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Explaining Household Leftover Reuse Behaviours Through the COM-B Framework: Implications for Food Waste Reduction

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Abstract

Household food waste remains a major sustainability challenge, with significant environmental, economic, and social consequences. In the UK, households are responsible for approximately 70% of total food waste, much of which is linked to how food leftovers are managed at home. While previous research has examined general household food waste drivers, less attention has been devoted to the specific behavioural processes underlying different leftover reuse practices. To address this gap, this study applies the Capability-Opportunity-Motivation Behaviour (COM-B) model to examine three leftover reuse behaviours: (1) reheating leftovers, (2) transforming leftovers into new dishes, and (3) packing, storing, or freezing leftovers for future use. Data were collected through an online survey of UK households (n=596). The survey measured the six COM-B components (i.e., physical and psychological capability, social and physical opportunity, and reflective and automatic motivation), as well as self-reported frequencies of leftover reuse behaviours. Self-reported food waste and socio-demographic characteristics were also collected. Structural equation modelling (SEM) was applied to examine the relative contribution of COM-B components to each behaviour and the association between behaviours and food waste levels. The SEM results suggest distinct behavioural pathways across three leftover reuse practices. For reheating and storing, capability and social opportunity did not show a significant direct effect on these behaviours. Instead, their effects operated indirectly through motivation, suggesting that having the necessary skills or social support alone is insufficient unless these factors enhance individuals' motivational processes. In contrast, transforming leftovers showed a more complex pathway. Capability exerted both direct and indirect effects, indicating that culinary skills and knowledge can independently facilitate transformation practices, while also strengthening motivation. Social opportunity contributed only indirectly through motivation. Regarding food waste outcomes, more frequent reheating and transforming were associated with lower levels of food waste, whereas storing practices did not show a significant association. These findings suggest that not all leftover reuse behaviours contribute equally to food waste reduction, and interventions aiming to reduce household food waste should prioritise reheating and transforming practices. Overall, this study contributes to the Behaviour Change Wheel literature by extending the application of the COM-B framework to household food management behaviours and demonstrating that segments of the same behaviour may follow distinct behavioural pathways. In particular, it differentiates between reheating, transforming, and storing practices, showing that these behaviours are driven by different pathways rather than a uniform mechanism. The practical contribution of this study lies in informing intervention design, suggesting that interventions should be behaviour-specific and target the distinct capability, opportunity, and motivation mechanisms underlying each behaviour. Building on these findings, interventions aimed at

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reducing household food waste should enhance capability and social opportunity to strengthen motivation, thereby promoting reheating and transforming leftovers behaviours.

Keywords: Household food waste, Leftover reuse behaviours, COM-B model, Behaviour Change Wheel, Behavioural interventions

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