Understanding consumer loyalty to technology-based self-services with credence qualities

Purpose: Professional services, which traditionally require specialized knowledge and high levels of interpersonal interaction to produce owing to their credence qualities, are increasingly delivered via self-service technologies. Health services delivered via mobile devices, for example, facilitate self-care without direct involvement from health professionals. This research employs the Model of Goal-Directed Behavior to examine the factors affecting consumers' continued use of these emerging technology-based self-services with credence qualities.

Design/methodology/approach: A mental health service delivered via the Internet and mobile phone, *myCompass*, was selected as the research context. Twenty interviews were conducted with users of *myCompass* and the data were thematically analyzed.

Findings: The findings of the study showcase the unique determinants of consumers' continued use of technology-based self-services with credence qualities relative to the more routine services which have been the focus of extant research. The findings further provide support for the utility of the Model of Goal-Directed Behavior in explaining service continuance, although the importance of distinguishing between extrinsic and intrinsic motivational components of behavioral desire and capturing the impact of social influence beyond subjective norms is also highlighted.

Originality/value: This study contributes to recent research examining differences in consumer responses across technology-based self-services and behavioral loyalty to these services. It also provides empirical evidence for broadening and deepening the MGB within this behavioral domain.

Keywords: Technology-based self-service, Credence qualities, Continued use, Model of Goal-Directed Behavior, mHealth

Article Classification: Research paper

Introduction

Self-service technologies, such as the Internet and mobile devices, have facilitated a radical shift from interpersonal to interactive service delivery (Wang *et al.*, 2013). Technology-based self-service (TBSS), where consumers use self-service technology to perform a service without direct service employee involvement (Dabholkar, 1994; Meuter *et al.*, 2000), enables organizations to deliver additional value to consumers while improving operational efficiency (Hilton *et al.*, 2013; Meuter *et al.*, 2003). Until recently, however, TBSS has been confined to replacing more routine or standard aspects of interpersonal service delivery (Forbes, 2008). Significant technological developments have enabled the transition of complex professional services to TBSS (Schuster *et al.*, 2013), where once they were characterized by low levels of technology and consumer involvement in service delivery (Bolton and Saxena-Iyer, 2009). This new era in TBSS is exemplified by the recent advent and rapid growth of mHealth services, developed by health professionals to provide real-time health advice and personalized support via mobile devices (Whittaker, 2012).

Research is needed to improve understanding of consumer responses to using professional services delivered via self-service technology, such as mHealth services. TBSSs are not all comparable and consumer responses to different categories of TBSSs are similarly heterogeneous (Collier *et al.*, 2014; Curran and Meuter, 2005). Professional services tend to be highly customized with longer consumer contact time relative to other services (Silvestro *et al.*, 1992). Further, professional services are traditionally highly relational, to the extent that such services have previously been inseparable from the service provider (Johnson and Zinkhan, 1991). They also typically possess credence qualities that distinguish them from other services (McColl-Kennedy and Fetter, 2001). Professional services with credence qualities require specialized

knowledge to produce (Howden and Pressey, 2008), are difficult for consumers to evaluate even after trial (Zeithaml, 1981) and are perceived as more risky (Ostrom and Iacobucci, 1995). Since TBSS has the effect of augmenting consumers' participation in service delivery while reducing or eliminating direct contact with service employees (Hilton *et al.*, 2014; Meuter *et al.*, 2005; van Beuningen *et al.*, 2009), it is likely that consumers will respond differently to using professional services delivered via this channel compared to more standard TBSSs.

Furthermore, there is a particular need to investigate consumers' *continued use* of TBSSs with credence qualities. This is because behavioral loyalty, or the continued use of the service, is generally critical for organizational (Anderson and Srinivasan, 2003) and, at times, consumer benefit. Despite this, limited extant research focuses on factors influencing consumers' behavioral loyalty to TBSSs relative to the considerable scholarly attention that has been paid to their adoption (Tojib and Tsarenko, 2012; van Beuningen *et al.*, 2009; Wang *et al.*, 2013). This is important given consumers' attitudes and perceptions change after experiencing the service (Bhattacherjee and Premkumar, 2004) and, as such, antecedents of consumers' adoption and behavioral loyalty to TBSSs have been shown to be distinct (Karahanna *et al.*, 1999; Wang *et al.*, 2013).

This study employs the Model of Goal-Directed Behavior (MGB) (Perugini and Bagozzi, 2001) to examine consumers' behavioral loyalty to mHealth services. The MGB builds upon models, such as the Technology Acceptance Model (TAM) (Davis *et al.*, 1989), typically used to understand consumers' use of TBSSs (e.g. Curran and Meuter, 2005; Dabholkar and Bagozzi, 2002) through its recognition of consumers' goals and emotions (Perugini and Bagozzi, 2001). Both goals and emotions are likely to influence consumers' participation in service delivery (Bolton and Saxena-Iyer, 2009)

as they effect service employees' participation in interpersonal service delivery (see Hennig-Thurau *et al.*, 2006; Janssen and Van Yperen, 2004).

