primary construct, delineating how employees across different stages of moral development approach ethical dilemmas, such as using unauthorized IT tools. Hence this study posits the following hypotheses:

- **H1:** Employees at higher stages of MR (post-conventional and conventional) will demonstrate reduced engagement with USAU, while those at lower stages (pre-conventional) will demonstrate increased engagement with USAU.

Jones's (1991) Moral Intensity Model

The concept of Moral Intensity, MI, as defined by Jones (1991), enriches the analysis of USAU by situating moral decision-making within external situational dynamics. That's to say moral behavior is influenced not only by individual MR stages but also by the characteristics of the moral dilemma itself. These factors are encapsulated by six dimensions: magnitude of consequences, social consensus, probability of effect, temporal immediacy, proximity, and concentration of effect shape the perceived morality of an action, and the intensity of the moral response elicited. In the context of USAU, this study posits that:

- **H2:** The MI of USAU will be significantly correlated with USAU behavior in remote work settings
- **H3:** The MI of USAU will significantly moderate the relationship between moral development and USAU behavior such that the higher the MI, the less the engagement in USAU and vice versa, regardless of MR stage.

Perceived Magnitude of consequences, PMC, refers to the perceived severity of outcomes of USAU. As such, it is hypothesized that MI of USAU is heightened when the PMC is perceived as substantial, that is to say, employees who perceive significant negative consequences associated with USAU - such as data breaches, financial losses, or reputational damage - will be less inclined to use unauthorized applications, and conversely, when perceived consequences are minimal, employees will be more likely to engage in USAU (Silic and Back 2014). Hence,

- **H2a:** The PMC of USAU will be significantly correlated with USAU behavior in remote work settings.
- **H3a:** The PMC of USAU will moderate the relationship between MR and USAU such that when PMC of USAU is perceived to be high, employees will have a reduced likelihood of engaging in USAU; and vice versa, regardless of MR stage.

Perceived Social Consensus, PSC, refers to the degree of agreement among stakeholders about whether a particular action is morally acceptable. In organizations where the USAU phenomenon is normalized or tacitly accepted, this study posits that employees may feel less moral conflict about engaging USAU practices. Hence,

- H2b: PSC, the degree of perceived agreement among peers regarding the moral acceptability of USAU, will be significantly correlated with USAU behavior in remote work settings.
- H3b: PSC will moderate the relationship between MR and USAU such that when PSC regarding the moral acceptability of USAU is high, the more will be the engagement in USAU, and vice versa, regardless of MR stage.

The likelihood that the USAU phenomenon will result in negative consequences (Perceived Probability of Effect, PPOE), such as a security breach, influences employee decision-making. If employees believe the probability of such probability is low, they may be more inclined to take the risk

- H2c: PPOE of USAU will be significantly correlated with USAU behavior in remote work settings.
- H3c: PPOE of USAU will moderate the relationship between MR and USAU such that when the PPOE of USAU is high, the less will be the engagement in USAU, and vice versa, regardless of MR stage.

Perceived Temporal immediacy, PTI, refers to the proximity between an action and the manifestation of its consequences. It is hypothesized that PTI will significantly influence employees' decisions to engage in USAU while working remotely. Specifically, employees who perceive the consequences of USAU as immediate and negative are more likely to avoid the behavior and conversely, employees who view the consequences as distant or abstract may prioritize short-term benefits over long-term risks, increasing their propensity to engage in USAU.

- **H2d:** The PTI of USAU will be significantly correlated with USAU behavior in remote work settings.
- **H3d:** PTI will moderate the relationship between moral development and USAU such that the higher the PTI of USAU, the less will be the engagement in USAU, and vice versa, regardless of MR stage.

Perceived Proximity, PP, refers to the perceived relational closeness - social, cultural, or psychological - between the decision-maker and those affected by their decision. It is hypothesized here that PP significantly influence employees' decisions to engage in USAU such that employees with a strong sense of organizational closeness, deeply intertwined with their organizational community, with a strong sense of ownership or alignment with corporate values are likely to perceive potential harm as immediate, deterring deviant behavior. Hence this study posits that:

- **H2e:** PP will be significantly correlated with USAU behavior in remote work settings.
- **H3e:** PP will moderate the relationship between MR and USAU such that the higher the PP of employees to the organization, the less will be the likelihood of engaging in USAU, and vice versa, regardless of MR stage.

The Concentration of Effect, PCoE, pertains to whether an action's consequences are concentrated on a few individuals or diffused across a broader group. In this study, it is hypothesized that employees who perceive the negative consequences of USAU as narrowly focused on a small number of individuals, such as close peers or team members, are less likely to engage in such behavior. Conversely, when harm is perceived as dispersed across the organization, the sense of personal accountability diminishes, increasing the likelihood of engagement in USAU.

- **H2f:** The PCoE will be significantly correlated with USAU behavior in remote work settings.
- **H3f:** The PCoE, will moderate the relationship between MR and USAU such that employees who perceive the consequences of USAU as concentrated on a few individuals will be less likely to engage in USAU, and vice versa, regardless of MR stage.

