

Algorithmic Commitment and the Autonomy Paradox in App-Work (Research in Progress)

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Introduction

Digital technology and mobile devices are transforming how people work and how organizations operate (Möhlmann et al., 2021). App-work, defined as “service-providing intermediary digital platform organizations (or apps) that utilize workers to perform tasks locally (e.g., transport and food-delivery) for customers who pay for these services, with the organization retaining a percentage of the exchange” (Duggan et al., 2020, p. 118), is one of the most important segments in the gig economy. App workers, defined as individuals who register with an intermediary digital platform to undertake work assignments (Möhlmann et al., 2021), create billions in revenues for platform organizations. For example, Uber drivers generated \$17.4 billion in 2021.¹ By 2028, the number of US online workers will exceed 90 million.²

A key motivation for app workers is to have the autonomy to decide when, where, and how much to work (Duggan et al., 2020). Ironically, app workers are increasingly experiencing work-life conflict (WLC), referring to a state wherein workers experience a discordant relationship between “the demands of work” and the demands of “their lives beyond the workplace” (Nord et al., 2002, p. 223). Full-time Uber drivers may spend over 80 hours per week on the app, with much of that time spent “on call” waiting for passengers, which can lead to significant physical, mental, emotional, and relational strain (Rodino-Colocino, 2019). An ethnographic study of food-delivery platforms in China found that the app’s frequent alerts and instructions push drivers to work as fast as they can (Huang, 2022). The rich literature on WLC focuses primarily on traditional work arrangements, so the emerging domain of app-work calls for a renewed understanding of WLC (Warren, 2021).

Platform organizations face challenges to retain and remotely manage the large and growing number of distributed app workers. App workers are usually classified as independent contractors rather than employees, and thus have autonomy to decide when, how, and how much to work in a way that fits their lifestyle (Todolí-Signes, 2017). Platform organizations provide services via mobile applications (i.e., apps) that use algorithms to match app workers with customers to perform tasks locally (Duggan et al. 2020). Because platform organizations cannot mandate participation, they motivate app workers using algorithms to establish and communicate economic incentives based on customer demand. Platform organizations also employ algorithms to motivate app workers via psychological

¹ <https://www.businessofapps.com/data/uber-statistics/>

² <https://www.statista.com/statistics/921593/gig-economy-number-of-freelancers-us/>

nudges as “invisible hands” to influence behavior (Benlian et al., 2022; Möhlmann et al., 2021). Nudges refer to “any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives” (Loewenstein & Chater, 2017, p. 27). Algorithmic nudging refers to the use of algorithms to learn from personalized data and alter app workers’ choices in subtle ways (Möhlmann et al., 2021). We refer to *motivational algorithms* as those designed to influence app worker behavior using direct (i.e., economic) or indirect (i.e., nudging) incentives.

App workers repeatedly interact with motivational algorithms (via the app) to perform tasks such that the algorithms can take on the role of a co-worker or colleague (Tarafdar et al., 2022). We propose that this results in a sense of commitment to the algorithm. Traditionally, organizational commitment refers to the extent of involvement and identification with one’s organization (Ahuja et al., 2007). Given the usual arrangement of app workers as independent contractors, and the role of algorithms as their co-workers, we define *algorithmic commitment* as the extent of involvement and identification with the app. Moreover, we suggest that algorithmic commitment surfaces a paradoxical tension with the sense of autonomy that is central to app work (Smith & Lewis, 2011).

The autonomy paradox refers to “professionals’ ongoing navigation of the tension between their interests in personal autonomy on the one hand and their professional commitment to colleagues and clients on the other” (Mazmanian et al., 2013, p. 1337). This lens has been used to study WLC in professionals in various contexts such as mobile email devices (Mazmanian et al., 2013) and workplace culture (Michel, 2011). Prior literature finds that when professionals have the autonomy to decide when and how to work, they may choose work more, resulting in WLC (Mazmanian et al., 2013). We suggest that repeated interaction with motivational algorithms promotes a sense of algorithmic commitment that stands in contrast to the view of app workers as independent, self-directed, and entrepreneurial individuals with the autonomy to choose when and where to work (Duggan et al., 2020; Möhlmann et al., 2021), resulting in an autonomy paradox. Specifically, we propose that motivational algorithms increase app workers’ algorithmic commitment, and that high levels of algorithmic commitment can result in WLC.