Consequently, this study makes three key contributions to extant literature. First, it provides further insight into the differences across consumers' use of distinct categories of TBSSs (e.g. Collier *et al.*, 2014). Specifically, this research investigates the determinants of consumers' continued use of TBSSs with credence qualities. Thus, it also extends research examining consumers' continued use, rather than adoption, of TBSSs (e.g. van Beuningen *et al.*, 2009; Tojib and Tsarenko, 2012; Wang *et al.*, 2013). Finally, by employing the MGB as the theoretical foundation of this study it augments understanding of the explanatory sphere of the MGB. This is important given the need to investigate the model's capacity to explain behavior across contexts (Fry *et al.*, 2014) and supports the call for the application of theories beyond the TAM in the technology diffusion domain (Bagozzi, 2007; Williams *et al.*, 2009).

The paper is organized as follows. First, it presents a brief review of extant literature in the field of consumer responses to TBSS relevant to this research. It then describes the qualitative research methodology employed and lastly, discusses the findings of the study and their implications.

Consumers' use of technology-based self-services

Extant literature focuses on the determinants of consumers' use of TBSSs that have replaced more standard aspects of service, including information retrieval and order-taking. These TBSSs range from restaurant touch-screen ordering kiosks (Dabholkar and Bagozzi, 2002), supermarket self-checkout kiosks (Wang *et al.*, 2013), job database kiosks (Dabholkar and Spaid, 2012), electronic banking (Curran and Meuter, 2005; Curran *et al.*, 2003; Levy, 2004; Wu *et al.*, 2014), mobile banking and other mobile

services (Tojib and Tsarenko, 2012), telephone bill paying (Walker and Johnson, 2006) and railway ticket vending machines (Reinders *et al.*, 2008). A notable exception is van Beuningen *et al.*'s (2009) study on online investment trading, which shows increasing novice consumers' self-efficacy improves future usage intentions. However, multiple factors affect continued use of even routine TBSSs (Wang *et al.*, 2013), supporting investigation of other potential determinants of behavioral loyalty.

As in the adoption of TBSSs (e.g. Curran and Meuter, 2005; Dabholkar and Bagozzi, 2002), models such as the TAM and Theory of Planned Behavior (TPB) (Ajzen, 1991) have typically been employed to understand consumers' continued use of TBSSs (e.g. Hsu *et al.*, 2006; Liao *et al.*, 2007; Wu *et al.*, 2014). However, the TAM incorporates only two definitive determinants of consumers' responses toward technology – perceived usefulness and perceived ease of use – and is therefore unlikely to adequately explain consumers' use of complex TBSSs (Bagozzi, 2007). It does not, for instance, consider the effects of social variables such as subjective norms (Bagozzi, 2007). The TPB addresses this limitation of the TAM by taking into account the effect of subjective norms, in addition to the individual's attitude and perceived behavioral control, on behavior (Ajzen, 1991).

Nevertheless, the TPB fails to consider the personal goal motivating the behavior (Perugini and Bagozzi, 2001). This is an important shortcoming since most consumer behavior, including consumers' use of technology (Bagozzi, 2007), is goal-directed (Bagozzi and Dholakia, 1999) and thus better predicted by models incorporating goal-focused determinants (Perugini and Bagozzi, 2001; Taylor *et al.*, 2005). Further, the TPB does not explicitly incorporate emotions (Perugini and Bagozzi, 2001) and recent research emphasizes their importance in the adoption of innovations (Wood and Moreau, 2006). Goals and emotions influence service employees'

participation in interpersonal service delivery (see Hennig-Thurau *et al.*, 2006; Janssen and Van Yperen, 2004) and as such, are expected to influence consumers' participation in professional services through self-service technology. The MGB addresses the aforementioned shortcomings (Perugini and Bagozzi, 2001) and is therefore employed as the theoretical framework informing this research.

Model of Goal-Directed Behavior

There is growing empirical support for the MGB (Figure 1). In particular, it has been shown to provide a basis for explaining technology-related behaviors, including participation in virtual communities (Bagozzi and Dholakia, 2002) and software learning (Leone *et al.*, 2004). Further, the model has been successfully employed to improve understanding of other behaviors such as weight management (Perugini and Bagozzi, 2001), ecological behaviors (Carrus *et al.*, 2008), drinking responsibly (Fry *et al.*, 2014) and self-regulation of hypertension (Taylor *et al.*, 2005). In these contexts, the MGB explains more variance in intention and behavior than the TPB (Leone *et al.*, 2004; Perugini and Bagozzi, 2001; Taylor *et al.*, 2005).

