Mindful Eating: Apps Review

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1 INTRODUCTION

Despite the growing body of HCI research on mindfulness technologies [25][26] and eating behaviors [29][33], there has been limited exploration of their intersection, particularly for the design of technologies for mindful eating [3][14]. Mindfulness involves being aware of the present moment, without judgment [12], which has been shown to have significant benefits for physical and mental health [1][4]. Mindful eating is the practice of paying attention to both physical and emotional experiences while consuming food [8]. This involves being fully present and mindful of the sensory qualities of food, while also tuning into internal bodily sensations such as hunger and satiety [18]. By being aware of triggers for eating, including thoughts and emotions, one can avoid overeating [27]. The sensory qualities of food, including its smell, taste, and haptics, play a crucial role in the experience of eating. These can influence a person's ability to savor their food by promoting slow and deliberate eating with smaller bites. Such mindful eating practices can help individuals become more aware of their eating behaviors and, ultimately, make healthier food choices [17].

Considering its potential benefits, there has been limited research on designing for mindful eating. However, there has been a growth in mobile apps aimed at supporting mindful eating. To address the current gap, we report an initial review of 6 such apps for mindful eating.

2 METHOD

In order to identify the apps, we conducted a search on the Apple Store using the term "mindful eating". In this paper, we report preliminary findings from 6 apps that had at least a 4 out of 5 ratings and over 100 user reviews. We evaluated the apps using expert evaluation for which the first author used each app on an iPhone 7 for at least 2 hours, by considering concepts from mindful eating and mindfulness-based eating awareness training (MB-EAT) which focuses on increasing awareness of bodily sensations as well as sensory qualities of food to prevent problematic eating behavior [16]. Table 1 summarizes the functionalities of these 6 apps.

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	SENSORY MODALITIES of FOOD			MINDFUL EATING						
App Name	Smell	Taste	Temperature	Guided mindfulness eating meditation						Relationship with one's body
				Body Awareness			Savour Food	Eating slowly	Small bites	Body acceptance
				Bodily sensations (hunger/ satiety)	How is captured	When is captured				
Rise Up	-	-	-	Hunger and satiety	Self-report	Before meal During meal After meal Random time	-	-	-	Yes
MEAL	-	-	-	Hunger and satiety	Self-report	Random time	Yes	Yes	Yes	Yes
Mindfulness Guided Meditation	-	-	-	-	-	-	Yes	Yes	-	Yes
EatRightNow	-	-	-	Hunger and craving	Self-report (5-point Likert scale)	Random time	Yes	-	-	Yes
Fabulous	-	-	-	Hunger and satiety	Self-report	Random time	Yes	Yes	Yes	Yes
Holly Health	-	-	-	Hunger and satiety	Self-report	Customised: Before meal During meal After meal Random time	-	-	-	-

Table 1. Some functionalities of top-rated mindful eating apps

3 FINDINGS

Findings indicate that all these 5 apps support (MEAL, Mindfulness Guided Meditation, EatRightNow, Fabulous) mindfulness guided meditation. With respect to support for mindful eating, 5 apps (Rise Up, MEAL, EatRightNow, Fabulous, Holly Healthy) capture self-reports of bodily sensations for hunger and satiety. This outcome is important, given the acknowledged value of the awareness of one's bodily sensations for mindful eating[16] and 4 of them prompt users to self-report emotional triggers for eating (Rise Up, MEAL, EatRightNow, Fabulous, Holly Health). All these 5 apps prompt self-reports at random times while 2 of them also prompt such self-reports of hunger or satiety before, during or after meal (Rise Up, Holly Health).

An important outcome is that none of the apps included sensory modalities of food, despite their importance for mindful eating [13].

Mindful eating involves a range of practices, such as savouring the flavour and texture of food, taking small bites, eating slowly, and accepting one's body [18]. During guided mindfulness eating meditation 4 apps (MEAL, Mindfulness Guided Meditation, EatRightNow, Fabulous) capture savoring food; 3 apps (MEAL, Mindfulness Guided Meditation, Fabulous) support slow eating. From these, 2 apps (MEAL, Fabulous) support this in audio modality; 4 apps capture body acceptance in audio modality (MEAL, Mindfulness Guided Meditation, EatRightNow, Fabulous), and one app as text (Rise Up).

4 DISCUSSION

Mindfulness practice has been shown to have significant benefits for mental [4] and physical health [11], and there has been a growing interest in developing mindfulness technologies that use brain-computer interfaces [25], visual and auditory feedback [7][23][28], and VR [2][15]. While many mindfulness apps emphasize guided meditation [5], there is a growing interest in designing technologies that incorporate the body's sensory experiences into the meditation practice [6]. However, the potential of such technologies for promoting mindful eating remains limitedly explored.

Food is an important material that can be experienced through senses both inside and outside the body [10]. Human-food interaction research has particularly explored multisensory experiences like taste, temperature, and smell [9][19][20][30][31][32]. Some studies have combined different sensory modalities such as taste and thermal stimuli [24] or thermal and smell [21][22] to create new flavors or experiences.

Mindful eating involves focusing on the sensory modalities of food, eating slowly in moderation, and being aware of bodily sensations, emotions, and external factors which can have a positive impact on healthy eating behavior. Our initial findings highlight that some of the commercial apps for mindful eating provide limited support for sensory modalities, despite the importance of bodily sensations and sensory modalities of food in mindful eating [13]. Our findings also suggest that future interfaces should consider incorporating food sensory modalities to support healthy eating and mindfulness. Additionally, leveraging past HCI research on multisensory aspects of eating can aid in the design of effective mindful eating technologies. Such interfaces can be designed to cater to users' specific requirements and serve as novel solutions.

5 CONCLUSION

HCI research on healthy eating and multisensory experiences of food separately explored different aspects of eating but limited support is observed for the significance of sensory modalities of food in promoting mindfulness eating. The core of mindfulness eating involves being aware of bodily sensations as well as sensory modalities of food. In this preliminary research on the evaluation of 6 mindful eating apps, we found that existing mobile interventions do not support sensory qualities of food such as smell, taste and temperature which are key for encouraging individuals to make healthier eating decisions. Neglecting the sensory aspects of food can hinder the effectiveness of interventions aimed at promoting mindfulness eating and healthy eating habits.

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