Platform organizations typically implement motivational algorithms using gamification (Benlian et al., 2022), which refers to “the incorporation of game design elements into a target system while retaining the target system’s instrumental functions” (Liu et al. 2017, p. 1013). For example, platform organizations may gamify the app with points for instant gratification, and appeal to intrinsic motivations to achieve high scores through frequent and sustained engagement (Scheiber, 2017). We therefore focus on examining how gamification in apps impacts workers’ algorithmic commitment. At the same time, gamification in apps can create engaging and enjoyable work experiences (Huber & Ropke, 2014) by turning app workers into “players” (Cameron, 2022; Mullins & Sabherwal, 2020), and thereby also reinforce the perception of autonomy. Accordingly, we ask the following research question: *How do algorithmic commitment, gamification, and individual characteristics influence App workers’ work-life conflict?*

We argue that motivational algorithms, via gamification in apps, will increase workers' algorithmic commitment, which can lead to WLC. In addition, drawing on the gamification literature and control theory, we propose that competitiveness and self-control moderate these effects. Competitiveness refers to the desire to excel in relation to others (Newby & Klein, 2014). Self-control is defined as "the exertion of control over the self by the self" (Muraven & Baumeister 2000, p. 247) in regulating emotion, cognition, and behavior to serve longer-term interests. We propose that competitiveness amplifies the positive link between gamification and algorithmic commitment, while self-control dampens the positive link between algorithmic commitment and WLC, as shown in Fig. 1.

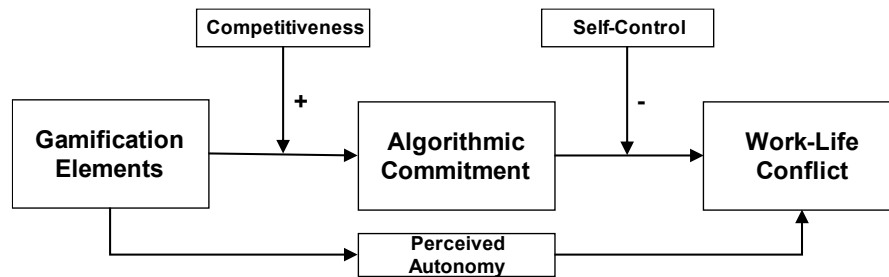


Fig 1. Proposed Research Model

To investigate the research questions, we plan to conduct a longitudinal field study of app workers. The planned empirical context of our study is algorithm-driven ride-hailing platforms such as Uber and Lyft, in which drivers interact with algorithms to accomplish work tasks (e.g., Cram et al. 2022; Wiener et al., 2021). We will collect perceptual and behavioral data via surveys at three time points (t_0 : baseline data collection; t_1 : 1 week after t_0 , t_2 : 1 week after t_1). To ensure content validity, we will adapt previously validated scales to the context of this study.

Recent research (e.g., Cram et al., 2022; Möhlmann et al., 2021; Wiener et al., 2021) finds that platform organizations rely on algorithms to control and manage workers, including real time monitoring, screening eligibility to work, process tracking, and guiding. These studies have contributed to the literature by explaining how platform organizations implement rules and workflows that effectively simulate an organizational context to carry out coordination and control functions (Benlian et al., 2022). However, prior literature has focused less on the outcomes from online workers' perspectives. More specifically, limited work has considered the apparent paradox between app worker autonomy and commitment, and the associated consequences (Duggan et al., 2020; Malhotra, 2021).

Our proposed study takes an initial step towards addressing WLC of app workers. We build upon previous OLP studies (e.g., Möhlmann et al., 2021) proposing an autonomy paradox in app workers by situating algorithmic commitment as the central mediating mechanism between motivational algorithms and WLC. In doing so, we describe how digital platforms use gamified motivational algorithms that can increase WLC through algorithmic commitment. This study contributes to the literature on online labor platforms by foregrounding the autonomy paradox of app workers to explain how platform

organizations design gamified experiences that encourage workers to work more frequently and for more hours. It contributes to the broader IS literature by introducing the concept of algorithmic commitment. In doing so, this study addresses calls for research on algorithmic nudging in OLPs (Benlian et al., 2022; Möhlmann et al., 2021) and the dark side of gamification (Liu et al., 2017).

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