[Insert Figure 1]

The MGB incorporates attitudes, subjective norms and perceived behavioral control from the TPB. Briefly, attitude is a tendency to evaluate a behavior favorably or unfavorably, whilst subjective norms are based on an individual's perception of whether important reference groups support or reject the behavior (Ajzen, 1991). Perceived behavioral control refers to the individual's "perception of the ease or difficulty of performing the behavior of interest" (Azjen, 1991, p. 183) and encompasses both self-

efficacy and perceived controllability (Hagger and Chatzisarantis, 2005). Research shows that these antecedents significantly and positively affect consumers' continuance intentions in the context of more standard TBSSs (e.g. Hsu *et al.*, 2006; Liao *et al.*, 2007; Wu *et al.*, 2014). The following propositions thus underpin the current study:

P_1: Attitude will influence continued use of a TBSS with credence qualities.

P_2: Subjective norms will influence continued use of a TBSS with credence qualities.

P_3: Perceived behavioral control will influence continued use of a TBSS with credence qualities.

The MGB extends the TPB by accounting for goal and emotional influences on behavior (Perugini and Bagozzi, 2001). Purposive behaviors, such as using TBSSs, are generally performed as a means to achieving personal goals (Perugini and Bagozzi, 2001). Positive and negative anticipated emotions stem from an individual's appraisal of how they would feel following goal attainment and failure respectively. Given individuals are motivated to make behavioral choices that promote positive affect and avoid negative affect (Bagozzi and Dholakia, 2002), positive and negative anticipated emotions positively influence performance of behavior deemed instrumental to goal achievement. Of note, however, is that the relative effect of positive and negative anticipated emotions has varied across empirical studies (Taylor, 2007). Some studies show only positive anticipated (Fry *et al.,* 2014; Leone *et al.*, 2004; Taylor *et al.*, 2005) or negative anticipated emotions (Perugini and Bagozzi, 2001) significantly influence behavior. Nevertheless, in line with the specifications of the MGB, the following propositions are examined by this study:

P$_4$: Positive anticipated emotions from deliberating goal achievement will influence continued use of a TBSS with credence qualities.

P$_5$: Negative anticipated emotions from deliberating goal failure will influence continued use of a TBSS with credence qualities.

The MGB also incorporates frequency and recency of past performance of the behavior, representing the positive influence of habit and automatic processes on the continued performance of the behavior (Perugini and Bagozzi, 2001). Past behavior was found to positively influence behaviors (Fry *et al.,* 2014; Perugini and Bagozzi, 2001; Taylor *et al.*, 2005), including technology-related behaviors (Leone *et al.*, 2004), when tested as part of the MGB. On this basis, the following proposition is also examined by this study:

P$_7$: Past behavior will influence continued use of a TBSS with credence qualities.

The MGB further specifies that desire captures the motivational content needed to perform a behavior instrumental to goal pursuit. Desire is "a personal motivation to perform an action" (Perugini and Bagozzi, 2001, p. 71) and stems from reasons that make a given behavior appealing, including negative and positive anticipated emotions, attitude, subjective norms and perceived behavioral control (Leone *et al.*, 2004). Desire has consistently been found to significantly influence behaviors (Fry *et al.*, 2014; Leone *et al.*, 2004; Perugini and Bagozzi, 2001; Taylor *et al.*, 2005). The following proposition is therefore also examined by this study:

P$_8$: Desire will influence continued use of a TBSS with credence qualities.

The aforementioned theoretically and empirically supported propositions thus form the basis for this study's examination of consumers' continued use of an emerging TBSS with credence qualities, a mHealth service for mental health, described in the next section. Nevertheless, continued inquiry related to broadening and deepening the MGB conceptualization is called for by the literature (Taylor, 2007). Consequently, further investigation of the MGB constructs, as well as exploration for additional determinants of behavior in this context, will also be undertaken.

Method

Context

Self-help mental health services delivered via mobile phone were selected as the focus of this study given psychotherapy is an exemplar professional service. It is generally high-contact, highly relational and difficult to evaluate without specialized knowledge and skills. Further, mental health is one of the most pressing health concerns worldwide, accounting for 7.4% of the disease burden (Whiteford *et al.*, 2013). This is partly owing to the fact that more than 70% of people with mental health disorders do not access professional help (Thornicroft, 2007). mHealth services for mental health, although in their infancy, promise to offer instantaneous access to effective and cost efficient psychotherapeutic support (Harrison *et al.*, 2011; Proudfoot *et al.*, 2013).

