Designing for Presence: A Randomized Controlled Trial Comparing Incentive Structures to Reduce Smartphone Use During Social Interactions

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Phubbing (phone use during face-to-face interactions) affects 75% of smartphone users and correlates with depression, loneliness, and relationship dissatisfaction. While contingency management, an incentive-based framework, has been shown to curb addictive behaviors, it has not been tested for phubbing. To address this gap, a randomized controlled trial of 132 adults (62% female, mean session duration = 75 minutes) was conducted with existing social groups in public spaces. Groups attempted to refrain from phubbing and were randomly assigned to an incentive structure: individual incentives (earned independently), interdependent incentives (identical rewards but required group compliance), or a no-incentive control. A customized, privacy-preserving Bluetooth Low Energy app monitored real-time phubbing and delivered rewards (gift cards). Statistical analysis using GEEs with group clustering showed that interdependent incentives reduced phubbing more than individual incentives (OR = 2.8 [1.4, 7.6], $p < 0.05$), which outperformed the control (OR = 2.5 [1.2, 4.5], $p < 0.01$). A majority of interdependent condition participants never used their phones but, unexpectedly, reported no greater pressure than the control ($p > 0.05$). This research demonstrates a novel approach to address phubbing through contingency management, with applications in cafeterias, events, and other social settings. It also suggests that beyond incentives alone, interdependent group dynamics drive behavior change. Next, a longitudinal study will examine whether these reductions persist and whether interdependent dynamics can be isolated to drive behavior change with minimal or no incentives, paving the way for non-coercive, cost-effective interventions to reduce phubbing and improve mental health at scale.

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