The Theory of Generations

Generations, as a concept in sociological research, can be understood from two key perspectives. The first views a generation as a social force, shaped by shared historical events and cultural experiences that connect them to one another (Lyons et al. 2015). The second, the cohort perspective, sees generations more simplistically as groups of people born within a specific time frame Bauer and (Bauer and Bernroider 2017). Both perspectives is the definition considered in this study and together provide a framework for understanding how shared experiences during formative years influence the attitudes, values, and behaviors that persist into adulthood (Sohrabi et al. 2016). Research shows that while generations may not always differ significantly in their work capabilities, attitudes and behaviors often differ and therefore shape how they engage in diverse environments (Johnston et al. 2016; Lyons et al. 2015). In this study,

it is posited that these generational differences will moderate the relationships between MI and USAU, as well as between MR and USAU. Therefore, we hypothesize:

- **H4:** Generational differences will moderate the relationship between MI and USAU.
- **H5:** Generational differences will moderate the relationship between MR and USAU.

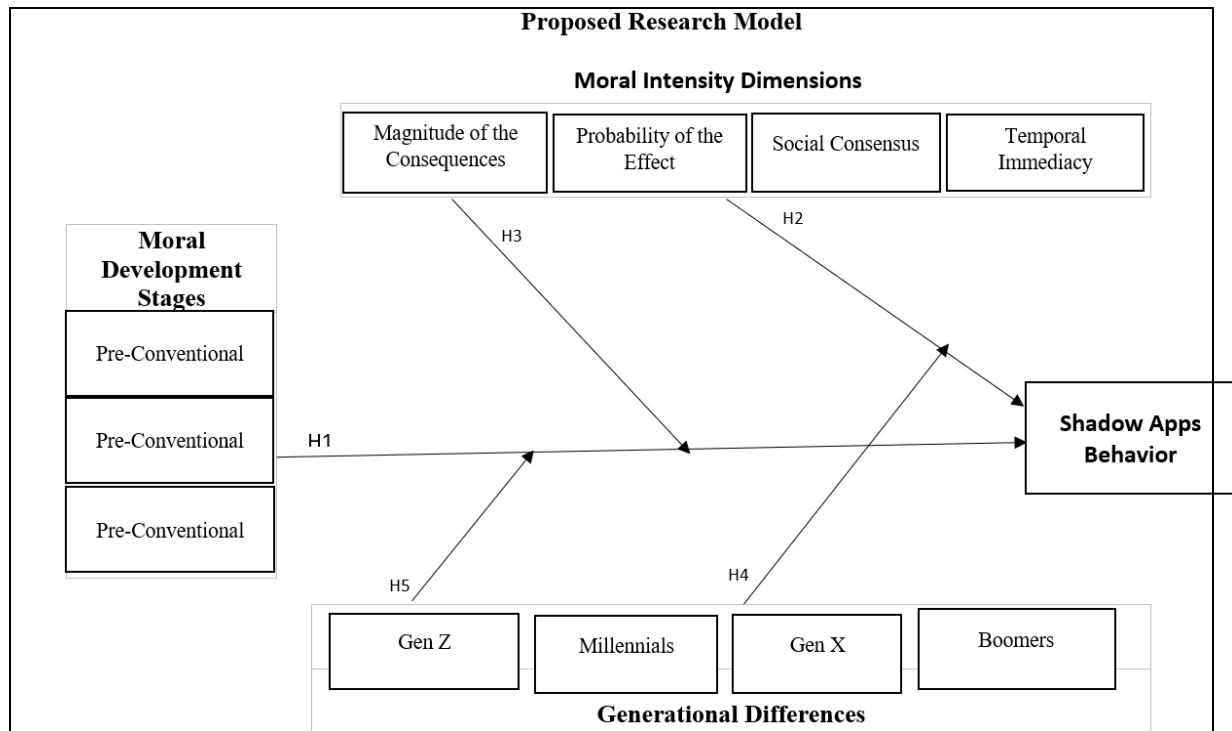


Figure 1. Integrated Research Model Based on Kohlberg (1981) and Jones (1991)

METHODS, MEASUREMENTS AND ANALYSIS

The study will adopt a cross-sectional survey design targeting a multigenerational workforce across various industries engaged in remote or hybrid work arrangements. The primary objective is to gather data on participants’ moral reasoning, perceptions of the moral intensity of USAU, and the moderating role of generational differences. Each construct will be

measured using Likert scales adapted from validated instruments to ensure reliability and contextual relevance.

Moral reasoning will be assessed using a scale adapted from the Defining Issues Test (DIT) (Rest et al.1999), modified to reflect pre-conventional, conventional, and post-conventional reasoning in the context of USAU. Moral intensity will be measured using items derived from Jones's (1991) framework, encompassing its six dimensions, including magnitude of consequences and social consensus. Generational cohort classification will be based on self-reported birth years, with participants categorized into one of four groups: Gen Z, Millennials, Gen X, or Baby Boomers. The dependent variable, USAU, will be measured through self-reported frequency using a Likert scale ranging from 1 (Never) to 7 (Always).

Data analysis will be conducted using Structural Equation Modeling (SEM) with SmartPLS to examine the proposed relationships. The measurement model will be evaluated to ensure construct validity and reliability, and then the structural model will be analyzed to test the proposed hypotheses: the direct effects of moral reasoning dimensions and moral intensity on USAU, the moderating effects of moral intensity dimensions such as magnitude of consequences and social consensus on the relationship between moral reasoning and USAU, and the moderating role of generational differences on the relationships between moral reasoning and USAU, as well as between moral intensity and USAU.

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