The specific mHealth service for mental health selected for the purpose of this study is *myCompass*, a self-management service shown to reduce symptoms of mild to moderate depression, anxiety and stress, and improve work and social functioning (Proudfoot *et al.*, 2013). *myCompass* assists users to track their moods (e.g. depression), symptoms (e.g. concentration) and behaviors (e.g. physical activity) in real time and provides graphical feedback, including contextual information to help monitor change

and identify triggers to moods via the Internet and their mobile phone. The service also contains 12 psychological modules, each comprising three 10-minute sessions to be completed online, with practice tasks for completion between the sessions. Other features of *myCompass* include SMS tracking reminders and motivational statements, an online diary, helpful tips and information about mental health. *myCompass* is a fully-interactive service that has no direct therapist input.

Depth interviews

Semi-structured depth interviews were conducted over the telephone to examine the determinants of consumers' continued use of *myCompass*. This methodological approach allows the propositions derived from the MGB to serve as a guiding basis for the interview questions, with flexibility to identify and explore determinants beyond this model in line with the modified objectivist epistemology of the post-positivist paradigm. That is, it facilitates continued inquiry related to broadening and deepening of the MGB, consistent with the post-positivist notion of "knowledge accumulation through accretion" (Guba and Lincoln, 2005, p. 194). This qualitative methodology is also in line with the call for non-quantitative approaches to examining consumer responses to technological innovations (Williams *et al.*, 2009) and appropriate for researching vulnerable populations within sensitive contexts (Liamputtong, 2007).

Depth interviews in particular were employed to facilitate free exchange of information that may not have been possible in group interviews given the sensitive nature of the mental health context (Hesse-Biber and Leavy, 2006). Further, the relative anonymity of telephone interviews is suited to researching vulnerable populations (Liamputtong, 2007). Telephone interviews are also suited to a semi-structured format since telephone conversations naturally follow an agenda-driven format and can provide

rich data (Cachia and Millward, 2011) comparable to face-to-face interviews (Sturges and Hanrahan, 2004). The interviews ranged from 20 to 60 minutes, averaging 25 minutes.

The interviews commenced with three exploratory questions: (1) "What do you think or feel about using *myCompass*s to manage your wellbeing instead of going to see a health professional face-to-face?" (2) "What factors motivated you to continue using the service?" and (3) "What factors discouraged you from continuing to use the service?" Following this, questions based on Perugini and Bagozzi's (2001) operationalization of the MGB were administered. These questions were formulated on the basis of the items provided by Perugini and Bagozzi (2001) to measure the MGB's constructs and the specified relationships between the constructs encapsulated by the propositions of the study. To examine the influence of past behavior on service continuance, for example, participants were first asked "How often did you use *myCompass* on average?" followed by "How did or didn't this affect whether you continued with the program?" The interview guide was piloted with three participants. The introduction was shortened and the ordering of the questions altered in response to feedback. All of the interviews were audio recorded and participants received a $30 voucher to recompense them for their time.

Sample

A cohort of young adults, all aged between 18 and 25 years old, who had participated in a national clinical trial of the *myCompass* program (see Proudfoot *et al.*, 2013) were invited to take part in this study. All participants provided written informed consent. The research received ethics approval from the Human Research Ethics Committee at the University of New South Wales, Sydney, Australia (HREC 100019). This age group

was targeted since mental illness is a leading cause of morbidity among young adults, who are also the most likely age group to prematurely discontinue treatment services (Patel *et al.*, 2007). Participants in this cohort had all been randomly allocated to the *myCompass* arm of the trial and were contacted four weeks after completing the seven-week intervention so as to minimize interference with clinical results.

Beyond voluntary participation and confidentiality, other ethical issues were also given consideration owing to the potential vulnerability of this population. The interviewer received training in interviewing vulnerable participants, particularly in establishing rapport. Establishing rapport is one of the most important elements during depth interviewing on a sensitive topic (Liamputtong, 2007). Several email and phone communications occurred with the participants prior to the interviews to begin to establish trust as recommended by Elmir *et al.* (2011). The interviewer's age, which matched the age range of the participants, also helped minimize power imbalance, another key concern in sensitive contexts (Elmir *et al.*, 2011).

The final sample comprised four male and 16 female participants residing in Australia, who at baseline reported mild to moderate symptoms of stress, anxiety and/or depression. The bias towards female participants is consistent with research showing that young men are the least likely group to use professional mental health services (Rickwood *et al.*, 2007). No other demographic information was collected to maintain participant anonymity. Eleven participants in the sample used the service for the recommended seven weeks and nine participants discontinued the service prematurely (i.e. before seven weeks). This is consistent with the dropout range from 2% to 83%, with an average of 31%, across 19 studies of technology-enabled treatment services for psychological disorders (Melville *et al.*, 2010), which were similar to *myCompass* in that they involved minimal therapist contact.

Analytical procedure

The interview recordings were de-identified, professionally transcribed and then checked against the original audio recordings for accuracy. Thematic analysis was performed on the data using a hybrid approach, combining inductive and deductive thematic analysis (see Fereday and Muir-Cochrane, 2006). The data were coded manually in QSR NVivo 9, a qualitative data management tool. The phases of thematic analysis outlined by Braun and Clarke (2006) guided the analysis. To identify emergent themes, open and *in vivo* coding of the data formed the basis of first cycle coding. Pattern coding followed to collate, or group, codes on the basis of similarity. To examine the MGB constructs, provisional coding was first undertaken based on a priori codes developed from the MGB. This type of coding is appropriate for qualitative studies that build on previous research (Miles and Huberman, 1994). Second, open coding and axial coding were employed to illuminate the dimensions of a priori codes, specifically with relation to their conditions and causes.

Findings and discussion

Attitude and service continuance

P_1 specifies that consumers' attitudes will influence their continued use of a TBSS with credence qualities in accordance with the MGB. The findings support this proposition. Many participants reported that the degree to which they perceived *myCompass* to be beneficial influenced their continued use of the mHealth service. As summarized by one participant, "*I always thought this is benefiting me and I wanted to finish this*" (Participant 16, Female). Some participants derived benefit specifically from the autonomy of self-service, as well as the ability to access the service ubiquitously. This is consistent with literature citing greater consumer control over the service delivery

process and improved accessibility as key consumer benefits of self-service technology (Meuter *et al.*, 2000; Meuter *et al.*, 2003).

> *You can do it when you need to or when you've got the time to do it and it's kind of working with yourself to fix what you think you need to fix ... it was just helpful because it was always there when you needed it, but it wasn't like an appointment that you had to go to every week.* (Participant 10, Female)

However, for other participants delivery via self-service technology attenuated perceived benefit from the service. These participants thought service customization was restricted by technological limits. This finding contrasts with the assertion that a key benefit of TBSS is greater customization (Beatson *et al.*, 2007), but may be attributable to higher consumer expectations of customization in professional services (Silvestro *et al.*, 1992) relative to other service types that have transitioned to TBSS. Mental health services, like other professional services, traditionally involve extensive discussion to determine individual needs and to tailor the service to those needs; *myCompass* may thus be perceived as relatively standardized in comparison to interpersonal services.

> *I guess it's also maybe a bit limited in terms of, basically, you are entering information based on what the paradigm is, what the program is asking you, rather than if you were to do it with an actual real person – they would be able to sort of individualize the questions that they would ask.* (Participant 13, Female)

Subjective norms and service continuance

P$_2$ specifies that subjective norms will influence consumers' continued use of a TBSS with credence qualities. Many participants reported that family, friends and important others did not influence their continued use of *myCompass*. This finding deviates from the MGB and previous studies investigating continued use of routine TBSSs (Hsu *et al.*,

2006; Liao *et al.*, 2007; Wu *et al.*, 2014). Wu *et al.* (2014), for instance, found supportive subjective norms positively influenced consumers' intention to continue using Internet banking. Most participants used *myCompass* privately, and thus did not provide those in close social proximity with an opportunity to influence their behavior. Participants may have been particularly reluctant to share their use of *myCompass* with others given the social stigma surrounding mental health disorders (Corrigan and Shapiro, 2010).

> *No, I didn't really tell anyone at all apart from the doctor… Just because it's personal and I wanted to kind of see if I could develop within myself, on my own, before having to get too many other people involved.* (Participant 10, Female)

Perceived behavioral control and service continuance

P_3 specifies that perceived behavioral control, which encompasses self-efficacy (Hagger and Chatzisarantis, 2005), will influence consumers' continued use of a TBSS with credence qualities. Consistent with previous research (Wang *et al.*, 2013; Wu *et al.*, 2014), many participants reported initially feeling confident in their ability to use *myCompass*, including their capacity to use the service, develop routines and cope with barriers. For some participants, however, this changed over time. These participants lost confidence in their ability to use the service without direct involvement of service personnel. This lowered their expectations of benefit from the service and reduced their motivation to continue using the service. They prematurely discontinued their use of the mHealth service.

> *I guess it also comes back to the fact that you don't get that third party feedback about what you've learnt and how you are applying it. So without that feedback, it's not as easy to continue… because you are not really sure it will be beneficial long term or whether what you've learnt is right or wrong.* (Participant 4, Male)

> *I think because mental health is so, um, it's not kind of black and white. I think it does help a lot more to just talk to someone rather than you know, just read about it or do something electronically.* (Participant 5, Female)

This finding is consistent with research showing consumer perceptions change after experiencing the service (Bhattacherjee and Premkumar, 2004). However, it seems to contradict research showing that self-efficacy becomes a less important driver of service use as experience with a more routine TBSS accumulates over time (Wang et al., 2013). Self-efficacy may remain an important driver of service continuance in this study owing to the credence qualities of the TBSS. Participants found it difficult to evaluate the service, symptomatic of credence services (Howden and Pressey, 2008), without feedback from service personnel and began to doubt they possessed the requisite specialized knowledge, also characteristic of credence services (Zeithaml, 1981), to co-produce a professional mental health service through self-service technology.

Goals, anticipated emotions and service continuance

P_4 and P_5 specify that consumers' positive and negative anticipated emotions from deliberating goal achievement and failure respectively will influence their continued use of a TBSS with credence qualities in accordance with the MGB. Many participants desired to improve their mental health, an abstract end-state goal, by continuing to use the mHealth service. For instance, one participant stated: "*I was motivated to stay in the program because I would actually like to manage my mental health a little better*" (Participant 2, Female). This finding is consistent with the argument that consumers' use of technology (Bagozzi, 2007) is goal-directed like most other consumer behaviors (Bagozzi and Dholakia, 1999) and, by extension, that this behavior may be better

explained by models that incorporate goal-focused antecedents (Perugini and Bagozzi, 2001; Taylor *et al.*, 2005).

Some participants indicated positive anticipated emotions encouraged them to continue using *myCompass*. These participants reported envisioning the empowerment, self-satisfaction and/or achievement that would stem from continuing to use the mHealth service to achieve their mental health goal. However, analysis of the responses of only one participant suggested negative anticipated emotions influenced service continuance. Her responses indicate a sense of failure from not continuing to use the service, and subsequently failing to achieve her mental health goal, may have affected her service continuance.

> *Because I found it really interesting and helpful, and because it was so easy to use and there was that sense of achievement and self-satisfaction when you sort of get to the end of doing it all.* (Participant 9, Female)

> *I would've become, not negative towards it, but like a sense of already failed at it* [using myCompass to achieve her mental health goal] *and I'm just not going to continue it.* (Participant 16, *Female)*

The mixed support for the impact of anticipated emotions on behavioral loyalty to *myCompass* is consistent with the literature. Some studies have found only positive anticipated (Fry *et al.,* 2014; Taylor *et al.*, 2005) or negative anticipated emotions (Perugini and Bagozzi, 2001) respectively have a significant positive effect on behavior. Schuster *et al.* (2013) suggest this variation may be owing to different levels of goal abstraction. That is, in abstract goal contexts, such as mental health, consumers may have difficulty envisioning goal achievement or failure, affecting the formation and influence of positive and negative anticipated emotions.

Frequency of past behavior and service continuance

P$_7$ specifies that past behavior will influence consumers' continued use of a TBSS with credence qualities. Half the participants reported using *myCompass* frequently, ranging from every day to twice-a-week, so that it became integrated into their routine. The remaining participants recounted sporadic use of the TBSS. Many participants considered forming a habit of using *myCompass* important for service continuance. This is consistent with extant empirical studies of the MGB (Fry *et al.*, 2014; Leone *et al.*, 2004; Perugini and Bagozzi, 2001; Taylor *et al.*, 2005) and previous research investigating the determinants of the continued use of TBSS (Wang *et al.*, 2013). One participant suggested this is because, as part of a routine, it is easier to set aside and prioritize time to engage with the service since it is automatic: "*You just get into routines and you just do it regardless sometimes of what else you're doing. It's just what you do- it's part of your daily flow*" (Participant 16, Female). Another participant suggested routine helps to keep the service top-of-mind: "*It probably kept me going on the program so that I didn't forget about it*" (Participant 1, Female).

Desire and service continuance

P$_7$ specifies that desire – "a personal motivation" (Perugini and Bagozzi, 2001, p. 71) – will influence continued use of a TBSS with credence qualities in accordance with the MGB. Maintaining motivation to continue using the service was a significant challenge for participants, although it is acknowledged that low motivation is associated with depression and anxiety (Lonigan *et al.*, 1994). One participant summarizes: "*So there wasn't anything that I sort of went: 'This is making me not want to complete it', but I just felt like my motivation just wasn't stimulated*" (Participant 7, Female).

Desire stems from reasons that make a given behavior appealing (Leone *et al.*, 2004). Without direct interaction with service personnel or other service users participants found it difficult to recognize positive outcomes of service use, such as improved mental health, reducing their desire or motivation to continue using the service. Services with credence qualities are difficult to evaluate even after use (Zeithaml, 1981) and it appears that interaction with service personnel in particular provide valuable cues to assist consumers to recognize positive service outcomes.

> *It was difficult to stay motivated ... with myCompass, you're not getting any outside feedback – you are left to assess your own sort of progress. When it's sort of left to you, maybe you're not sure if it is helping you or not. So if you are not sure if it is helping you or not, then you lose a bit of motivation to actually continue it and you lose a bit of interest in it.* (Participant 4, Male)

Participants who reported maintaining their motivation to continue using *myCompass* seemed to exhibit less focus on external sources of motivation. These participants appeared more intrinsically motivated, focusing on the enjoyment and sense of accomplishment they derived from using the service. Whereas extrinsic motivation to perform a behavior is based on achieving a specific outcome, intrinsic motivation refers to the inherent satisfaction derived from performing the behavior itself (Ryan and Deci, 2000). As summarized by one participant: "*There was no one pushing it on me, it was just there for me to do and each day I looked forward to it*" (Participant 16, Female). Although intrinsic motivation has received some attention in research examining the determinants of consumers' adoption of TBSSs (e.g. Venkatesh, 2000), the role of intrinsic and extrinsic motivation has yet to be explored in the continued use of TBSSs.

Social influence and service continuance

Notwithstanding the determinants of service continuance outlined by the propositions of this study, the data revealed that the shift away from high levels of interpersonal interaction typical of professional services with credence qualities (Johnson and Zinkhan, 1991) toward the TBSS had a substantial impact on participants' continued use of *myCompass*. First, several participants proposed that the social support provided via interpersonal interaction would have been beneficial at times when they had lost momentum or stopped using the TBSS to remind them of its benefits, to help prioritize the service, to add a "*personal touch*" to the service experience (Participant 6, Female) and to make them feel important – like they were more than "*just a number*" (Participant 7, Female). This finding corresponds with previous research showing service recipients who receive social support from service personnel are more loyal to the service (Rosenbaum, 2006) and that affective commitment to service personnel, derived from "perceptions of support", reduces attrition from the service (Bansal *et al.*, 2004, p. 238).

> *Maybe* getting emails if I hadn't been on the program for a while, then maybe getting a reminder email to say "We haven't seen you for a while, why don't you log on and do some modules" [laughs] ... It would make people feel that someone is actually noticing that I'm not putting much time into this ... I mean some people are probably more self-motivated than others, but I think a lot of people kind of also depend on other people's encouragement and expectations. *(Participant 19, Female)*

Second, some participants felt no "*real obligation or commitment to continue*" (Participant 4, Male) using the mHealth service without the high levels of interpersonal interaction typical of professional services with credence qualities. These participants suggested additional interaction with service personnel would have increased their desire to continue using *myCompass* owing to a sense of social obligation. Participants

reported that feeling accountable to a third party would have increased their commitment to continue using the service. Research shows that in addition to affective commitment, discussed previously in relation to social support, normative commitment also decreases attrition from services (Bansal *et al.*, 2004). Normative commitment is the psychological force which binds a service recipient to a service through perceived obligation and stems from internalized norms of behavior (Bansal *et al.*, 2004), such as attending scheduled appointments.

> *I guess you feel that, not pressure, but you feel that expectancy from a health professional. Thinking, well okay, you have made this appointment, so you are expected to attend that appointment as opposed to just having that expectation of yourself. So I guess there is that social pressure as well from the health professional... as opposed to no social pressure from when you are just doing it off your own back.* (Participant 7, Female)

Overall, the findings suggest participants in this study value interaction with third parties such as service personnel in contrast to other TBSSs, such as online banking, where consumers desire to reduce interaction with service personnel (Meuter *et al.*, 2000). This provides empirical support for the propositions that reduced interpersonal interaction could impact consumer perceptions of service (Forbes *et al.*, 2005) and loyalty toward TBSSs (Levy, 2014). Further, participants suggested technology-mediated interaction, through mediums such as emails, instant messaging, forums or text messages, could be used to engender a sense of social support or obligation. This finding extends previous conceptualizations of social support, which focus on interpersonal verbal and nonverbal interaction (e.g. Adelman and Ahuvia, 1995; Rosenbaum, 2009).

> *You would get frequent email reminders with surveys... And it kind of felt like you were supported by the researchers that were behind it. You didn't just sign up and*

you're another number. I did feel like I was part of something. I did feel supported in that way when I would get the reminders. I guess that was a little bit of motivation to continue with it… (Participant 7, Female)

Implications

Theoretical implications

This study makes three key contributions to the extant literature. First, it extends research examining the unique dynamics in consumers' use of distinct categories of TBSSs (e.g. Collier *et al.*, 2014). The study highlights several differences in the determinants of consumers' continued use of professional services delivered via self-service technology relative to more standard or routine TBSSs. Of note, the findings suggest consumers value interaction with service personnel, in contrast to more routine TBSSs (Meuter *et al.*, 2000), and that reduced interaction may influence service continuance as previously proposed (Levy, 2014) but not empirically substantiated until this study. The findings further indicate that self-efficacy remains crucial to consumers' continued use of TBSSs with credence qualities in contrast to more routine TBSSs where self-efficacy becomes less important as the consumer gains service experience (Wang *et al.*, 2013).

Second, this research builds on the relatively limited body of literature examining factors affecting behavioral loyalty to, as opposed to adoption of, TBSSs (van Beuningen *et al.*, 2009; Tojib and Tsarenko, 2012; Wang *et al.*, 2013). Specifically, it provides qualitative support for the MGB, which takes into account consumers' goals and emotions, as a useful conceptual foundation in this behavioral context. Although Schuster *et al.* (2013) provide preliminary evidence of this model's utility in explaining consumers' acceptance of TBSSs, this study is the first to provide support for its value in explaining service continuance.

Finally, the study augments understanding of the explanatory sphere of the MGB through its application to a novel behavioral context. The findings generally corroborate the propositions derived from the MGB. However, the research also extends the MGB conceptualization by providing evidence for deepening the theory through reformulation of an existing construct and by broadening the theory though an additional exogenous construct. The findings indicate the importance of distinguishing between the extrinsic and intrinsic motivational components of behavioral desire and further highlight the impact of social influence beyond that which is captured by the MGB through subjective norms.

Managerial implications

This research provides managers with insight into factors likely to influence consumers' behavioral loyalty toward professional services delivered through self-service technology. The study suggests that interaction may be a critical factor in encouraging behavioral loyalty toward these TBSSs, particularly mHealth services for mental health. A high level of interactivity seems to be required for service users to feel motivated and confident in their ability to continue using such services, which are highly specialized, complex and traditionally interpersonal. The findings indicate that continuous interactive feedback should be a core feature of these services and that this feedback does not need to be interpersonal; rather, it can be technologically-mediated. Technology-mediated interaction would enable organizations to retain the operational efficiency gained by transitioning the service to a self-service format. For instance, service managers can actively communicate with service users via email, SMS or other electronic means to provide social support and create a sense of social obligation to continue using the service over time. The findings also suggest that feedback should be

directed at maintaining and improving service users' confidence in their ability to co-produce the service, including clearly showing progress toward achieving their goals. Assisting service users to recognize the benefits of the service through feedback could also provide external motivational support necessary to encourage individuals who are not intrinsically motivated to continue using the service.

Limitations and future directions for research

This study is an exploratory, qualitative investigation and accordingly, quantitative validation is required for improved generalizability. Further, this study only examined one type of TBSS with credence qualities, the mHealth service *myCompass*. Although mHealth services are exemplar TBSSs with credence qualities, this narrow focus nonetheless restricts generalizability of the findings. For example, subjective norms could be more influential in cases where consumers use the self-service publicly, given research shows differences in consumers' responses to public compared to private self-service technology (Collier *et al.*, 2014). Overall, however, the study's findings are generally consistent with the MGB and previous research on professional services, suggesting potential for replicability across other TBSSs of this type (e.g. law and education). Moreover, since the study was conducted within Australia, further research should be undertaken across different cultural contexts to account for potential differences in social norms and other beliefs. For instance, Australians are amongst the world's heaviest users of technological products (Simon and Wardrop, 2002). Investigating the use of more complex TBSSs with credence qualities in cultural contexts where consumers do not have the same level of experience and penchant for technological products may yield further insights.

The research also provides directions for further research related to deepening and broadening the MGB. Currently, the motivational content captured by desire in the MGB is derived solely from extrinsic sources of motivation, such as subjective norms, attitudes, perceived behavioral control and anticipated emotions. However, this research suggests intrinsic motivation may also contribute to the formation of desire to perform behavior. This is in line with Self-Determination Theory (Ryan and Deci, 2000) and may provide a basis for further deepening the MGB, particularly in the context of consumers' continued use of TBSSs with credence qualities. The findings of this research highlight the potential to broaden the MGB through the inclusion of social influence beyond perceptions of subjective norms, although future research is needed to test this proposition.

Conclusion

Complex professional services are increasingly delivered via self-service technologies such as the Internet and mobile devices owing to continued advancements in these channels. Limited research attention has been paid to this emerging category of TBSS with credence qualities that distinguish it from other more standard or routine TBSSs. In particular, limited investigation of the factors affecting consumers' use and continued use of TBSSs with credence qualities has been undertaken. With the aim to contribute to addressing this gap in the literature, this study employed the MGB to explore consumers' continued use of a rapidly growing type of TBSS with credence qualities – health services delivered via mobile devices (mHealth services). The findings of the study highlight the unique determinants of consumers' continued use of TBSSs with credence qualities and generally provide support for the propositions derived from the MGB. However, they also provide deeper insight into the constructs of the MGB and

the nuances of how these determinants operate within this novel behavioral context. The findings further reveal the potentially important role of social influence beyond that which is captured by the MGB through subjective norms. This research provides an important basis for future research since advancements in technology will likely see a growing number of professional services, such as accountancy and legal services, delivered through self-service technologies.

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